

ROADMAP: Lead and Copper Rule Revisions

Delaware Rural Water Association
LCRR Training Manual



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**Delaware Rural Water Association
LCRR Training Manual**

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IN COLLABORATION WITH

Delaware Rural Water Association

120Water

Delaware Health and Social Service
Division of Public Health
Office of Drinking Water

COURSE OVERVIEW

Welcome to the LCRR Training. The Delaware Rural Water Association partnered with 120Water and the DHSS Office of Drinking Water to develop a course that successfully prepares you for the EPA LCRR changes that go into effect in October 2024 and beyond. The curriculum is reviewed and approved by the Delaware Office of Drinking Water.

GOALS, OBJECTIVES, OUTCOMES

Course Description

In this training, you'll examine the new lead and copper rule revisions (LCRR) to implement successfully in your water system.

Course Goals

- Be your utility's expert and understand the updated regulations
- Jumpstart internal problem-solving discussion and determine best practices for compliance
- Identify gaps to determine the resources needed and know how to fund your efforts

Learning Objectives

- Demonstrate knowledge of the updates to LCRR and the historical timeline.
- Understand inventory basics to be in compliance and produce a plan.
- Understand advanced inventory strategies with data/no data.
- Know Delaware ODW-specific LCRR requirements.
- Understand sampling changes, ways to verify data, and collaborating with customers.
- Learn the communication requirements and best practices for customer engagement.
- Understand what funding is available for LCRR and future updates.

Knowledge Check Quizzes

Each section is concluded with a Knowledge Check Quiz. A final exam consisting of 30 questions at the end of the course. The light bulb icon  indicates a quiz/test question.

To receive a certification of completion, you must receive at least a 70% passing rate.

PARTNERS

DELAWARE RURAL WATER ASSOCIATION (DRWA)

The DRWA is the state's leading association dedicated to providing on-site technical assistance and specialized training for rural water and wastewater systems. DRWA is an affiliate of the National Rural Water Association

DELAWARE OFFICE OF DRINKING WATER

The mission of the Office of Drinking Water is to protect the health of Delawareans by assuring safe drinking water through comprehensive monitoring, technical assistance, and public education.

120WATER

120Water is the comprehensive solution used by water professionals across the country to manage critical lead and drinking water programs. Comprised of secure cloud-based software, services and point-of-use kits, 120Water's solution provides tailored workflows for complying with lead and water quality programs to protect public health.

Working with thousands of utilities nationwide, 120Water is in the process of inventorying over 3 million service lines that impact more than 10 million individuals. Their team of water, policy and technology experts have supported over 8,000 sampling events, partnering with the National Rural Water Association (NRWA), water systems and government agencies such as Citizens Energy Group, the City of Providence, RI, the City of Asheville, NC, and Chicago Public Schools to protect public health and provide clean drinking water to all communities.



DELAWARE HEALTH
AND SOCIAL SERVICES
Division of Public Health
Health Systems Protection



120Water™

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INTRODUCTION

Lead pipes and fixtures still exist in our country—11,000 communities, to be more specific— and no amount of lead is safe. Replacing 100% of the existing lead pipes in our country sounds daunting; however, for the first time in decades, water professionals have the opportunity to solve some of the most challenging industry-wide problems. Matt Damon, actor and Co-founder of Water.org, stated it best in the documentary Brave Blue World, "How lucky are we that we are the ones who get to solve this?"

We know that tasks set before you are a huge undertaking. Still, the EPA has made unprecedented amounts of funding available to assist systems in identifying and replacing all lead service lines in our great nation.

As a water operator professional, your number one priority is public health protection. You must uphold professional standards for the operation and maintenance of water systems. Fighting through the hardships of day-to-day operations, being short-staffed, and managing limited resources, you are the gatekeepers for safe, clean drinking water.

A lot rides on your shoulders, but for a good reason. The ultimate goal is to produce something other than safe, clean drinking water. You're here for those who consume, use, bathe, and play in the water you treat.

It's important to remember whom you serve and protect as you carry out your day-to-day operations—children, mothers, fathers, neighbors, senior citizens, the healthy and immunocompromised, the young and old. While they may take water for granted, you do not have that luxury.

In decades past, water systems and the industry operated in a reactive, behind-the-scenes, siloed manner. However, systems can not continue to operate reactively and expect to keep up with the way of the world. New technology, updated regulatory requirements, and the changing workforce and cultural landscape impact the way the industry must function. Public attention toward water-related issues is growing and will continue to get mainstream media's attention.

Two words forever changed the water industry and the public's perception of water utilities: Flint, Michigan.



How lucky are we that we're the ones who get to solve this?"

– Matt Damon, American Actor and Co-founder of Water.org

The United States Environmental Protection Agency (EPA) established the Lead and Copper Rule (LCR) in 1991 to minimize lead and copper in drinking water. Thirty years later, the EPA published Lead and Copper Rule Revisions to protect children and communities from lead exposure.

It's our responsibility, as water professionals, to build trust with the community we serve. We must take proactive approaches in our daily operations, but it doesn't end there. We must communicate about our work with our customers. Transparency builds trust, even if the answer isn't good news. Arming customers with information allows them to make informed decisions and puts them at ease, knowing you are working to ensure the water from their tap is safe.

The EPA considers the recent guidance, the Lead and Copper Rule Revisions (LCRR), part of a series of "long-term" revisions to significantly reduce water contaminants, enhance education, and protect children at schools and daycare facilities.

Although the LCR continues to change, the EPA and Delaware Office of Drinking Water expects systems to prioritize the revisions as they gradually arrive.

As the person tasked with implementing your water systems LCRR, the following course and materials will help you understand the updated regulations, determine best practices for compliance, and know how to fund your efforts. The goal is to help you understand the revised Lead and Copper Rule and feel confident tackling the changes.

Delaware Rural Water Association partnered with 120Water and the DHSS Office of Drinking Water to provide this course, which examines the new LCRR and provides guidance for your system to implement compliance successfully.

By attending this course, we assume you have a basic understanding of water operations. We highly recommend partnering with your water utility operator if you do not.



01

LCRR FOUNDATION

**Understanding the
Foundation of LCR
Revisions**



YOU ARE THE EXPERT

As a water operator, especially in rural or small systems, you're the compliance, communications, sampling, and reporting expert. Understanding the historical context and updates to the rules will help you educate community members with limited knowledge, especially regarding lead and copper regulations.

Over the last thirty years, the Lead and Copper Rule focused primarily on sampling. The new rules require more data gathering, refined sampling methods, communications, and plans to replace all lead service lines.

As the expert, you can serve as your community's confident, trusted source regarding water quality. Please be prepared to answer questions and help out city officials and community members.



LEAD AND COPPER RULE REVISION (LCRR)

The EPA published the LCRR on January 15, 2021, and formally approved it in December 2021. The revisions improve the Lead and Copper Rule to eliminate lead contamination in drinking water and increase public health protection by reducing lead exposure.

These revisions apply to 40 CFR Parts 141 and 142 which can be found online under the Code of Federal Regulations. The EPA provided the Guidance for Developing and Maintaining a Service Line Inventory (August 2022) to better understand the LCRR requirements.

The QR Code in the Appendix contains URL links and additional resources.



View the EPA Guidance for Developing and Maintaining a Service Line Inventory by scanning the QR Code in the Appendix

Lead and Copper Rule Improvements (LCRI)

It is important to note that we are exploring the rule as it is written in the law today. Still, the EPA has expressly committed to improving the regulation on a few key fronts and plans to promulgate the "Lead and Copper Rule Improvements" (LCRI) before the compliance deadline. On August 4th, 2022, the EPA released its final update to the "Inventory" component of the law and stated further that they would evaluate the other components. It is essential to know that the Inventory is final and will not change. Although the EPA issued Lead and Copper Rule Revisions (LCRR) in January 2021, the agency did not address practices for lead pipe replacement. The EPA later reviewed the LCRR to determine if it adequately protected families and communities, especially those at risk from lead in drinking water. The agency concluded that significant opportunities existed to improve the LCRR and proposed the LCRI.

Improvements include four priorities:

1. Replace lead service lines proactively and equitably.
2. Improve compliance with sampling at the tap to identify communities most at risk of lead in drinking water and compel action to reduce lead.
3. Decrease the complexity of the regulation (i.e., trigger-level vs. action-level, sampling methods, replacement schedules, etc.)
4. As part of the LCRI rulemaking process, the EPA is considering prioritizing protections for historically underserved and overburdened communities.

The Safe Drinking Water Act also requires the EPA to consult with the SAB on tools, indicators, and measures to evaluate the environmental justice impacts of lead service line presence and replacement in drinking water systems.

In addition, a Small Business Advocacy Review Panel will include Small Entity Representatives (SERs), specifically from public water systems serving 10,000 or fewer people. The EPA hopes SERs, particularly those in disadvantaged communities, will be fully engaged in proposing solutions. The National Drinking Water Advisory Council and federal and local entities also participate.

EPA plans to propose the LCRI for public comment in 2023 and take final action by October 16, 2024. Obtaining public input is essential, and public meetings were held online in October and November 2022.



HISTORICAL CONTEXT



PRO TIP

Use this timeline to brief your staff, elected officials, the general public, schools, and media.

LCR BEGINNINGS

To know where we're going, it's essential to know where the regulation began, how we've changed, and how not to repeat ourselves. Knowing the timeline helps explain WHY the changes are happening, ultimately allowing every community to have zero lead and copper in the system. While that may feel impossible now, this timeline represents how much closer we are to achieving that goal.

Federal Lead Pipe Timeline

If you live in a home built before 1986, your system may have lead pipes. No matter the piping material, you must account for lines via an inventory – for which many utilities lack reliable or complete data.

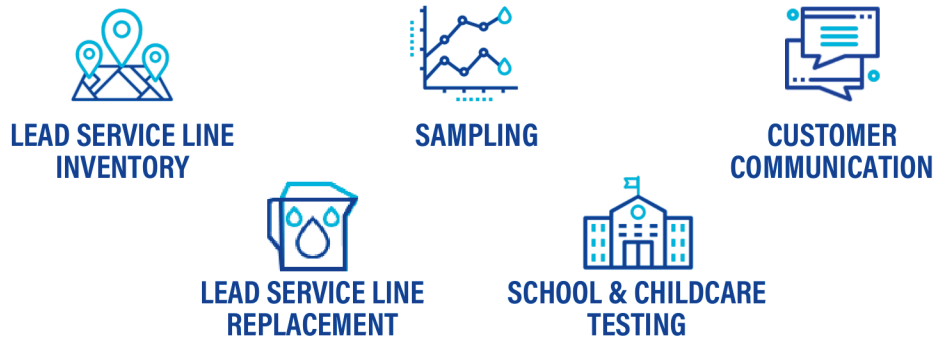
Here's a quick rundown of our early days:

- 1800s - Installation on a major scale
- 1930 - Some cities moving away from LSL use
- 1970 - LIA Campaigns End
- 1977 - Changes to plumbing codes
- 1986 - Federal LSL ban (Date of Lead Ban in each State Varies from 1986 - 1991)

DATE	ACTION	RESULT
1974	The Safe Drinking Water Act (SDWA) was passed to protect our drinking water. The US Environmental Protection Agency (EPA) sets the standards for drinking water quality and monitors states, local authorities, and water suppliers who enforce those standards.	The EPA sets legal limits for more than 90 contaminants in drinking water, including chemical and microbial contaminants.
1986	Congress amended the SDWA prohibiting using pipes, solder, or flux that were not "lead-free" in public water systems or plumbing in facilities providing water for human consumption.	At the time, "lead-free" was defined as solder and flux with no more than 0.2% lead and pipes with no more than 8%.
1991	EPA first issued the Lead and Copper Rule (LCR) to limit concentrations of lead and copper in public drinking water.	The rule also set a standard for pipe corrosion control, a proven method of controlling contaminants in drinking water.
1996	Congress further amended the SDWA requiring plumbing fittings and fixtures to comply with voluntary lead leaching standards.	Further amended the SDWA to clarify that its "lead-free" prohibition on using pipes, solder, and flux also applies to pipe fittings, plumbing fittings, and fixtures.
2014	Reduction of Lead in Drinking Water Act	Changed the Pb limit for pipes, fittings, and fixtures from 8% to 0.25% of the wetted surfaces of pipes, fittings, and fixtures
2021	Revised Lead and Copper Rule (LCRR)	Major changes to the LCR with a focus on reducing lead in drinking water and removing sources of lead.
Oct. 16, 2024	Revised Lead and Copper Rule (LCRR) compliance deadline for utilities	The service line inventory is required by 10/16/2024; a new rulemaking may change all other LCRR requirements (Lead and Copper Rule Improvements). LCRI is expected to be proposed in 2023 and finalized before 10/16/24.

PILLARS OF LCRR

The EPA's Lead and Copper Rule Revision brings new challenges for water utilities nationwide. The LCR revisions include five key updated areas.



To set your organization up for long-term compliance success, systems must take action by:

- developing action plans,
- revising current processes,
- organizing their data,
- engaging with customers and,
- creating and validating their Lead Service Line Inventory

Although we expect the EPA to provide additional guidance on sampling, LSL replacement, and school and childcare testing, we include the current revisions to better prepare you for what's to come soon.

The first major hurdle to overcome is creating and validating your LSL inventory and developing customer communications. Your preliminary LSLI is due October 16, 2024.

This date doesn't mean you must have a lead-free system by then; you must gather all the data possible about your system to be prepared to move toward a lead-free system.



5 PILLARS OF LCRR

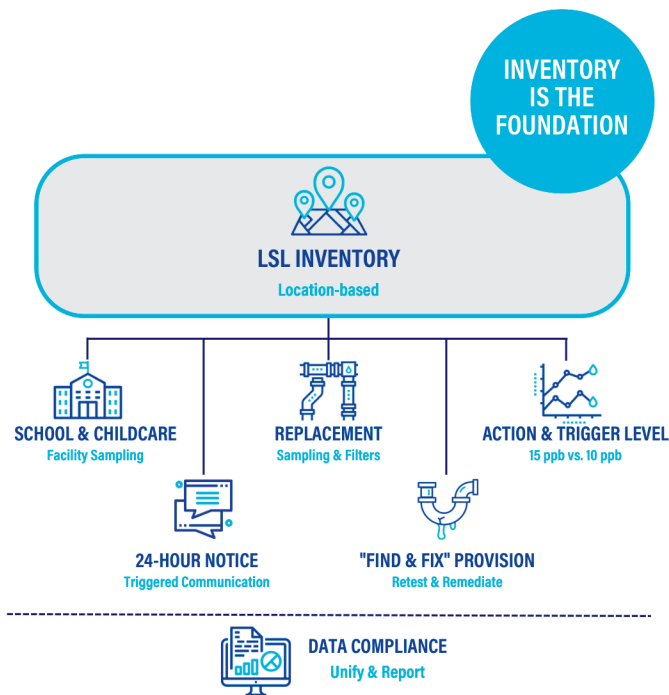
- Lead Service Line Inventory
- Residential Sampling
- School and Daycare Sampling
- Public Communications
- Lead Service Line Replacement



LEAD SERVICE LINE INVENTORY (LSLI)

The Lead Service Line Inventory is the foundation for the LCRR.

Every program (facility testing, public communications, replacement plans, new tier levels) depends on the preliminary inventory of your system. The goal here is to ascertain what you know – and don't know - about the materials in your system.



Below are the EPA's requirements for your lead service line inventory:

- Every public water system must compile and manage an inventory of public and private portions of all service lines within their service area by 2024.
 - Develop a preliminary inventory of ALL commercial, residential, public, and private service lines by October 16, 2024.
- Inventories must be made publicly available, and each customer serviced by an LSL, GRR, or a line with an unknown material must be notified annually.
 - Includes lead pipes, galvanized pipes previously or currently connected to lead, non-lead pipes, and unknowns.
 - Populations over 50,000 must be publicly available online.
- Systems must develop a Replacement Plan identifying an LSLI validation strategy and annual replacement goal.



BOTTOM LINE:

You must create a location-based inventory of the public and private sides of every service line in your system by **October 16, 2024**.

RESIDENTIAL SAMPLING

The EPA changed the sampling process to prevent issues like Flint, Michigan.

The EPA introduced a new trigger level, a redefined tier list, and a change in the sampling process. The goal is to gather more information on the entire system—public and privately-owned sides—to indicate that problems could be on the horizon.

New Trigger Level of 10 ppb.

The Action Level of 15 ppb remains the same; however, with the new trigger level of 10 ppb, you will see potential issues before becoming problems. This trigger level aims to force systems to identify issues before it causes harm to the public (i.e., Flint, MI).



THIS TRIGGER LEVEL WILL ALSO HAVE AN EFFECT ON YOUR SAMPLING.

The monitoring schedule is based on the 90th percentile level for all systems

P90 > 15 µg/L

If your 90th percentile is above 15 ppb:

- You'll test semi-annually at the standard number of sites, and
- At a minimum, you will be required to replace 3% of your lead service lines annually.

P90 > 10 to 15 µg/L

If your 90th percentile is between 10 and 15 ppb,

- You'll sample annually at your standard number of sites
- You will reoptimize your corrosion control treatments
- You will work with state officials to set an annual goal for lead service line replacements



RESIDENTIAL SAMPLING, continued

New Tier Sites

Previously, there were three tiers, defined below, but now the EPA has redefined the first three and added two more for five tiers.

The list will be based on the LSL inventory, and all Tier 1 samples must be collected from any home served by an LSL.

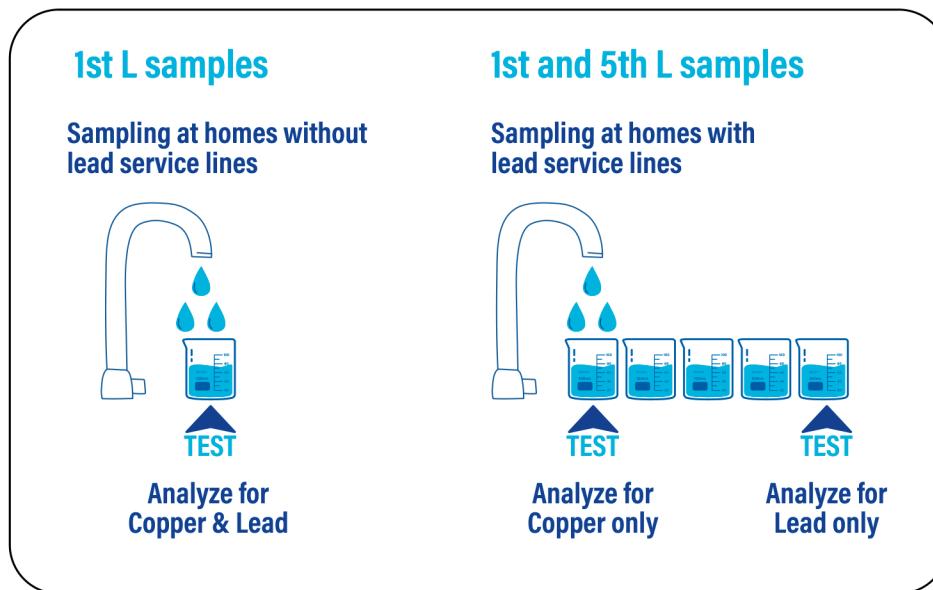
TIERS	OLD REQUIREMENTS FOR CWS	NEW REQUIREMENTS FOR CWS
1	Single Family Homes served by LSLs, goosenecks pigtails or copper service lines & lead solder (constructed between 1983-1988) <ul style="list-style-type: none"> • Allows for a 50-50% mix 	Single Family Homes served by LSLs
2	All types of buildings served by LSLs, goosenecks/pigtails or copper service lines & lead solder (constructed between 1983-1988)	Multi-Family Residences served by LSLs
3	Single Family Homes served by copper pipes constructed before 1983	Single Family Homes with galvanized service lines currently or historically downstream of an LSL (Galvanized Requiring Replacement)
4		Single Family Homes with copper pipes and lead solder installed before the state's ban (1986-1988)
5		Representative sample where plumbing is "similar" to other sites served

RESIDENTIAL SAMPLING, continued

First- and Fifth-liter Sampling

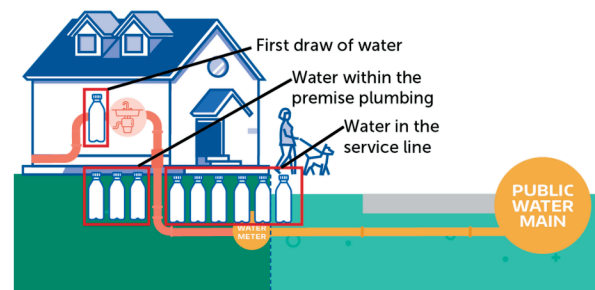
A 1st- and 5th-liter draw and analysis for any home served by an LSL is now required

- In 2024, we move from collecting only first-liter samples after stagnation to the following:
 - 1st and 5th L samples for Tiers 1-2
 - 1st L samples for Tiers 3-5



Why the First and Fifth?

Taking the first and fifth samples gives you more insights into your system! You are used to asking customers to collect the first draw of water; however, a first-liter draw only tells us what's going on in the internal plumbing of the homes water lines, whereas collecting a five-liter sample tells us what's going on deeper in the service line and can provide more accurate information.





RESIDENTIAL SAMPLING, continued

What Does This Mean For You and the Customer?

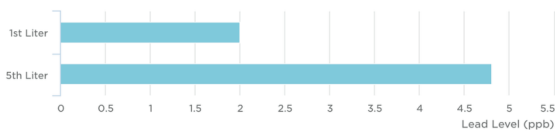
Having customers collect and submit one-liter stagnation samples is challenging in its own right. Collecting a 1st and 5th-liter sample requires even more communication and education between you and your customer. Because of this new requirement, it's essential to share WHY these samples need to be collected and the value it brings to your utility operations and them as a customer.

Provide clear communication in layperson's terms that includes explanations and graphics.

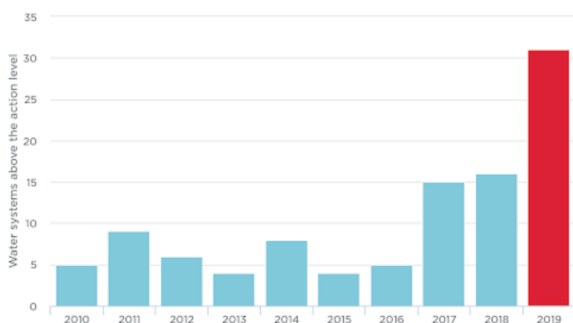
Below is an example of why the fifth sampling is so important.

FIRST & FIFTH-SAMPLING IN ACTION

An APM Reports analysis of over 30,000 individual lead tests in Michigan over four years found that on average fifth-liter samples had two and half times as much lead as first-liter samples.

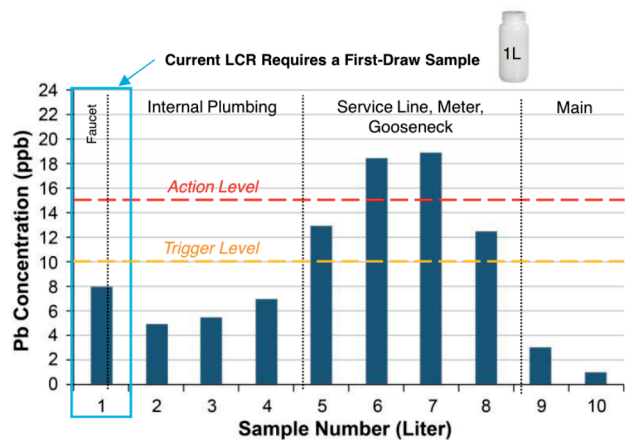


After Michigan began sampling the fifth and first liter, the number of water utilities above the EPA's action level doubled from 16 in 2018 to 31 in 2019.



SOURCE: Michigan Department of Environment, Great Lakes, and Energy

This data lends credence to the argument that 1st-liter sampling will likely find lower lead levels. In comparison, the 5th-L sampling shows above the new trigger level.



RESIDENTIAL SAMPLING, continued

"FIND AND FIX" PROVISION

The EPA also introduces a "find and fix" provision, which asks utilities to take a second look at homes with high lead levels. In addition to the steps below, various notifications are associated with find and fix requirements. Small water systems have alternative find and fix requirements. Find-and-fix requires:

Step 1 (Corrosion Control Assessment):

Within five days of a system receiving a tap sample result exceeding 15 µg/L (Pb), water quality parameter (WQP) sampling must be conducted near the compliance sample site with a high lead value. If appropriately cited, existing WQP and coliform sampling sites can be used for this purpose.

Step 2 (Lead Source Evaluation):

Within 30 days, follow-up tap sampling for lead at the site that exceeded 15 µg/L should be performed. Alternative sampling protocols are allowed to understand the cause and source of lead better. These samples are not included in compliance monitoring data used to calculate the 90th percentile lead levels for the system.

Step 3 (Evaluation):

Within six months, systems should submit an analysis based on results from Steps 1 and 2 to determine the cause of elevated lead. If the cause of elevated lead is unknown or determined to be from a source at the sampling location, then no fix is required. Suppose the cause of elevated lead is determined to be corrosive water. In that case, additional actions are required to restore optimal water quality to that portion of the system, which could include an evaluation of corrosion control.

Step 4 (Change Implementation):

Utilities must work with the State to implement an approved treatment recommendation.



SCHOOL AND DAYCARE SAMPLING

No amount of lead is safe for children.

A recent study by the World Health Organization (WHO) found that when adults drink water with lead, they absorb up to 10%, but when children drink water with lead, they can absorb 40-60%. Consuming lead can cause nervous system damage, learning disabilities, behavioral problems, and in extreme cases, seizures, comas, and even death. Ever since the crisis in Flint, Michigan, lead in schools and facilities has been top of mind and a prevalent legislative issue. As of November 2021, almost half of the nation had voluntary programs, and 18 states had mandatory programs. This has been the trend, with the U.S. prioritizing lead removal where children are present.



Water systems can get a head start for sampling schools and childcare facilities. Here are a few recommendations:


- Build a list of the schools and all licensed childcare facilities in your service area
- Meet with stakeholders to bring awareness of upcoming changes
- Provide training and education
- Develop a sampling schedule
- **Sign up for the WIIN grant voluntary sampling program:**
<https://www.epa.gov/dwcapacity/wiin-grant-voluntary-school-and-child-care-lead-testing-and-reduction-grant-program>

SCHOOL AND DAYCARE SAMPLING, continued


Before LCRR, lead sampling in school facilities was the responsibility of states, cities, and individual facilities. With the updated regulation, school and daycare sampling will now fall to water systems to operate, including the following:

IDENTIFY Every water system must create an inventory of facilities they serve – elementary schools, middle schools, high schools, preschools, daycares, etc.



 **SAMPLE** Utilities must sample 20% of elementary schools and 20% of all childcare facilities in the service area each year for five years.

- **Five (5) samples per school and two (2) samples per childcare facility**
 - Schools - Sample:
 - Two (2) drinking water fountains,
 - One (1) kitchen faucet used for food or drink preparation
 - One (1) classroom faucet or other outlet used for drinking
 - One (1) nurse's office faucet (as available)
 - Child care facilities – Sample:
 - One (1) drinking water fountain
 - One (1) of either a kitchen faucet used for the preparation of food or drink OR one (1) classroom faucet or other outlet used for drinking
- **Secondary school sampling must also be provided when requested.**

 **SHARE** You must deliver results and public education to each sampled facility, primary agency, and health department.



PUBLIC COMMUNICATIONS

The EPA recognizes public communication as an essential component in the new revisions. Talking about lead in drinking water can sound alarm bells in your residents' heads. Historically, the water industry did not prioritize public communication. But it's proven that communicating with your customers early and frequently builds trust.

Previously, systems had 30 days to notify customers on their monitoring list. They only used the annual drinking water report, the Consumer Confidence Report (CCR), to share monitoring results with the community. These reactive strategies are correct but should couple with proactive strategies allowing two-way communication between your water system and your resident.



“
If they hear it from you first, they trust you first. If they hear it from you last, they trust you last.”

– Mike McGill, President of WaterPIO

PUBLIC COMMUNICATIONS continued

We will dive deeper into public communication later in this course, but below are the new communication requirements under LCRR:

- Systems must notify customers with an individual LCR sample result > 15 µg/L within three days (72 hours).
- After your monitoring period ends, water systems must notify all consumers within the service area within 24 hours if your 90th percentile is over 15 ppb.
- Water systems must now distribute annual notifications to customers served by known lead, GRR, and unknown service lines.
- In your LSLR plan, water systems must include targeted outreach if your trigger level is exceeded.
- LSLI info must be publicly available for all systems. Inventory must be made available online if the population is greater than 50,000.
- Water systems must provide public education materials when doing mandatory LSLR.



Your communication strategy is a crucial element of your LCRR compliance strategy. Here are a few recommendations to begin building your public communication strategy:

- Assess how you communicate now and how you can improve or add strategies
- Ensure you have updated customer contact information, including emails, addresses, and phone numbers
- Prepare your notification templates, postcards, and letters BEFORE you need them
- Start talking to your customers NOW. Talk to residents about the LCRR changes, what to expect from your system, and how you will need their help
- Communicate EARLY and OFTEN on all facets of your LCRR adoption



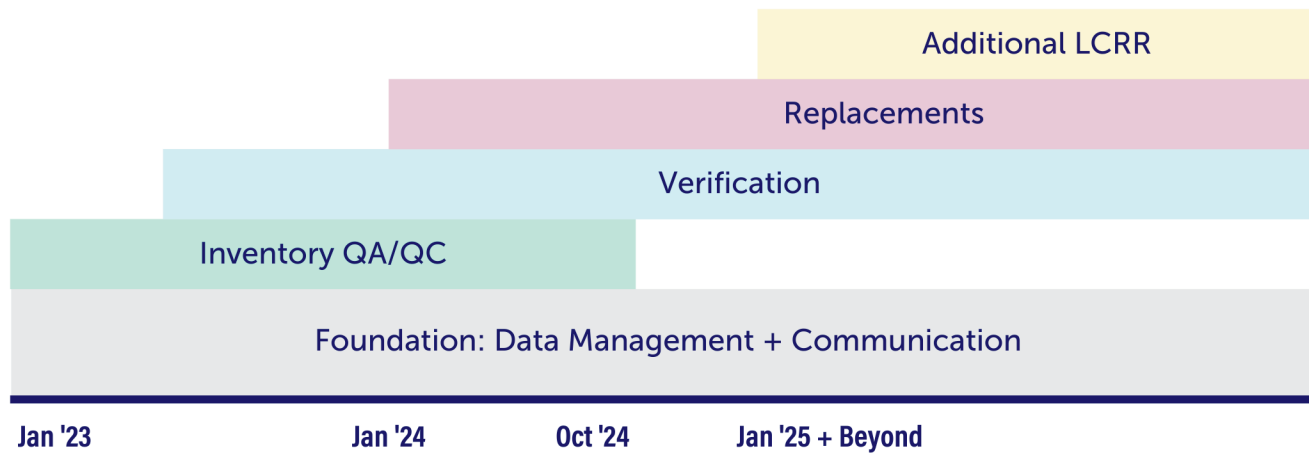
SEQUENCING YOUR LCRR PLAN

Timing is everything

Every water system's LCRR Plan will look different from one another. It's up to you and your team to ensure that you have a plan that accounts for the critical elements of LCRR in a way that makes logical sense to you and your system based on what you know and how you operate. A plan helps you identify gaps and lays out the steps you'll take to ensure they are filled to achieve compliance by October 2024 and maintain it in the following years.

Meeting the October 16, 2024, deadline and future compliance depend on your team managing the timeline.

The graphic below shows how the LCRR requirements overlap on the timeline versus completing them in a series.



BEST PRACTICE STRATEGY

To maximize effectiveness and efficiency, a best practice strategy is to run LCRR programs in parallel with communication and data management serving as the foundation throughout the timeline.

Quick Reference to LCRR Changes

LEAD SERVICE LINE INVENTORY	PUBLIC COMMUNICATION
<p>Every public water system must compile and manage a preliminary inventory of all commercial, residential, public, and private service lines within their service area by October 16, 2024.</p> <ul style="list-style-type: none"> Includes lead pipes, galvanized pipes previously connected to lead, non-lead pipes, and unknowns. 	<p>Systems must notify customers with individual LCR sample results over 15 µg/L within three days (72 hours).</p>
<p>Submission recurrence is based on a system's monitoring compliance schedule, and you must submit the first inventory within three years (or prove they don't have any LSLs).</p> <ul style="list-style-type: none"> You can submit approved or compliant evidence of no LSLs to receive a waiver, but you still have to resubmit every 1-3 years based on your monitoring period. 	<p>After your monitoring period ends, you must notify all consumers within the service area within 24 hours if your 90th percentile is over 15 ppb.</p>
<p>Inventories must be made publicly available, and each customer serviced by an LSL or a line with an unknown material must be notified annually.</p> <ul style="list-style-type: none"> Over 50k population must be publicly available online. 	<p>You'll have to distribute annual notifications to customers served by known lead and unknown service lines.</p>
<p>Systems must develop a Replacement Plan by identifying an LSLI validation strategy and annual replacement goal.</p>	<p>Your LSLR plan must include targeted outreach when monitoring results if you exceed your trigger level.</p>
	<p>LSLI info must be made public and included in the CCR.</p>
	<p>Systems must provide public education materials when doing mandatory LSLR.</p>



RESIDENTIAL SAMPLING	SCHOOL & DAYCARE FACILITY SAMPLING
<p>New Trigger Level of 10 ppb</p> <ul style="list-style-type: none"> The Action Level of 15 ppb remains the same at this time. 	<p>Identify – Every water system will be required to create an inventory of facilities they serve – elementary schools, middle schools, high schools, preschools, daycares, etc.</p>
<p>The monitoring schedule is based on the P90 level for all systems.</p> <ul style="list-style-type: none"> P90 > 15 µg/L - If your 90th percentile is above 15 ppb: <ul style="list-style-type: none"> You'll test semi-annually at the standard number of sites, and You will be required to replace a minimum of 3% of your lead service lines annually. 	<p>Sample – Utilities must sample 20% of elementary schools and 20% of all childcare facilities in the service area each year for five years.</p> <ul style="list-style-type: none"> Five (5) samples per school and two (2) samples per childcare Secondary school sampling must also be provided when requested.
<ul style="list-style-type: none"> P90 > 10 to 15 µg/L - If your 90th percentile is between 10 and 15 ppb <ul style="list-style-type: none"> You'll sample annually at your standard number of sites, Reoptimize your corrosion control treatments, and Work with state officials to set an annual lead service line replacement goal. 	<p>Schools - Sample:</p> <ul style="list-style-type: none"> 2 drinking water fountains, 1 kitchen faucet used for food or drink preparation 1 classroom faucet or other outlet used for drinking 1 nurse's office faucet, as available
<p>New Tier Sites - The EPA redefined the first three and added two more for five tiers.</p> <ul style="list-style-type: none"> The list is based on the LSL inventory, and all Tier 1 samples must be collected from any home served by an LSL. 	<p>Child care facilities – Sample:</p> <ul style="list-style-type: none"> 1 drinking water fountain 1 of either a kitchen faucet used for the preparation of food or drink OR 1 classroom faucet or other outlet used for drinking
	<p>Share –The water system must provide results and public education to each sampled facility, primary agency, and health department.</p>

KNOWLEDGE CHECK

QUESTION 1: SHORT ANSWER / OPEN DISCUSSION

The LCR Revisions include five key updated areas (pillars of LCRR). List them below.

QUESTION 2: TRUE OR FALSE

The Action Level and new Trigger Level are 10 ppb.

- a.) True
- b.) False

QUESTION 3: FILL IN THE BLANKS

The monitoring schedule is based on the 90th percentile level for all systems.

If your 90th percentile is above ___ ppb:

- You'll test _____ at the standard number of sites, and
- At a minimum, you will be required to replace ___% of your lead service lines, annually.

If your 90th percentile is between ___ ppb and 15 ppb,

- You'll sample _____ at your standard number of sites
- You will reoptimize your _____
- You will work with state officials to set an annual _____

Use the word bank for the statements above

3	annually
10	semi-annually
15	corrosion control treatments
	goal for lead service line replacements

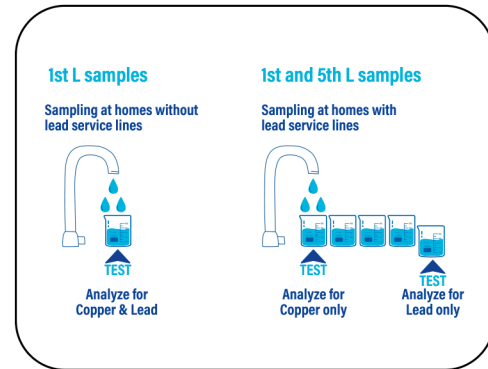


QUESTION 4: FILL IN THE BLANKS

Write out which of the five tiers are associated with the samples in the blanks below.

A 1st- and 5th-liter draw and analysis for any home served by an LSL is now required. In 2024, we move from collecting only first-liter samples after stagnation to the following:

- 1st and 5th L samples _____
- 1st L samples _____



QUESTION 5: SHORT ANSWER

Briefly explain why pulling the 1st and 5th samples for single- and multi-family homes served LSLs is essential.

QUESTION 6: FILL IN THE BLANKS

1. You must sample 20% of _____ and 20% of _____ in your service area each year over ___ years.
2. When sampling in schools and childcare facilities, water systems must provide _____ and _____ to each sampled facility, primary agency, and health department.

Use the word bank for the 3 statements above

all licensed childcare facilities results
elementary schools five
public education

QUESTION 7: TRUE OR FALSE

It's recommended to wait until your preliminary inventory is complete to start verification and communication.

- a.) True
- b.) False

ACTIVITY SECTION 1: LCRR CHANGES

LEAD SERVICE LINE INVENTORY	PUBLIC COMMUNICATION
<p>Every _____ must compile and manage a preliminary inventory of all commercial, residential, public, and private service lines within their service area by October 16, 2024.</p> <ul style="list-style-type: none"> • • • • 	<p>Systems must notify customers with individual LCR sample results over 15 µg/L within _____ days (_____ hours).</p>
<p>Submission recurrence is based on a system's monitoring _____ schedule, and you must submit the first inventory within _____ (or prove they don't have any LSLs).</p>	<p>After your monitoring period ends, you must notify all consumers within the service area within _____ hours if your 90th percentile is over _____ ppb.</p>
<p>You can submit _____ or _____ evidence of no LSLs to receive a waiver, but you still have to _____ based on your monitoring period.</p>	<p>You'll have to distribute annual notifications to customers served by _____ and _____ service lines.</p>
<p>Inventories must be made _____ available, and each customer serviced by an LSL or a line with an unknown material must be notified _____.</p>	<p>Your LSLR plan must include targeted outreach when monitoring results if you exceed your _____.</p>
<p>Population over _____ must be publicly available online.</p>	<p>_____ info must be made public and included in the CCR.</p>
<p>Systems must develop a Replacement Plan by identifying an _____ and annual _____.</p>	<p>Systems must provide _____ materials when doing mandatory LSLR.</p>



RESIDENTIAL SAMPLING	SCHOOL & DAYCARE FACILITY SAMPLING
<p>New Trigger Level of ____ ppb</p> <ul style="list-style-type: none"> The _____ Level of 15 ppb remains the same at this time. 	<p>Identify – Every _____ will be required to create an inventory of facilities they serve. Including: _____, _____, _____, _____, etc.</p>
<p>The monitoring schedule is based on the P90 level for all systems.</p> <ul style="list-style-type: none"> P90 > 15 µg/L - If your 90th percentile is above 15 ppb: <ul style="list-style-type: none"> You'll test _____ at the standard number of sites, and You will be required to replace a minimum of _____ of your lead service lines _____. 	<p>Sample – Utilities must sample _____ of elementary schools and _____ of all childcare facilities in the service area each year for _____ years.</p> <ul style="list-style-type: none"> _____ samples per school and _____ samples per childcare
<ul style="list-style-type: none"> P90 > 10 to 15 µg/L - If your 90th percentile is between 10 and 15 ppb: <ul style="list-style-type: none"> You'll sample _____ at your standard number of sites, Reoptimize your _____ treatments, and Work with _____ to set an annual lead service line replacement goal. 	<p>Schools - Sample:</p> <ul style="list-style-type: none"> ___ drinking water fountains, ___ kitchen faucet used for _____ or _____ preparation ___ classroom faucet or other outlet used for _____ ___ nurse's office faucet, as available.
<p>New Tier Sites - The EPA redefined the first three and added _____ more tiers</p> <ul style="list-style-type: none"> The list is based on the LSL inventory, and all Tier 1 samples must be collected from any home served by an LSL. 	<p>Child care facilities – Sample:</p> <ul style="list-style-type: none"> ___ drinking water fountain ___ of either a kitchen faucet used for the preparation of food or drink OR ___ classroom faucet or other outlet used for drinking _____.
<p>A ___ and _____ draw and analysis for any home served by an LSL is now required</p> <ul style="list-style-type: none"> In 2024, we move from collecting only first-liter samples after stagnation to the following: <ul style="list-style-type: none"> 1st and 5th L samples for Tiers _____ 1st L samples for Tiers _____ 	<p>Secondary school sampling _____ also be provided when requested.</p>
<p>New Tier Requirements for CWS:</p> <ol style="list-style-type: none"> 	<p>Share –The water system must provide _____ and _____ to each sampled facility, primary agency, and health department.</p>



02

DELAWARE'S LCRR APPROACH

**Delaware Office of
Drinking Water's
Specific LCRR
Requirements**



DELAWARE'S APPROACH

The Office of Drinking Water (ODW) aims to develop the nation's most comprehensive and forward-thinking lead mitigation program. ODW and DRWA have reviewed the US EPA's LCRR and all associated guidance documents to develop a fully compliant but elevated approach to implementing this Rule. In the following chapters, we will highlight the key components of compliance actions, definitions, and more that embody ODW's compliance program. We are excited to take this journey together and set the bar for what it means to "Get the Lead Out" in our country.

The ODW is working on an electronic submission platform and a model template for PWS. Additional information will be forthcoming.


IF COMPLIANCE IS NOT ACHIEVED:

Noncompliance will be coordinated with the US EPA, as Delaware will only have interim primacy for implementation. At the same time, EPA retains the enforcement burden until Delaware has amended its state regulation and receives full primacy from EPA.


QUESTIONS? CONTACT THE OFFICES DIRECTLY:

Office of Drinking Water: 302-741-8630
Drinking Water State Revolving Fund:
302-744-4817
Office of Engineering: 302-741-8640

LCRR KEY POINTS

 The ODW expects all Community and Non-Transient Non-Community (NTNC) Water Systems to develop an inventory that identifies the materials of service lines connected to their water distribution system.

Listed below are some of the key points that all Community and NTNC Water Systems shall prepare for to meet the requirements of the LCRR. These key points align with the EPA's LCRR.

-  Develop a service line inventory.
 - This inventory must include information on the water system-owned and customer-owned parts of the service lines.
 - This inventory must be completed and submitted to the Office of Drinking Water (ODW) by October 16, 2024.
- Service line inventories must be made available to the public.
 - The ODW plans to manage a public-facing website and encourages PWS to provide updated inventories in real-time or as soon as possible.
- The PWS identifying lead service lines as part of their inventory creation must create a lead service line replacement plan.
- The PWS identifying lead service lines must revise their sampling plans and protocols.
- The PWS that serves schools and childcare facilities is to create a sampling plan to test 20% of the elementary schools and childcare facilities they serve annually.
- The PWS must review their Corrosion Control Treatment and reoptimize if necessary. This must be done if the PWS's 90th percentile results indicate exceeding the trigger level.



ACTIVITY: CATEGORIZING SERVICE LINES WORKSHEET



Determine the service line classification based on the system-owned portion and customer-owned portion material type





SERVICE LINE CLASSIFICATION DEFINITIONS


The first step in creating a lead service line inventory is to understand the definition of a lead service line. The following is ODW’s working definition of a lead service line:

TERMS	DEFINITIONS
<p>Lead</p>	<p> "Lead service line" means any pipe or portion thereof of, whether the privately-owned portion, utility-owned portion, or both, that is made of or contains lead that connects a water main to a building inlet up to the first shut-off valve not to exceed two feet inside the premises or to the water meter, whichever is furthest inside the premises.</p> <ul style="list-style-type: none"> • For purposes of this regulation, a galvanized service line is considered a lead service line if it has ever been or is currently downstream of any lead service line or portion thereof or service line of unknown material. • If the only lead piping or portion thereof serving a premise is a lead gooseneck, pigtail, or connector and it is not a galvanized service line, that portion of the service line that is non-lead is not considered a lead service line. <ul style="list-style-type: none"> ◦ Still, replacement of the lead gooseneck, pigtail, and/or connector is required.
<p>Galvanized Requiring Replacement (GRR)</p>	<p> If the galvanized line is or ever was downstream of any portion of a lead service line, lead gooseneck, pigtail or connector, or service line of unknown material.</p> <ul style="list-style-type: none"> • The water system must demonstrate that the galvanized service line was never downstream of a lead service line. Otherwise, it must be considered galvanized requiring replacement.
<p>Non-Lead</p>	<p>If the service line is validated as not to be lead or galvanized requiring replacement.</p> <ul style="list-style-type: none"> • Generally, this category is to be used when the PWS identifies the service line materials to be made of Copper or Plastic. A determination must be through an evidence-based record, method, or technique.
<p>Lead Status Unknown</p>	<p>If the service line material makeup is unknown due to a lack of information, records, or the ability to perform a physical verification.</p> <ul style="list-style-type: none"> • ODW recommends that PWSs conduct on-site investigations to reduce the number of unknowns as soon as possible.

ODW's Key Components

The ODW reviewed the EPAs' guidance documents released on August 4, 2022 that assist public water systems in developing and maintaining a service line inventory and an inventory template. Below are the top key components regarding your inventory, the ODW wants to highlight:

HIGHLIGHTS

- Public Water Systems (PWS) must develop an initial lead service line inventory by **October 16, 2024**.
- Inventories **must have material information for the entire service line**, including both the water system-owned and customer-owned parts of the service line.
- Inventories **must include information on any lead or galvanized iron/steel service lines** as identified.
- The PWS **must update inventories as lead service lines are replaced**.
- The **PWS must provide inventory updates** to ODW periodically.
 - ODW encourages the PWS to provide updated inventories in real-time or as soon as possible, enabling ODW to update its public-facing website.
- ODW will **not require the PWS with only non-lead service lines** (water system-owned or customer-owned) to provide ongoing inventory updates.
 - However, if any of these PWS finds lead within their distribution system at a later time, ODW will require an updated inventory to be submitted.
-  ODW **strongly recommends** that the initial inventory has no more than 25% of its service lines as "Lead Status Unknown."
- Inventories **must have verifiable information regarding service line materials**. The PWS must review all available sources to identify service line materials. ODW approval is required for any method not specified below. Sources may include:
 - Historical PWS records
 - Distribution system maps
 - Meter installation records
 - Site inspection records
 - Plumbing inspection records/permits
 - Test pits
 - Vacuum or mechanical excavation
 - Information gathered during normal PWS operation
 - Predictive modeling
 - Homeowner surveys
 - Water quality sampling may be used as an indicator of a possible lead service line but not as a standalone method of identifying a lead service line. Additional approved verification methods must corroborate water quality sampling.





ADDITIONAL ACTIONS AND RECOMMENDATIONS

RECOMMENDATIONS

- PWS should **engage** with their customers throughout the inventory creation and LSLR process.
- **Building partnerships** via customer engagement/involvement will assist with information gathering for the customer-owned service lines.
- PWS should **develop revised standard operating procedures** for sampling and the creation of new sample plans.
- PWS should install dependable means to provide **proactive and timely communications** to their customers and ODW on lead sampling results and lead service line replacements.

SAMPLING REQUIREMENTS

- ODW requires PWS to ensure that 100% of samples collected as part of the LCRR requirement come from identified Lead Service Line sites.
- Sampling the first liter is OK for homes without Lead Service Lines.
- Fifth-liter samples are to be collected for homes with LSLs to ensure that the water being tested is not from the internal plumbing and is from the service line. This will reliably capture the LSL's lead risk.
- Practices such as line flushing and aerator cleaning/removal are not allowed.
- Samples are to be collected in a wide-mouth jar to improve accuracy.

TRIGGER LEVEL

- The PWS must sample annually when the trigger level is exceeded.

SAMPLING IN SCHOOLS AND CHILDCARE FACILITIES

- LCRR requires the PWS to test the drinking water they supply in 20% of elementary schools and childcare facilities annually.
- They must test secondary schools for a testing cycle of five years if requested.
- The PWS must conduct sampling if requested by any of these facilities in the future.
 - Especially if these facilities had plumbing installed before January 1, 2014.
- Analysis results and educational materials must be provided to the schools and to ODW.

AFTER LSLR

- The PWS must provide a six-month supply of pitcher filters/cartridges to affected customers within 24 hours post-replacement.
- The PWS must collect water samples for Lead analysis within three to six months of replacement.



View the Delaware Office of Drinking Water LCRR Guidance Document by scanning the QR Code in the Appendix.

KNOWLEDGE CHECK

QUESTION 1: TRUE OR FALSE

The ODW expects only Non-Transient Non-Community Water Systems to develop an inventory that identifies the materials of service lines connected to their water distribution system.

- a.) True
- b.) False

QUESTION 2: FILL IN THE BLANKS

1. The inventory must include information on the _____ and _____ parts of the service lines.
2. The inventory must be completed and submitted to the Office of Drinking Water (ODW) by _____.

QUESTION 3: FILL IN THE BLANKS

"Lead service line" means any _____ or portion thereof of, whether the _____ portion, _____ portion, or both, that is made of or contains lead that connects a water main to a building inlet up to the first shut-off valve not to exceed _____ inside the premises or to the water meter, whichever is furthest inside the premises.

QUESTION 4: FILL IN THE BLANKS

If the galvanized line is or ever was _____ of any portion of a lead service line, _____, pigtail or connector, or service line of unknown material.

QUESTION 5: TRUE OR FALSE

The ODW requires that the initial inventory has no more than 25% of its service lines as "Lead Status Unknown.

- a.) True
- b.) False



ACTIVITY SECTION 2: SERVICE LINE CATEGORIZATION

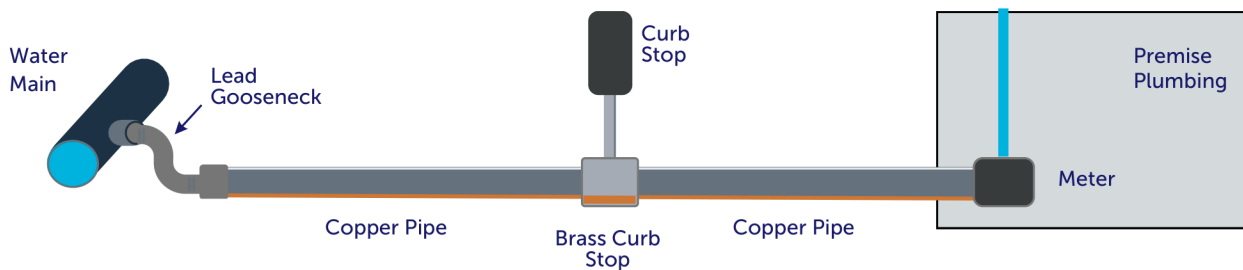
Identify which of the four categories the complete service line would be considered.

CATEGORIES

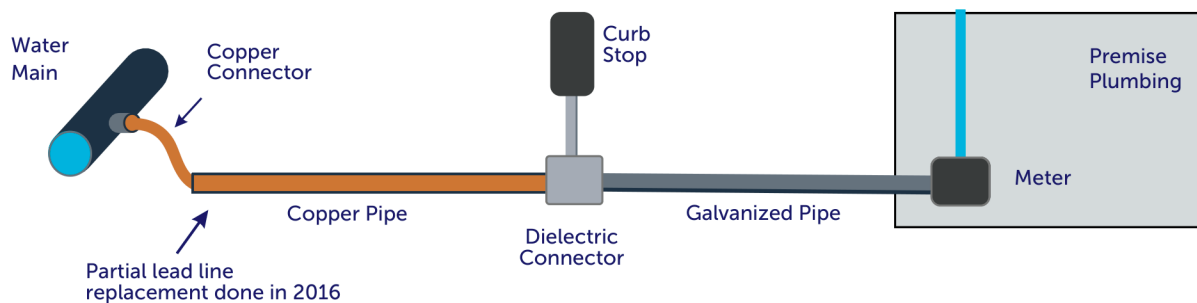
Lead
Galvanized Requiring Replacement

Non-lead
Lead Status Unknown

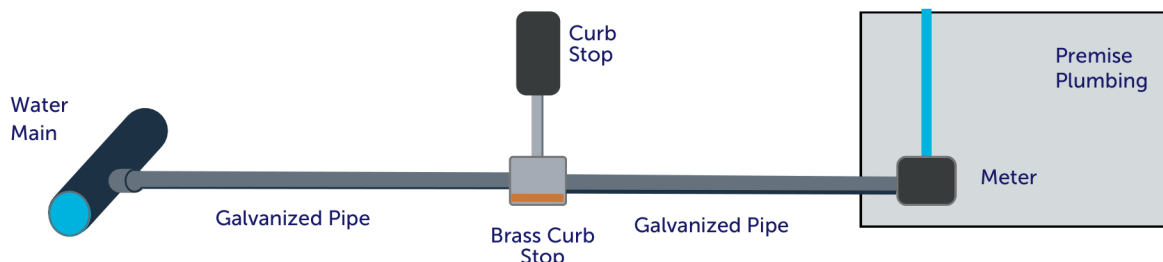
1.



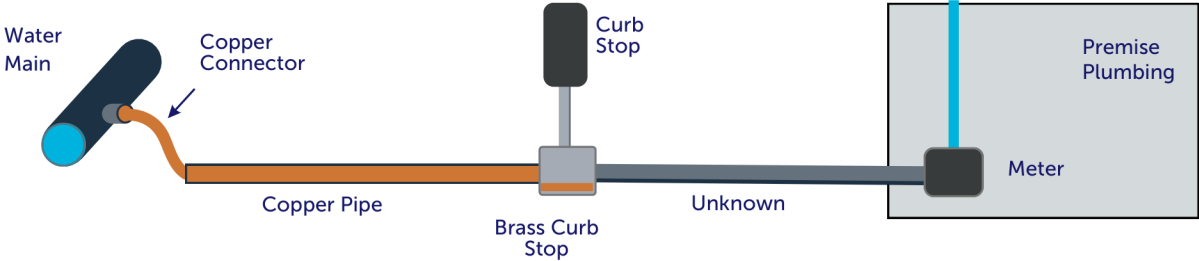
2.



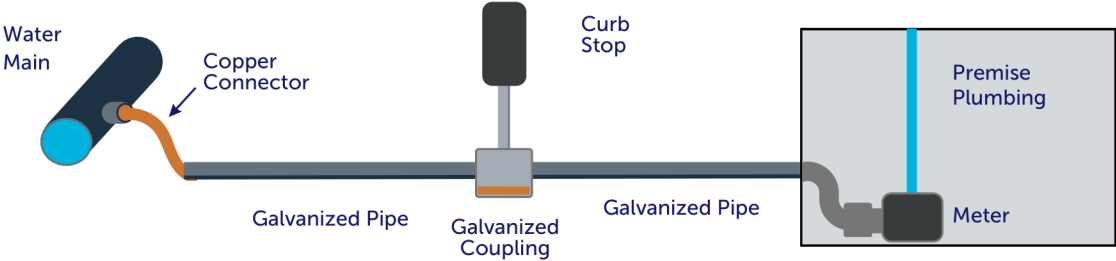
3.



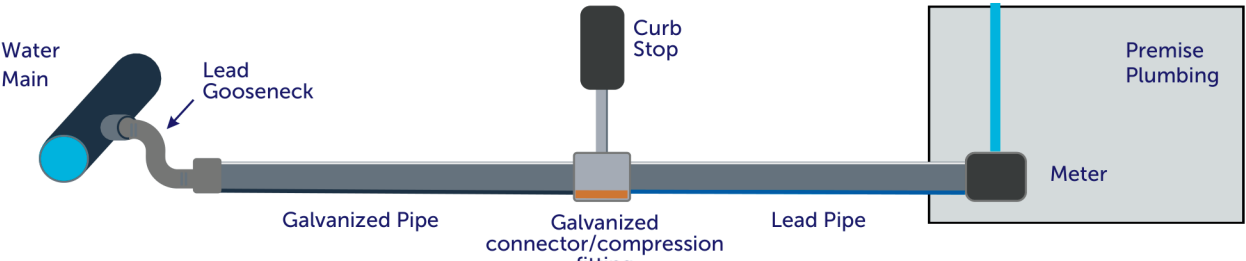
4.



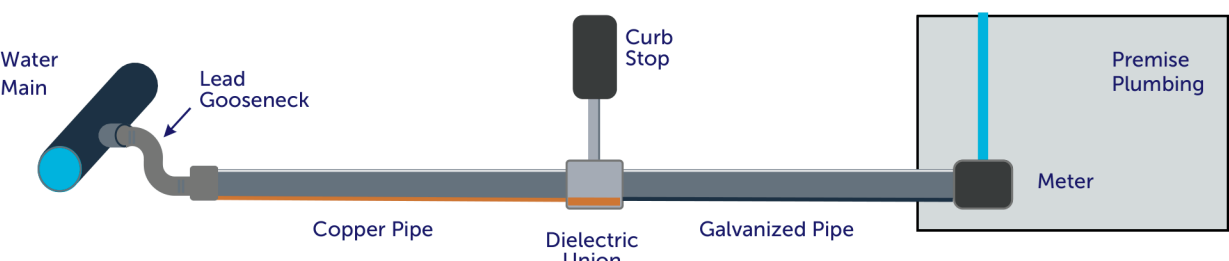
5.



6.



7.



03

INVENTORY BASICS

Understand the
Inventory Basics
for LCRR
Compliance



UNDERSTANDING THE REQUIREMENTS

PURPOSE OF THE INVENTORY

The purpose of the inventory is to track a water system's progress to complete lead service line replacement.



A preliminary inventory helps you:

- Locate lead and galvanized service lines that require future replacement throughout the distribution system.
- Identify the most vulnerable areas to target for replacement and sampling activities.
 - Including school and childcare facilities for future sampling
- Create a Lead Service Line Replacement Plan (if lead is present in your system)
- Provide the basis for communicating to the public, customers, residents, and anyone consuming water from your system.
- Track/verify sample monitoring (forces transparency and accountability)
- Access funding for replacement



INITIAL INVENTORY

The initial service line inventory is due by **October 16, 2024**.

- You can submit approved/compliant evidence of no lead service lines to receive waivers with an "initial inventory" and methods used.
- You'll be required to resubmit every 1-3 years based on your water systems monitoring period; however, it won't be more than one time per year.

LSL REPLACEMENT PLAN

The LCRR requires an LSL Replacement Plan to be submitted with the inventory. Replacement activities are tied to concentration levels below:

15 PPB (PB)

The Action Level in the revised LCR will remain the same, with concentrations above 15 ppb requiring actions to control corrosion.

10 PPB (PB)

The revised LCR introduces this new trigger level, requiring more proactive planning in communities with LSLs.

90TH PERCENTILE

If the 90th percentile monitoring results are between 10-15 ppb (Pb), the system will be required to pursue a replacement goal.

3 PERCENT

Any system with an action level exceedance needs to replace 3% of identified LSLs for at least two years (down from 7%).



DESCRIBING A SERVICE LINE

Under the LCRR, the inventory must use one of the following four material classifications to describe the entire service line, including separate material classifications for the system-owned and customer-owned portions of each service line where ownership is split:

- Lead service line
- Galvanized service line requiring replacement (GRR)
- Non-lead service line (such as copper or plastic)
- Lead status unknown service line

UNDERSTANDING THE REQUIREMENTS, continued

THINGS TO KEEP IN MIND

LEAD

- The LCRR updates the definition of a LSL as “a portion of pipe that is made of lead, which connects the water main to the building inlet”
- If the only lead pipe serving the building is a lead gooseneck, pigtail, or connector, the service line is not considered an LSL under the initial inventory requirements of the LCRR. EPA recommends that the system track the material of all components that potentially contain lead, including connectors.
 - A lead gooseneck, pigtail, or connector is defined as “a short section of piping, typically not exceeding two feet, which can be bent and used for connections between rigid service piping”

NON-LEAD

- If a system can demonstrate that a galvanized service line was never downstream of an LSL, it may be classified as non-lead.
- The water system may classify the actual material of the service line (for example, galvanized, plastic, or copper) as an alternative to classifying it as non-lead.
- “Non-lead” refers to the service line material only and does not include other potential lead sources present in solder, connectors, and other plumbing materials.

GALVANIZED REQUIRING REPLACEMENT

- Galvanized service lines that are or ever were downstream from an LSL can adsorb lead and contribute to lead in drinking water.
- An example of a GRR service line is when the customer-owned portion from the meter to the building is galvanized, and the system-owned portion from the water main to the meter was previously lead but has been replaced. The customer-owned portion of the service line would be GRR.
- Under the initial inventory requirements of the LCRR, a galvanized service line that was never downstream of an LSL but is downstream or previously downstream of a lead gooseneck, pigtail, or connector is not considered GRR. However, systems should check with their states if they have more stringent requirements.

LEAD STATUS UNKNOWN

- Water systems can use the terminology “unknown” instead of lead status unknown service line.
- Water systems may elect to provide more information regarding their unknown lines as long as the inventory clearly distinguishes unknown service lines from those where the material has been determined through records or inspections.



UNDERSTANDING THE REQUIREMENTS, continued

WHAT IS MEANT BY DOWNSTREAM?

Downstream refers to a galvanized pipe positioned after a lead connector or pipe in the same service line.

The water system must demonstrate that the galvanized service line was never downstream of a lead service line. Otherwise, it must be considered galvanized requiring replacement.



WHY ARE WE CONCERNED WITH GALVANIZED SERVICE LINES?

Galvanized pipes are iron pipes dipped in a protective zinc coating to prevent corrosion and rust and can be a source of lead exposure. Galvanized piping was commonly installed in homes built before 1970 and was an alternative to lead for service lines.

Captures Lead Upstream

Galvanized lines can capture lead released from upstream lead pipes. This stored lead can be released into the home.

The release can vary in concentration and can happen over a long period of time. In-home galvanized plumbing can also be a potential source of lead exposure if the house has or has ever had a lead service line.

Zinc Coating Contains Lead

The zinc coating on galvanized pipes contains lead that can corrode and leach into the drinking water. Galvanized pipes manufactured before 2014 contain a higher percentage of lead (0.5 % - 1.4%), whereas newer galvanized pipes must contain 0.25% lead or less.

Inside Lined With Lead

Lead-lined galvanized pipes are galvanized lines in which the inside of the pipe is lined with lead. These types of lines were used in the eastern part of the United States. These pipes are usually larger in diameter than typical LSLs and sometimes have a rusty appearance.

UNDERSTANDING THE REQUIREMENTS, continued

WHO'S AFFECTED?

All community water systems (CWSs) and non-transient non-community water systems (NTNCWSs) must prepare an inventory of all service lines connected to the public water distribution system, regardless of ownership status.

NON-TRANSIENT NON-COMMUNITY WATER SYSTEMS

A non-transient non-community water system is a public water system that is not a community water system and regularly serves at least 25 of the same persons over 6 months per year (40 CFR §141.2).

NOTE: For non-transient non-community systems, the service line is considered the line from the well or source to the building inlet (meter or pressure tank).

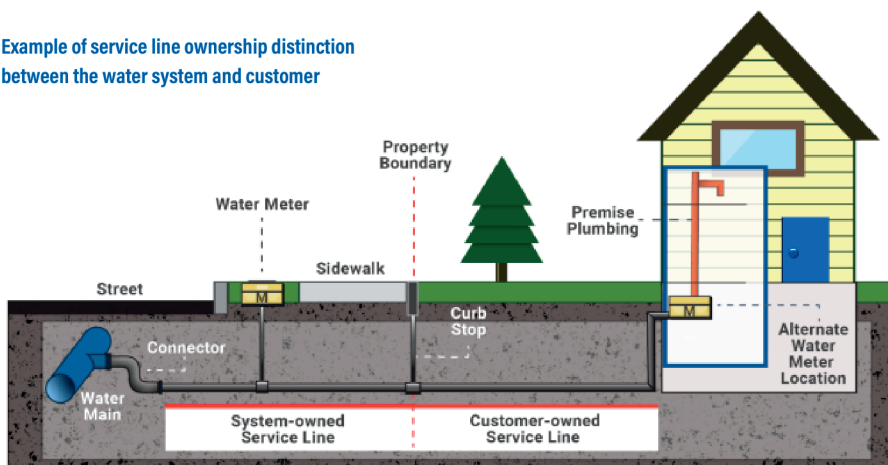
UNDERSTAND THE OWNERSHIP MAKEUP

The diagram below is an example of a possible division in service line ownership (or responsibility) between the customer and the water utility. The system-owned portion of the service line is from the water main to the curb stop and the customer-owned portion is from the curb stop to the water meter.

For some systems, the delineation may be different, (e.g., the ownership or responsibility distinction is at the water meter or property line). In other instances, the water system may share ownership with customers, or the water system or customer may have sole ownership of the service line.

Service lines vary depending on your county and state code. It's up to you to understand the ownership makeup in your distribution system.

Example of service line ownership distinction between the water system and customer





UNDERSTANDING THE REQUIREMENTS, continued

DEFINE OWNERSHIP: PUBLIC/PRIVATE OWNERSHIP

Any service line connected to the public water system, even where the water system owns no portion of the service line, must be included in the inventory. In those instances where ownership is split, the inventory must include both the system-owned and customer-owned portions of the service line. Water systems must internally track address locations of each service line and their respective material classification.

While the LCRR requires the inventory to categorize each service line or portions of the service line where ownership is split, a single classification per service line is also needed to support various LCRR requirements, such as lead service line replacement (LSLR), tap sampling, and risk mitigation. Systems should follow these guidelines to the right to comply with the LCRR requirements when classifying the entire service line when ownership is split.

CLASSIFYING THE ENTIRE SERVICE LINE WHEN OWNERSHIP IS SPLIT, ACCORDING TO THE EPA'S DEFINITION:

SERVICE LINE = LEAD	If either portion is a lead service line (LSL).
SERVICE LINE = GRR	If the downstream portion is galvanized and the upstream portion is unknown or currently non-lead, but the system is unable to demonstrate that it was never previously lead.
SERVICE LINE = LEAD STATUS UNKNOWN	If both portions are unknown, or one portion is non-lead, and one portion is unknown.
SERVICE LINE = NON-LEAD	Only if both portions meet the definition of non-lead.

The EPA recognizes that some segments of the system- or customer-owned service lines could be made of more than one material. EPA recommends that systems follow the guidelines above to classify the system-owned or customer-owned portion in these cases.

Below are EPA's examples for classifying the entire service line for various system-owned and customer-owned material combinations.

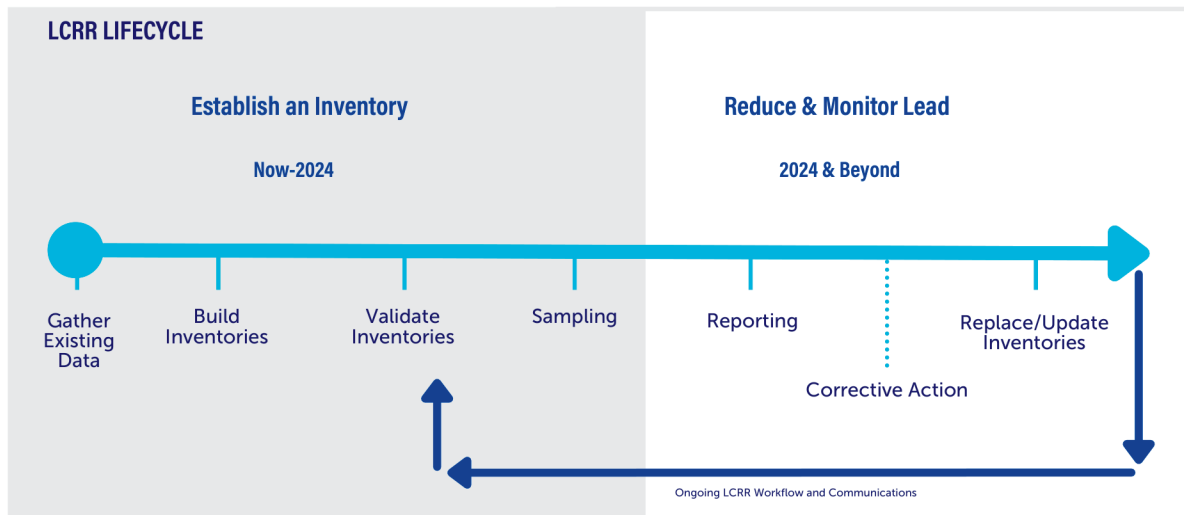
ODW IS DESIGNING A PROCESS THAT AUTOMATICALLY CALCULATES ENTIRE SL CLASSIFICATION AS YOU INPUT YOUR INVENTORY DATA

System-Owned Portion	Customer-Owned Portion	Classification for Entire Service Line
Lead	Lead	Lead
Lead	Galvanized Requiring Replacement	Lead
Lead	Non-lead	Lead
Lead	Lead Status Unknown	Lead
Non-lead	Lead	Lead
Non-lead and never previously lead	Non-lead, specifically galvanized pipe material	Non-lead
Non-lead	Non-lead, material other than galvanized	Non-lead
Non-lead	Lead Status Unknown	Lead Status Unknown
Non-lead, but system is unable to demonstrate it was not previously Lead	Galvanized Requiring Replacement	Galvanized Requiring Replacement
Lead Status Unknown	Lead	Lead
Lead Status Unknown	Galvanized Requiring Replacement	Galvanized Requiring Replacement
Lead Status Unknown	Non-lead	Lead Status Unknown
Lead Status Unknown	Lead Status Unknown	Lead Status Unknown

UNDERSTANDING THE REQUIREMENTS, continued

OTHER COMMON TERMS

MATERIAL	DEFINITION
Curb Stop	An exterior valve located at or near the property line that is used to turn on and off water service to the building
Community water system	A public water system that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents (40 CFR §141.2)
Full lead service line replacement	Replacement of a lead service line (as well as galvanized service lines requiring replacement) that results in the entire length of the service line, regardless of service line ownership, meeting the Safe Drinking Water Act (SDWA) Section 1417 definition of lead free ³ applicable at the time of the replacement. See 40 CFR §141.2 for the full regulatory definition
Galvanized service line	Iron or steel piping that has been dipped in zinc to prevent corrosion and rusting (40 CFR §141.2).
Gooseneck, pigtail, or connector	A short section of piping, typically not exceeding two feet, which can be bent and used for connections between rigid service piping. For purposes of this subpart, lead goosenecks, pigtails, and connectors are not considered to be part of the lead service line but may be required to be replaced pursuant to §141.84(c)4 (40 CFR §141.2).
Service line	The pipe connecting the water main to the interior plumbing in a building. ² The service line may be owned wholly by the water system or customer, or in some cases, ownership may be split between the water system and the customer.
Water main	A pipe that conveys water to a connector or customer's service line. In residential areas, it is usually located underground. ²
Water meter	An instrument, mechanical or electronic, used for recording the quantity of water passing through a particular pipeline or outlet. ²



STARTING YOUR INVENTORY

The LCRR lifecycle starts with gathering existing data but before you jump into researching inventory, your water system should develop a plan first. Developing a plan will ensure you accomplish the requirements in a timely manner and reduce duplication and inefficient workflows.

SUCCESSFUL LEAD SERVICE LINE PLANS INCLUDE:

- **Defined internal team** leaders and their roles and responsibilities
- **Data management strategies** to collect, centralize, and store inventory data
- Opportunities for the **field team to collect data** and update throughout the project
- An **realistic timeline** for your team to complete inventory
- **Communication strategies** and engaging the public from the beginning
- **Replacement rate** for any LSLs discovered
- **Lead sampling protocols** for the changes occurring in 2024



ACTIVITY: LSL PLAN WORKSHEET

Work together or independently to develop your LSL plan on the worksheet provided.

FOUNDATIONS OF A SUCCESSFUL PRELIMINARY INVENTORY

We will dive deeper into inventory strategies in the next lesson, but here are a few ways to start developing a successful preliminary inventory.

REVIEW OLD RECORDS WHILE DOCUMENTING YOUR CURRENT WORK.

To start inventory data collection document service lines you see during routine work or capital improvement projects and start asking your current staff and recent retirees where records may be stored. Here is a list of old records you can start with:

- Your water system's records (SL/meter/main install records)
- Your existing Standard Operating Procedures, OPs manuals
- Your community's local plumbing codes: When did your community ban lead private plumbing?
- Old homes/neighborhoods/schools
 - Assessor/County Zoning & GIS Office can help with this
 - Search your County Name + "GIS" to get their contact info

STANDARDIZED DATA-ENTRY METHODS

Developing a standardized data-entry method as staff collects information in the field is vital. The method should be a simple, friction-free way to add data to the inventory. Remember to include customer survey results and other customer-submitted data in one central location with the rest of your inventory.

PARTNER AND EDUCATE

Don't wait until you need something from your customers and partners to begin the communication process! Building trust early will increase response rates and help you achieve success. Start sharing educational materials with your community regarding the LCRR and what is coming over the next few years so they aren't surprised or concerned by any future requests you may have. Offer reassurance regularly and create a convenient way to submit the information that can inform your inventory.

There are required communication timeframes and language we will cover in section 5.



TIP: ADD TO YOUR ASSET MANAGEMENT PLAN

Once the inventory is complete and all lead service lines have been removed, the data can be added to your asset management plan.



THE KEY TO YOUR LCRR COMPLIANCE SUCCESS

Your inventory will impact your access to funding, LCRR execution, consumer outreach and identification of schools, and childcare facilities for future sampling.

Here are some tips we've compiled from working with dozens of utilities all over the country to begin their inventories:

- Stay organized from the beginning
- Start now - break it into small amounts each week and start with what you already know
- Be specific and codify definitions of LSL
- Communicate from the beginning (with your team and with other departments/agencies)
- Identify data sources and uncertainties
- Determine what data is needed, how it's defined, who inputs it, and who manages it
- Scan in paper records and add them to a database when compiling data
- Take advantage of all opportunities to support inventory development - hire it out!



TIP: FUTURE-PROOF YOURSELF

While you are collecting data for the preliminary inventory, you can future-proof yourself by identifying other service line materials relevant to lead levels, including brass, lead alloy, tube alloy, all galvanized, pigtails or gooseneck, copper and lead solder, and detail actual materials for non-lead lines like PVC.



PITFALLS TO CONSIDER

TIME

Not taking this seriously now will be damaging in the future. Building and managing an inventory is a lot of work for every size system. Avoid thinking that the EPA may reverse the decision to eliminate lead service lines or no longer require data management. Public health-focused legislation typically receives bipartisan support. Getting your "house in order" will smooth the path forward - data centralization, digitization and using technology will only aid our progress and help future generations of water system employees.

SUPPORT/PARTNERSHIPS

Doing it alone. Data management is an undertaking, especially starting at square one. It's essential to enlist as many people on staff and partners (from the community and within the industry) to help gather information. Remember: there are third-party companies whose sole job is to compile data quickly. If budgets are limited, pooling funds with other water systems to afford more help may be an option.

UNKNOWN CLASSIFICATIONS:

Labeling everything as "unknowns." The EPA has no limits on the number of unknowns you are "allowed" to submit, however you will have to account for them eventually. All unknowns are considered lead in the eyes of the EPA and will therefore require sampling along with known LSLs after 2024.



COMMUNICATIONS

Not communicating to the public and stakeholders from the beginning will be to your detriment. Building trust with your customers only happens when you prioritize transparency and are willing to have "good" and "bad" conversations. Don't fall into the trap of delaying or withholding information - residents want to know what's happening with their drinking water.

PROCESS MANAGEMENT

Developing inventory by the October 2024 deadline is the first step, not the finish line. Future-proofing will help you in the long run. Collect data and put processes in place that ensure you're ready for any upcoming change in regulation, whether federal or state.



KNOWLEDGE CHECK

QUESTION 1: CHECK ALL THAT APPLY

A preliminary inventory helps you:

- Locate lead service lines and galvanized service lines that require future replacement throughout the distribution system.
- Identify the most vulnerable areas to target for replacement and sampling activities.
- Create a Lead Service Line Replacement Plan (if lead is present in your system)
- Provide the basis for communicating to the public, customers, residents, and anyone consuming water from your system.
- Access funding for replacement

QUESTION 2: MULTIPLE CHOICE

The LCRR currently states all of the following statements are correct except one.

- a.) The initial service line inventory is due by October 16, 2024.
- b.) You are required to replace all known lead lines by October 16, 2024.
- c.) You can submit approved/compliant evidence of no lead service lines to receive waivers with an "initial inventory" and methods used.
- d.) You'll be required to resubmit every 1-3 years based on your water systems monitoring period; however, it won't be more than one time per year.

QUESTION 3: SHORT ANSWER

List the four material classifications inventory must use to describe the entire service line, including separate material classifications for the system-owned and customer-owned portions of each service line where ownership is split:

QUESTION 4: SHORT ANSWER

The LCRR lifecycle starts with gathering existing data, but before you jump into researching inventory, your water system should develop a plan first. Developing a plan will ensure you accomplish the requirements in a timely manner and reduce duplication and inefficient workflows.

List the seven components a successful lead service line plan should include.

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.



ACTIVITY SECTION 3: LSL PLAN WORKSHEET

LSL PLAN QUESTIONS	YOUR CWS PLAN
<p>INTERNAL TEAM: Define team leaders, roles and responsibilities, etc., to ensure there are clear owners for every step of the process</p>	
<p>DATA MANAGEMENT STRATEGY: How will you manage data over the coming years? Is it manual with spreadsheets or using a software platform? Ensure you have a system to collect, centralize, and store all data.</p>	
<p>OPPORTUNITIES TO INVENTORY: Provide plenty of opportunities for your field team to interact with service lines and update the inventory throughout the project.</p>	
<p>INVENTORY TIMELINES: Set up your ideal timeline for completing the LSL inventory to achieve compliance.</p>	
<p>COMMUNICATION: How will you engage with the public throughout this process? Have a proactive communication strategy set up and finalized from the start.</p>	
<p>REPLACEMENT RATES: Decide at what rates you will replace any LSLs discovered each year – ensuring you stay within the parameters of the revised LCR.</p>	
<p>SAMPLING AND REMEDIATION: Decide how your system will handle the lead sampling changes occurring in 2024 for residential, schools, and childcare facilities.</p>	

A photograph of a kitchen faucet with water flowing into a sink. The faucet is black and the water is clear. In the background, there are some colorful fruits like tomatoes and lemons on a counter. The image is partially obscured by a large white circular graphic on the left side of the page.

04

ADVANCED INVENTORY STRATEGIES

**Explore Strategies
for a Complete
Inventory Plan**



TOOLS AND STRATEGIES FOR A WINNING INVENTORY PLAN

Now that you understand the basics of the inventory and why it's important, let's dive deep into how we build a compliant inventory.



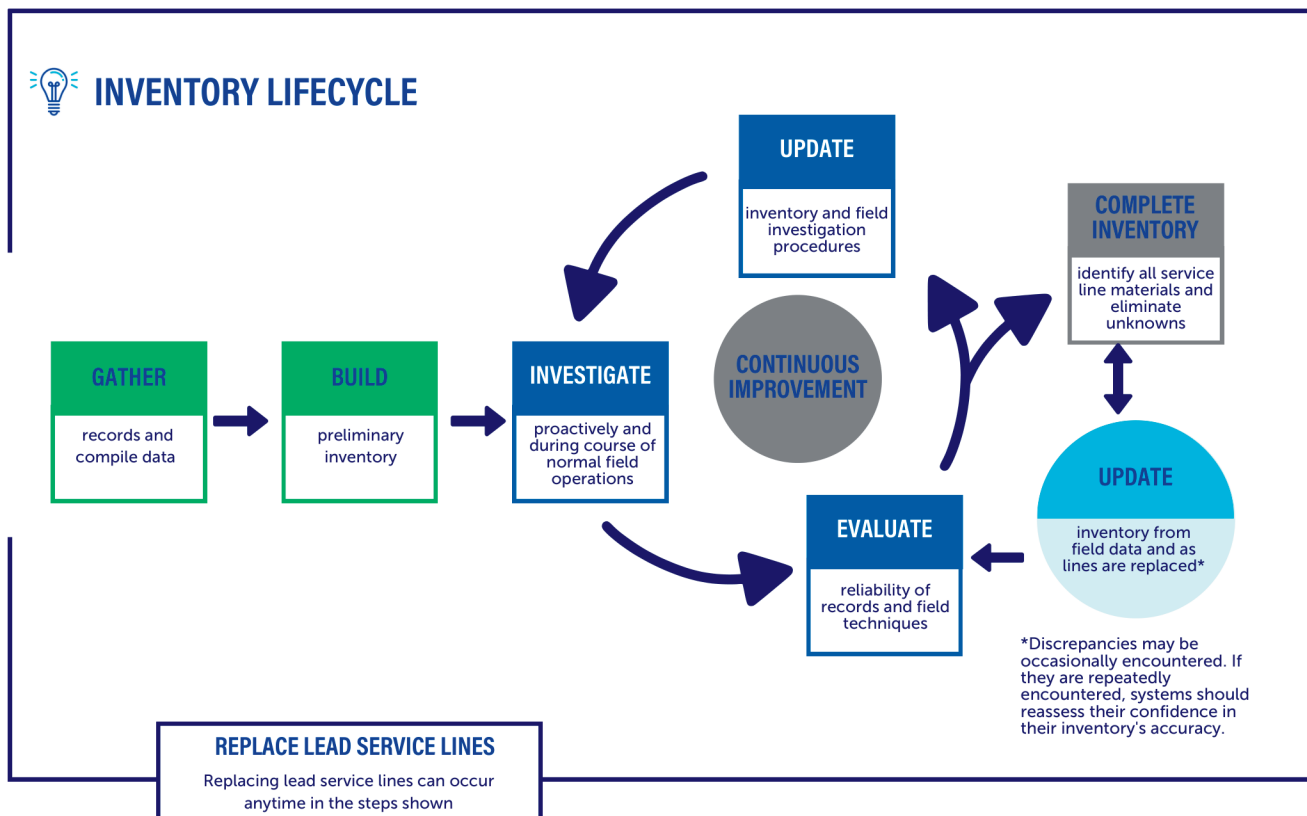
Below is a schematic of the inventory lifecycle in which the system is continuously improving the inventory with new and better data. It's important to remember that you may perform these steps simultaneously, depending on the situation and data available.

You will be gathering information, building the initial inventory, investigating service

lines proactively and during normal field operations, evaluating the reliability of records and field investigations, updating the inventory, and ultimately completing the inventory for 100% known service lines.

As shown in the graphic, lead service line replacement can occur at any time during the lifecycle.

Note: As you update your inventory, you may occasionally encounter discrepancies. If they occur repeatedly, your LCRR team may need to reassess its confidence in the inventory's accuracy.



GATHER DATA

Start with what you have.

To help identify the service line material(s) and build your inventory, gather existing data you can access. Below is an overview of strategies:

ALL WATER SYSTEM RECORDS, INCLUDING DISTRIBUTION SYSTEM MAPS AND DRAWINGS

A system's distribution map could include the pipes' size, location, and construction material.

METER INSTALLATION RECORDS

The meter size and type can indicate service line size and building usage. Most lead service lines are 2 inches or less in diameter.

HISTORICAL RECORDS ON EACH SERVICE CONNECTION

Tap cards, ledgers, or drill cards may give detailed information on location and size.

HISTORICAL CAPITAL IMPROVEMENT OR MASTER PLANS

CIP or Master Plan can help identify historical installation patterns to determine when lead service lines were used.

STANDARD OPERATING PROCEDURES

SOPs may indicate the allowable materials for service lines and repairs.

RECORDS REQUIRED BY THE STATE

Existing water quality information (areas with higher lead and copper results)

ANY INSPECTIONS OR RECORDS

- Customer complaints
- Investigation of leaks
- Meter and Cross-connection Inspections
- Anytime your water system has the opportunity to view the service line (main breaks, valve installation, meter installation)

ALL CONSTRUCTION AND PLUMBING CODES, PERMITS, AND EXISTING RECORDS OR OTHER DOCUMENTATION

Plumbing permits indicate when existing structures were built/renovated and service lines were installed/replaced. These permits should include the location and date of installation and an inspection record accompanying the permit.

Construction and plumbing codes may indicate when lead service lines were used and when they were prohibited. Some municipalities may have adopted their codes and ordinances.

Municipal tax records typically contain the date of home construction, which could indicate the likelihood of a lead service line when cross-referenced with construction practices at the time.

The requirement for materials evaluation is not new. It already exists in our current lead and copper rule to determine lead and copper sample site selection.





 **EXAMPLES WHERE TO FIND DATA**

- Billing records
- Sampling/LIMS data
- GIS records
- Work order records
- Capital projects data
- Tier site information
- Schools and daycare facilities
- Contractor knowledge (plumbers, inspectors)

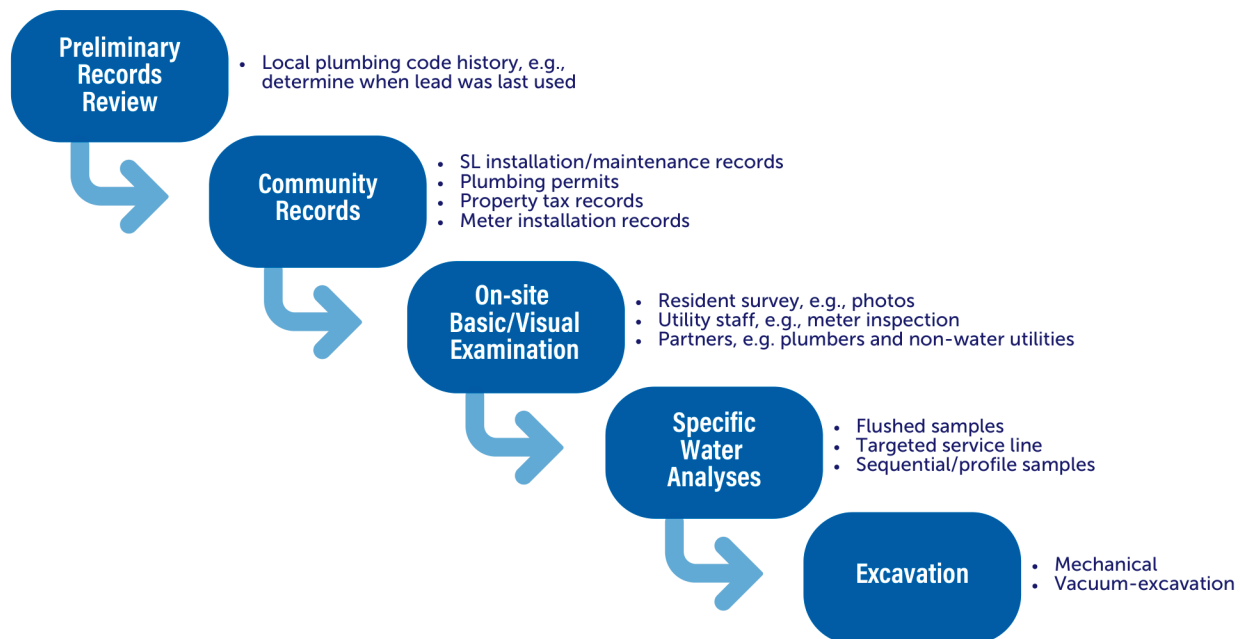


- Compliance reports
- Tap cards
- Paper records
- As-builts
- Tax parcel data
- Engineering schematics
- Inspection records
- Meter install dates

USING THE STEPWISE APPROACH

At the heart of the stepwise approach, you start with the most accessible and cost effective method to identifying service lines.

Suggested Stepwise SL Identification Approach



From Hensley, Bosscher, Triantafyllidou, Lytle, 2021, AWWA Water Science
 "Lead Service Line Identification: A Review of Strategies and Approaches"
<http://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/aws2.1226>

BUILDING INVENTORY

Categorize each line and segment.

After you've gathered all the data and reviewed your records to screen out non-lead service lines, you can begin building the initial inventory of service lines. Creating an initial inventory that is as thorough as possible will minimize the number of unknowns. You can check your inventory for completeness by comparing the total number of service lines to the number of service connections in their system.

- Remember: you are **required to submit the inventory** by October 16, 2024.
- The **initial inventory must include the system- and customer-owned portions** of all service lines in the system's distribution system.
- Each service line or portion **must be classified as lead, GRR, non-lead, or lead status unknown**, defined by ODW in the previous chapters.

WHERE TO START

The LCRR does not require a specific format for the inventory; however, ODW and DRWA will provide an electronic submission platform and a model template for PWS.

In the meantime, you can start with worksheets provided by the EPA or use your spreadsheets, maps, lists, or handwritten notes. Remember that your inventory will change as new information is added, records evaluations and investigations are conducted, and LSLs are replaced.

The format should be flexible enough to accommodate updates and be easily transmittable to the state's templates.



LIST, SPREADSHEET OR DATABASE

Systems can start by creating a simple list of all addresses with a service line material designation for each.

However, using spreadsheets and databases can be searched, filtered, sorted, and updated. You can upload photos and maintain your data in a central location.

TIPS FOR PREPARING A SPREADSHEET INVENTORY

- List each home/service line on a row.
- Track ownership portions separately.
- Label consistently and define headers.
- Ensure previous information is not lost when new information is found.

EPA Inventory Template

Check out the link below or scan the QR Code in the Appendix for a downloadable spreadsheet version of the template.

<https://www.epa.gov/ground-water-and-drinking-water/revise-lead-and-copper-rule>



BUILDING INVENTORY, continued

Going above and beyond LCRR requirements



Although not required, water systems should consider going beyond the requirements of the LCRR by subclassifying service line materials and tracking additional information. These best practices can provide additional information to help facilitate material classification and inform the public about service lines in their homes and communities.

RECOMMENDED SUBCLASSIFICATIONS

Lead Status Unknown's "LSL Likelihood"

Some water systems have incorporated additional information that indicates the probable material of an unknown service line, such as an "LSL Likelihood."

For example, Flint, Michigan, categorized unknowns as having a low likelihood of lead, a medium likelihood of lead, and a high likelihood of lead. Systems using predictive models may also assign numerical probabilities to unknowns representing the probability that they are LSLs.

Ex: if an individual service line material is unknown but was installed when lead was not commonly used in the system based on interviews with experienced system staff and plumbers, the system could consider subclassifying the service line as "Unknown-Unlikely Lead." Suppose the system has confirmed service line materials in a representative number of locations in a neighborhood to be lead. In that case, it could consider subclassifying the remaining unknown service lines in the neighborhood as "Unknown-Likely Lead" until its material can be investigated.

GRR Known or Unknown to Have Been Downstream of an LSL

The EPA recommends systems that identify GRR service lines consider tracking and differentiating these lines into subclassifications to indicate if:

- The pipe is known to be currently downstream of an LSL
- The pipe was previously downstream of an LSL
- The system is unable to demonstrate the pipe was never downstream of an LSL

This information could be used for many purposes, such as informing an LSLR prioritization approach or serving as an input for a predictive model. The system could also consider sub-classifying galvanized service lines that are or were downstream of a lead gooseneck, pigtail, or connector.

BUILDING INVENTORY, continued

Lead-Lined Galvanized Pipes

The EPA is aware of lead-lined galvanized service lines but found limited information indicating their prevalence nationally. A lead-lined galvanized service line is consistent with the definition of an LSL under the LCRR (“a portion of pipe that is made of lead, which connects the water main to the building inlet”). It must therefore be classified in the inventory as an LSL. These lines would be subject to the same LCRR requirements as other LSLs in the inventory, such as LSLR, public education, tap sample tiering, and risk mitigation.

Inventorying these lines will be more straightforward where water systems have known or likely use records. These pipes may appear to be non-lead on the exterior, but attempts to identify their material by visual observation or excavation may not reveal an interior lead lining. The EPA recommends that water systems consider any available information that indicates where (if ever) lead-lined galvanized pipes were used in the system, along with approaches such as service line sampling, to populate the inventory accurately.

Actual Material for Non-Lead

LCRR states that water systems may classify the actual material of the service line (e.g., galvanized, plastic, or copper) as an alternative to classifying it as non-lead. Suppose states and systems wish to classify these lines as non-lead. In that case, the EPA encourages systems to track the materials internally and/or as part of the publicly accessible inventory. Including these classifications could improve asset management and better inform a statistical model.

Goosenecks, Pigtails, and Connectors

The EPA encourages water systems to identify the location and material of goosenecks and pigtails (connectors) and include this information in their inventories. This would track and manage this potential source of lead, improve asset management, and increase customer transparency. This practice could also help systems identify where lead connectors are or were previously upstream of galvanized pipe and manage this additional potential source of lead in their system.

NOTE: LCRR requires that when lead connectors are encountered, they be removed or disconnected.

Lead Solder


The EPA recommends systems track the presence of lead solder in the service line or premise plumbing, such as after encountering information indicating their presence in records or if seen during inspections or maintenance. Tracking the presence of lead solder also improves asset management and can inform future actions for reducing lead sources in drinking water. In addition, knowing locations with lead solder in premise plumbing can help identify tap monitoring locations under LCRR.

Fittings and Equipment Connected to the Service Line

Devices such as curb stops and meters may be made of older brass that pre-date the effective date for the Reduction of Lead in Drinking Water Act (January 4, 2014). These devices may not meet the revised lead-free standard and could contribute to lead exposure (Sandvig et al., 2008). The EPA recommends that systems consider tracking these if the information is available.



INVESTIGATE

 On-site investigations are not required under the LCRR for the initial inventory. However, they can help verify existing records and reduce the number of unknowns.

The goal is to reduce the number of unknowns in the inventory as you gather new information. To achieve this goal, you can proactively track service line material(s) encountered during normal field operations and where the ownership is divided, include any pertinent information describing how the ownership or responsibility is split.

IDENTIFY AND TRACK SERVICE LINE MATERIALS

Water systems will need to identify and track service line materials in the inventory as they are encountered during routine operations such as during:

- Meter repair/replacement
- Service line repair/replacement
- Water main repair/replacement
- Backflow prevention projects
- Other street repair or capital projects with open excavations

As systems encounter unknown materials, service line designations could be impacted.

Anytime the system can physically view a service line, it should document and cross-reference what is listed for that line in the inventory.



INCLUDE A LOCATION IDENTIFIER FOR EACH SERVICE LINE.

The inventory must include a location identifier (unique ID) for each service line. This location identifier can and should be the same identifier used in the publicly available inventory version.

The water system should maintain the specific street address corresponding to the Unique ID in its records. But is not required to make an inventory with the exact street addresses publicly available. The water system can determine the best location identifier that meets the needs of its own community.

Using the same identifier for the written inventory submitted to the ODW and what is made available to the public ensures that private information for each homeowner is protected.


LOCATION IDENTIFIERS EXAMPLES

- Intersection
- Block
- Landmark
- GPS coordinates
- Emergency 911 address systems in rural areas
- Water meter location

EVALUATE

Evaluate the reliability of records and field techniques

Your LCRR team should evaluate which LSL identification method is best for your water system. Below is a table that compares each service line identification method by cost, disturbance, impact on the homeowner, utility skills required, time, and accuracy. You should gain confidence over time in the accuracy of the inventory as records or material identification methods are assessed.

 RELATIVE PROS/CONS OF LSL IDENTIFICATION METHODS L- LOW; M-MEDIUM; H-HIGH												
	UTILITY COST			DISTURBANCE		IMPACT TO HOMEOWNER			UTILITY SKILLS REQUIRED		OVERALL	
	Financial	Onsite Time	Pre-/Post-Time	Service Line	Traffic Flow	Water Service Disruption	Property Damage	Homeowner Involvement (Pre-/Post-Time)	Technical Interpretation	Labor	Time	Accuracy
LSL ID Method												
Community Records Review	L or M (if digitized)	NA	L or M (if digitized)	None	None	None	None	None	L to M	None	M	L to H
Basic/Visual Observations (on private-side)	L	L	L or M	None	None	None	None	L	L	L	L	M to H
Water Quality Sampling - Flushed	L	L	M to H	None	None	None	None	L	M	LM to H	M	L to M
Water Quality Sampling - Sequential	M	L	M to H	None	None	M	None	M to H	M	L to MH	M	L to H
Water Quality Sampling - Targeted	L	L	M to H	None	None	M	None	M to H	M	L to M	M	M
Excavation - Mechanical	H	H	M to H	H	M to H	H	H	L	L to M	H	H	H
Excavation - Vacuum	M to H	L to M	M to H	M	L to M	M to H	M to H	L	M	M to H	M	M to H



From Hensley, Bosscher, Triantafyllidou, Lytle, 2021, AWWA Water Science

"Lead Service Line Identification: A Review of Strategies and Approaches"
<http://awwa.onlinelibrary.wiley.com/doi/abs/10.1002/aws2.1226>



COMPLETE/UPDATE INVENTORY

No matter the specific approach and steps used, water systems should treat the inventory as a **living dataset** continuously improving over time as the inventory is updated.

You can anticipate that your inventory will be updated over time, decreasing the number of unknowns and confirming service line material classifications.

SUBMIT YOUR INITIAL INVENTORY

- The LCRR does not require a specific format for the inventory; however, Delaware water systems will have an electronic submission platform and a model template for PWS.
- The EPA developed a multi-worksheet template to assist you in developing your inventory in the meantime.

KEEP IN MIND

- When developing the initial inventory, water systems should review state regulations and follow required steps more stringent than the Lead and Copper Rule Revisions (LCRR).
- EPA may revise the inventory requirements under the Lead and Copper Rule Improvements (LCRI).

UPDATE REGULARLY

- After the initial inventory, systems are required to submit updated service line inventories annually within **30 days of the end of the tap sampling monitoring period**. Systems with inventories that contain only non-lead service lines are not required to provide inventory updates unless they discover any service lines requiring replacement within their distribution.
- Systems with all non-lead service lines must meet the verification requirements (discussed later in this training). These systems need to notify the state within 30 days of identifying service lines requiring replacement. The water system would then need to submit an updated service line inventory in accordance with the state's approved schedule.

What if your system is not on an annual monitoring schedule?

Inventory updates are required no more than annually. If they are on reduced monitoring then the inventory updates only need to be submitted every 3 years (e.g. a cadence that aligns with their monitoring schedule)



THINK YOU HAVE NO DATA? THINK AGAIN!

Water systems may find themselves in two categories—some may have data digitized and organized, and some may have little or no clue where to start uncovering relevant data.

If you're thinking, "But we have no data!"—think again. To begin, put away your shovel—you won't start with physically digging up lines to develop your inventory. You can rely on records and do not need to see each line to classify if these records include material type or installation date information.

YOU HAVE DATA

It may be challenging to locate or access (for example, inside an unlabeled box in the corner of an old building), but you have data somewhere. A good place to start is with your billing department. Likely, you have service address, maybe emails and phone numbers.

WHERE DO YOU FALL ON THE SPECTRUM?

It's important to understand where you realistically fall on the spectrum to determine what level of effort and timeline is needed to build your inventory and achieve compliance.

WHERE DO YOU FALL ON THE SPECTRUM?

- Staff have longevity - need to transfer knowledge
- Handwritten records, eg., tap cards
- Boxes of records but never been organized

- Some records are digitized
- Records are accessible but in across departments: Billing, GIS, Engineering, Public Works
- Some supportive elected officials and staff

- Records are digitized, centrally located and easily accessible
- GIS maps up to date
- SOPs and water op manuals updated
- Engaged public participation
- Supportive staff and elected officials

MINIMAL DATA

UNLIMITED DATA



Lean on technology

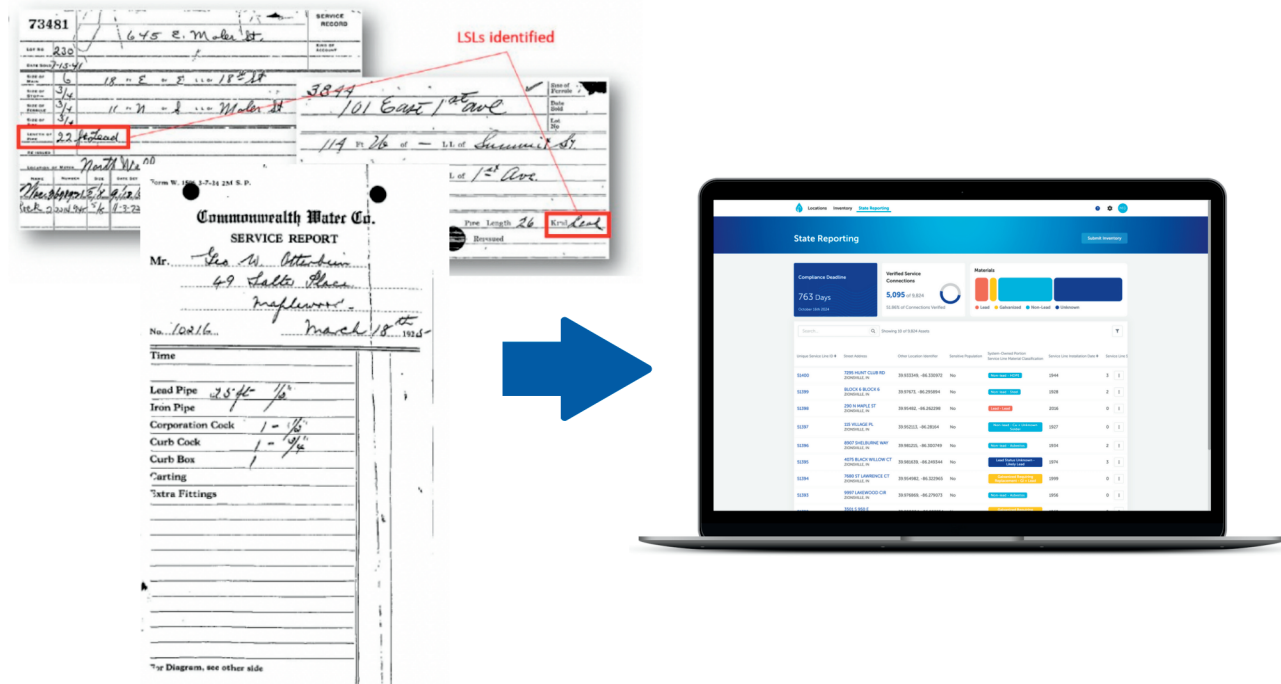
If you have a filing cabinet full of paper-based records (ex., tap cards), now would be an excellent time to push for digitizing and moving them to a system that can aggregate the data for you.

Using technology designed to scan these documents and aggregate data costs money, but the trade-off is time, staffing, and a looming deadline.

Here's an example of tap cards with lead listed as service line materials.

Using a digital database (for example, 120Water) transforms your physical data assets speedily and at scale to inform your service line inventory. Think about this—assuming the ODW will require/recommend collecting about 30 data points per location, the average 2,500 population town with roughly 750 taps/connections has to collect an estimated 22,500 data points in the EPA template.

The following page includes a real example of how digitization and data transcription of physical assets can help.

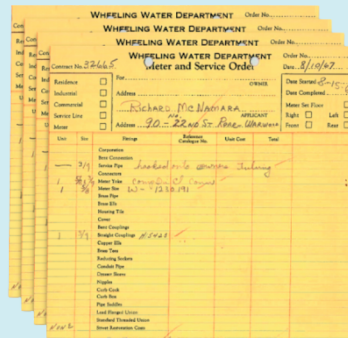


STORY TIME

The Wheeling Water Department needed a location-based database (e.g., GIS) to build its service line inventory. They have:

- 13,000+ Service connections
- 27,000+ Population served
- 72,000+ Files to be processed

They used tap cards as their reliable data source but needed specific data points to inform their inventory. However, that volume of data could not be done in-house, so they shipped their entire filing cabinet of tap cards to 120Water. Within 50 days, they received accessible, digestible, and actionable data compared to what would have taken the Wheeling Water Department years to achieve.



BOTTOM LINE

- Identify all potential data sources - prioritize by starting with low-hanging fruit (information you know and can access immediately)
- Pull together and clean - carefully tracking where the information came from and categorizing each line and segment
- Digitize and identify opportunities to supplement



LSL INSTALLATION RECORDS

SOURCES	DESCRIPTION	PROS
LSL INSTALLATION RECORDS		
Installation records	Records may be in the form of ledgers, cards, or databases; records describe the length, location, and construction material used for service line	Provides: location, timeframe when replacement occurred, may include information on material
Service card or ticket	Subsequent to installation, repairs or replacement activity conducted by the water system describe action taken	Provides: location, timeframe when replacement occurred, may include information on material
Construction records	Major main repair and construction project records will identify services replaced by those projects	Provides: a location and a timeframe when replacement occurred. May include information on material
Plumbing permits	Water system or local plumbing codes may require plumbers to obtain permits to replace service lines	Provides: a location and a timeframe when replacement occurred. May include information on material
CONSTRUCTION PRACTICES		
Utility construction standards and specifications	Water systems provide their own staff, contractors, and plumbers with standards for construction including service lines	Good reference: informed practice by water system and plumbers
Plumbing code; local ordinance	State and community plumbing codes specify, often by reference, pipe standards and specifications	Good reference: informed practice by water system and plumbers
Field experience	Interviews with experienced water system distribution system field staff and plumbers active in the system's service area	Can be used to: inform where to focus inventory effort and verify practice reflected in existing documentation; confirm absence of lead service lines
Summary notations of practice	Reports to governing bodies, internal memoranda, purchasing records, annual reports, etc.	Describes both water system and plumbing community practice
PARCEL RECORDS		
Tax records	Municipal tax records provide a database that typically contains the date of home construction	Electronic resource; typically includes address, subdivision, building age, number of bedrooms / square footage (information that can be used to compare against construction practice to assess likelihood of a lead service line); typically map is available
HISTORICAL ACCOUNTS		
Distribution system maps and record drawings	Should be a primary source of service line and connection information including materials, line sizes, and dates	Useful indicating historical growth of system
Capital improvement plans and maps	Historical CIPs can provide insight into historical installation patterns; current CIPs can be used to inform field investigations	Useful indicating historical growth of system
Community planning documents and maps	Subdivision plots, planning reports, records of housing starts, types and placement of initial construction, and reconstruction / renovation efforts can be used to determine which homes were constructed during time period lead service lines were used	Generally available information
Newspaper accounts	Changes in policy on topics of interest to the public, like lead, are sometimes captured in local media accounts	Generally available information

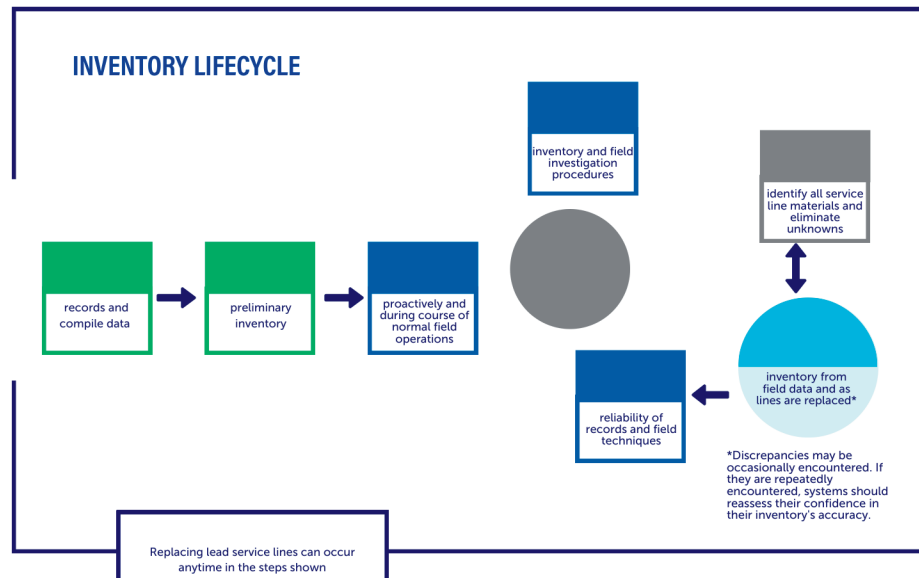
CONS	POSSIBLE LOCATIONS
Lead services are 30 - >130 years old; all or part of an installed line may have been replaced	Water system / municipal water department, municipal building permit / code enforcement department
May require cross-referencing with construction practice at the time of service to determine materials used; typically limited to portion of service maintained by utility; retention policy for these tickets may be inconsistent	Water systems / municipal water department
May require cross-referencing with construction practice at the time of service to determine materials used; typically limited to portion of service maintained by utility; retention policy for these records may be inconsistent	Water system / municipal water department, municipal planning department (new subdivision construction)
May require cross-referencing with construction practice at the time of service to determine materials used; typically limited to portion of service maintained by the customers; adherence to permit requirement may be incomplete; retention policy for these tickets may be inconsistent	Municipal building permit / code enforcement department, water system / municipal water department
Retention policy for these documents may be inconsistent; limited opportunity	Water system / municipal water department's administrative records; governing body (city or town council, etc.) records
Retention policy for these documents may be inconsistent; state plumbing codes are less likely to be useful than local codes	Municipal building permit / code enforcement department administrative records; governing body records; agency overseeing state plumbing code's administrative records
Some communities may lack a long-term internal workforce or a local plumbing workforce; relies on memory of available field personnel; personnel interviewed are only familiar with the portion of the service line their work affected	Existing and retired water system personnel; local plumbing companies; local plumbers union
Retention policy for these documents may be inconsistent	Water systems / municipal water department
Requires cross-referencing with construction practice information from other sources; does not have information specifically about lead service line	Municipal tax assessor's office; centralized municipal government GIS office
May lack desired level of detail, retention policy for these documents may be inconsistent	Water systems / municipal water department
May lack desired level of detail, retention policy for these documents may be inconsistent	Water systems / municipal water department
Requires cross-referencing with construction practice information from other sources; may require a combination of historical documents to establish construction patterns at level of detail required	Municipal planning departments, regional planning agencies, public library, local historical society
Limited potential for useful information	Newspaper, public libraries, local historical society



KNOWLEDGE CHECK

QUESTION 1: LABEL THE DIAGRAM

Fill in the 9 missing labels and 4 arrows from the Inventory Lifecycle. (Refer to page 51.)



QUESTION 2: SHORT ANSWER

The following information and records can be used to complete the initial service line inventory:

- | | |
|----|----|
| 1. | 5. |
| 2. | 6. |
| 3. | 7. |
| 4. | 8. |

QUESTION 3: TRUE OR FALSE

The LCRR does not require a specific format for the inventory; however, ODW and DRWA will provide an electronic submission platform and a model template for PWS.

- a.) True
- b.) False

QUESTION 4: FILL IN THE BLANK

On-site investigations are _____ under the LCRR for the initial inventory. However, they can help _____ existing records and reduce the number of _____.

A photograph of a kitchen faucet with water flowing into a sink. The faucet is black and the water is clear. In the background, there are some colorful fruits like tomatoes and lemons on a counter. The image is partially obscured by a large white circular graphic on the left side.

05

VERIFICATION BEST PRACTICES

Validating Your Data



VALIDATING YOUR DATA


Once a preliminary inventory has been created through gathering existing data sources, field inspections, and potentially employing techniques such as predictive modeling, the next step is validating that data, reducing the unknowns, and filling in gaps to ensure the accuracy of records and predictions. Although there is no deadline for validated inventories, your preliminary inventories must be fully validated to comply with the rule.

There are numerous options to verify your community's materials of service lines. The biggest challenge will be validating private-side lines, a new undertaking requiring collaboration and communication with residents to compile data for your system.

There are three main categories of verification:

- Digital
- Interior
- Exterior

It is essential to consider each verification practice type and determine which one(s) make the most sense for your utility staff, budget, and community. Methods of verification vary depending on what makes sense for your utility. Some are more within your control as the water system, while others rely on customers to take action. Some are cost-effective, while others may be outside of realistic budget expectations.

 Consider the following factors when deciding which combination of methods to employ:

- Inventory goals – Compliance or LSL removal
- Meter location
- Service line ownership
- Budget and resources (i.e., utility-owned hydrovac truck)
- Customer community and demographics (including age and language(s) spoken)



ACTIVITY: OPEN DISCUSSION

Which factors have impacted your system when attempting to verify LSLs? Which do you anticipate are barriers to overcome?

COMMON VERIFICATION METHODS

Three main categories of verification:

- Digital
- Interior
- Exterior

DIGITAL

Valuable if the PWS has access to robust digital and physical datasets.

- Data mining of existing internal & external databases
 - E.g., GIS, CMMS, Digital Billing, etc
- Predictive modeling/machine learning
- Physical asset digitization and transcription
 - E.g., Tap Cards

Data Mining of Existing Internal & External Databases

Many utilities manage their service addresses in the billing software, and this is a great place to start. Additionally, you may have a GIS or database with work orders that note the service line material. Other agencies in your community will also have a list of schools and daycares for your inventory.



Physical Asset Digitization and Transcription

In the previous chapter, we mentioned the value of evolving from paper-based records to a fully digital database. Transforming physical data assets such as tap cards and as-built records is a recommended best practice that informs your service line inventory quickly and efficiently.

This requires scanning and transcribing the record, then standardizing the data to match the state reporting template. The scans should then be attached to the location record.

Predictive Modeling

Predictive modeling looks for patterns in data to develop rules or algorithms and predict likely outcomes. These models use attributes from known service line materials at specific locations to make inferences about unknown locations. The models compile several layers of data. The model will then estimate the probability that a service line is a lead, which can help systems prioritize their investigations.

Statistical models are a powerful tool for systems with many unknown service lines. Models “learn” about the characteristics (i.e., home age and other variables) of homes with known LSLs and generate probabilities for every home with an unknown service line. Utilities can quantify the effort and resources needed to tackle inventory with predictive modeling.

Several inputs go into a service line inventory – GIS, historical paper data, customer information, and demographic information. It’s vital to centralize all data, keeping critical components together so that you can manage successful replacement programs. You’ll need a quick and easy way to understand your LSLR Program fully. Look for a software program that provides a visual picture of customers and service line connections to view and map your progress at a glance.



INTERIOR

Valuable if the resident population can be engaged to assist in mostly private-side data collection.

- Door-to-door/Visual inspections
- Resident surveys/photos
- Inspections during compliance sampling
- Contractor inspections
- Swab and magnet tests
- Water quality sampling

Visual Inspections

There are many opportunities to gather data on service line materials during a normal work week, such as reading or replacing meters, main replacement projects, or fixing leaky service lines. Be prepared to request access to the customer's home or building to verify the composition of the customer-owned portion of the service line.

If predictive modeling is used, utilities could also use probabilities to determine where to direct their validation efforts, saving time and money.

Customer Participation

Most utilities have little to no information about material types on the customer's side of the service connection (usually from the curb stop to the home). Customers can help utilities fill in significant data gaps through communication campaigns.

By leaning on marketing and education efforts (sending physical or digital materials directly to customers), utilities can communicate the importance of this identification project and request direct assistance on private side materials from customers via photographs or surveys. Building trust with your customers throughout this process is vital to ensure buy-in and to achieve desired response rates.

Engaging your customers is a great way to get information on the private side. Customers can complete surveys, send photos, perform water testing, lead check swabs and scratch and magnet tests, or schedule water system personnel to inspect their lines.



Customer Participation Resources

- The EPA has developed a guide to walk consumers through determining if they have a lead service line. The "Protect Your Tap – A Quick Check for Lead" can be found on a URL Resource page by scanning the QR Code in the Appendix.
- Please look at a digital survey example by scanning the QR Code in the Appendix.

INTERIOR, continued

Lead Check Swab Kit

Lead check swabs are typically used to identify leaded paint but can be used on visible portions of lead service lines (including leaded solder and leaded brass) by field teams or customers.

The lead check swab will turn red when applied if there's lead in the pipe. This is a good strategy if there are exposed parts of the line.



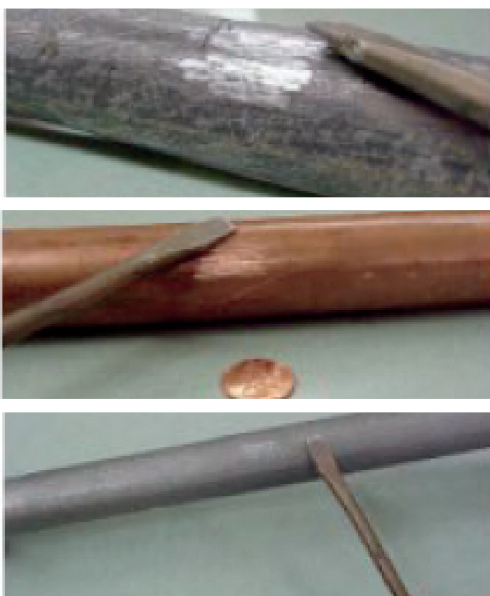
Lead Check Magnets

Like lead check swabs, strong magnets can identify if a pipe contains lead. Magnets will NOT stick to lead or copper pipes; thus, if a strong magnet is placed on a pipe and sticks, it can be presumed that the pipe is made of galvanized steel. Magnets can be utilized by utility staff or residents.



COMMUNICATION TIP

If you task residents to perform lead check swabs or magnet test, you must communicate instructions proactively, simple and clearly.



Images courtesy of City of Rockford, IL

Lead	<ul style="list-style-type: none"> • Dull silver gray • Soft - easily scratched (appear shiny) • Magnet will not stick
Copper Pipes	<ul style="list-style-type: none"> • Copper/bronze color • Magnet will not stick
Galvanized	<ul style="list-style-type: none"> • Silver gray • Difficult to scratch • Magnet will stick



Water Quality Sampling

Water systems have used water quality sampling protocols to detect the presence of LSLs. Three sampling protocols are described in Hensley et al. (2021), each with varying degrees of cost, complexity, accuracy, and customer cooperation required:

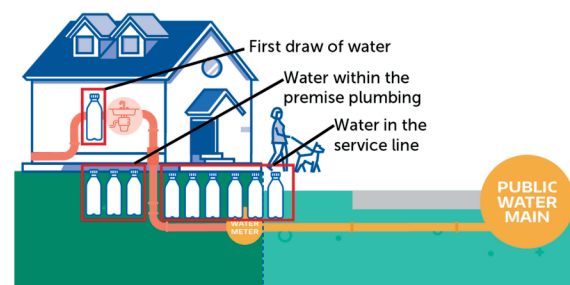
- **Targeted service line sampling**
 - It involves flushing out the volume of water in the premise plumbing and collecting and analyzing a sample from the service line. The volume of water from the tap to the service line can be estimated based on pipe diameters and lengths.
- **Flushed sampling**
 - It involves collecting a sample from the customer's tap after a set flushing time. For example, flushing for five minutes could result in a sufficient difference in lead levels to distinguish LSL sites from non-LSL sites. **This method is simple and can be done as an initial screening.**
- **Sequential sampling**
 - Uses a series of consecutive samples (typically 500 mL to 1 L) collected from an interior tap after a stagnation period (typically 6 hours or more). The number of samples needed depends on the length and diameter of the plumbing from the tap through the length of the premise plumbing and service line, but it is commonly between 8 and 15 liters. Although sequential sampling can be a sensitive tool for identifying LSLs, it is **relatively invasive to the resident and more complex than other water quality sampling methods.**

It is important to note that water quality sampling is a more appropriate screen for LSLs since low and non-detect lead levels may not reliably detect the absence of LSLs. **The key to using water quality sampling for identifying LSLs is establishing a community-specific threshold above an indicator for the possible presence of an LSL.**

Researchers found that using the flushed sampling protocol and sequential sampling in communities with varying levels of corrosion control to be robust in predicting the presence of LSLs under different corrosion control and household plumbing scenarios.

The recommended four-step sampling approach for identifying LSLs is as follows:

1. Establish baseline threshold lead concentrations for thoroughly flushed and sequential samples from homes that have never had LSLs.
2. Collect thoroughly flushed and sequential samples from homes with LSLs.
3. Collect thoroughly flushed samples from homes with unknown service line materials suspected to be lead (i.e., unknown, likely lead).
4. Collect sequential samples from the same homes in step 3 if thoroughly flushed samples do not indicate the presence of an LSL.



Example of sequential sampling.

EXTERIOR

These methods of verification are valuable if the PWS has a large capital budget and wants to optimize planned investments. Excavation methods require different levels of disturbance, time investment, cost, and coordination with the property owner.

- Field Validation
 - Mechanical excavation
 - Potholing or hydrovacating
 - CCTV
- Planned capital programs
 - E.g., water main rehabilitations

Suppose a service line is not accessible for visual inspection. In that case, the water system may need to excavate soil and potentially remove portions of the road, sidewalk, or other obstacles to determine service line materials.

Potholing or Hydrovacating:

- It involves using a water jet or compressed air to loosen soil, which is vacuumed up, resulting in a small hole to access the service line.

This method exposes a visible portion of the pipe without excavating an entire yard.

Before excavation, identify other utility lines and mark the locations where the holes will be excavated. A best practice is to expose a line at 2-3 points, as leaded segments can be attached throughout the line, and one pothole may miss a segment.

Once excavated, the holes allow for visual inspection and photos to be taken before restoring the holes, and it's less disruptive and cheaper than digging up an entire service line.

However, multiple holes may be needed to capture partial replacements, splicing, or key service line areas.

Mechanical Excavation

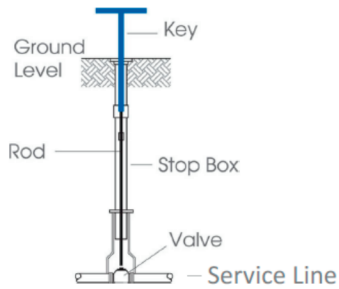
- Involves a backhoe or excavator to dig a "pothole" or test pit to expose the service line.
- Typically at a curb box or shutoff valve.
- Option: dig a full trench:
 - Pros: results in higher accuracy than methods that only expose sections of the service line because it typically exposes a longer length of the service line, up to 10 feet in some situations
 - Cons: labor- and time-intensive and possibly results in disturbance or damage to the yard, service lines, and nearby infrastructure





Camera Curb Box Inspections

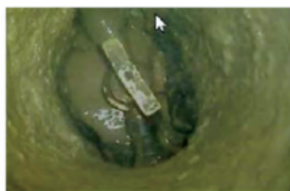
A low-impact way to determine the material of service lines is through curb box inspections. The curb box is a hollow tube that leads to the shut-off valve.



Cutaway view of the curb box

Cameras are used to take pictures of the exterior piping on either side of the curb box, and these images are then sent away for identification.

Challenges include locating/accessing the curb box and cleaning out debris from the box so that both sides of the valve can be inspected. Some imagery may not be clear enough to see the bulb-shaped “wipe joint,” which facilitates identification.



Lead Service Line



Non-Lead Service Line



Unable to Determine

Camera Pipe Scope

Fiber optics closed circuit TV camera technology can be used to visually inspect the service line's interior. To complete this inspection, the service must be shut off to send the camera through the disconnected meter or another valve on the service line.

Benefit: the entire length of the service line, rather than just portions of the service line, can be inspected.

Challenge: once inside the pipe, the interior walls may be coated with corrosion or scale deposits, which can conceal the pipe wall surface and make identification impossible.



EVALUATE SERVICE LINE IDENTIFICATION TECHNIQUES

Please look at the chart in Chapter 4 (page 58) to compare techniques that meet your water system's needs and resources.

BEST PRACTICES BEYOND INVENTORY DEVELOPMENT

MAINTAINING ONGOING COMPLIANCE

You've learned to gather records, build preliminary inventory, and validate data. The next step is to ensure you can continue to comply with the LCRR.

LEAN ON MODERN SOLUTIONS

No matter which validation method(s) you use, modern solutions can move your program forward more efficiently.

Statistical modeling can help you get a complete picture of your LSLR program, layering verification information over existing data from your preliminary inventory to help you visualize lead service lines in your community.

CENTRALIZE YOUR SERVICE LINE INVENTORY DATA

Easy-to-use software options will give your team efficient ways to centralize your service line inventory data. Several inputs go into a service line inventory – GIS, historical paper data, customer information, and demographic information.

The verification process adds another layer of accuracy to the collected data, and adding data while in the field can streamline efforts. Having one central place to house all data is vital, keeping critical components together so you can successfully manage ongoing compliance requirements, such as replacement programs.



Why is Centralized + Organized Data Important?

We know that the inventory is the backbone of the LCRR, and managing it in a centralized and organized manner will support many other elements of the LCRR requirements.

- Centralizing and organizing your inventory data optimizes the private-side communication strategy because your communications strategy is directly connected to the SL inventory.
- Centralizing and organizing your inventory data helps utilities prioritize replacement efforts.
- Centralizing and organizing help save time and money on unnecessary digs because efficiencies are gained in taking a strategic approach to inventory development, which is especially important for utilities with limited resources.
- Centralizing and organizing create long-term data management efficiencies by streamlining management processes.



KNOWLEDGE CHECK

QUESTION 1: MULTIPLE CHOICE

What factors should your water system consider when deciding to deploy verification methods?

- a.) Inventory goals – Compliance or LSL removal
- b.) Meter location and service line ownership
- c.) Budget and resources
- d.) Customer community and demographics
- e.) All the above

QUESTION 2: TRUE OR FALSE

Transforming physical data assets such as tap cards is a recommended best practice that informs your service line inventory in a quick and efficient manner.

- a.) True
- b.) False

QUESTION 3: MULTIPLE CHOICE

If the resident population can be engaged to assist in mostly private-side data collection, which interior methods of verification would you NOT use?

- a.) Physical asset digitization and transcription
- b.) Resident surveys and photos
- c.) Swab and magnet tests
- d.) Water quality sampling

QUESTION 4: TRUE OR FALSE

Excavation methods do not require different levels of disturbance, time investment, cost, and coordination with the property owner.

- a.) True
- b.) False

QUESTION 5: SHORT ANSWER

Why is centralized and organized data important to achieving and maintaining LCRR Compliance? Give one example.

ACTIVITY SECTION 5: OPEN DISCUSSION

Which factors have impacted your system when attempting to verify LSLs?

Which do you anticipate are barriers to overcome?

06

ENGAGING CUSTOMERS

Communication
Requirements and
Best Practices



COMMUNICATING WITH YOUR COMMUNITY

Our job as water providers is to produce and deliver the highest quality of drinking water that meets regulations for our consumers. Although communities depend on water to thrive, consumers must trust water providers. Historically, water providers have taken the silent approach, producing the drinking water and staying behind the scenes in most communities. What’s “worked” in the past is no longer an option today. Infrastructure is crumbling, populations are rising, and repair and replacement costs have skyrocketed. Consumers are regularly hit with bills and national “water crisis” headlines, leaving them dumbfounded and eroding trust in their water providers.

The Lead and Copper Rule Revisions are challenging but also serve as an opportunity to strengthen the relationship with your community. The LCRR public communication requirements allow you to engage with consumers, teach about drinking water, and communicate with complete transparency and empathy how to minimize lead and other contaminants in their drinking water.

In this section, you will review the LCRR communication requirements and learn tips and best practices for developing content that helps you build trust with your community.

VALUE OF COMMUNICATION

Public communication is required to achieve LCRR compliance, but more importantly, it's required to earn trust, respect, and confidence between you and your customers. Proactive communication drives positive partnerships with schools, collaboration with homeowners, stakeholder and media understanding, and elected officials' support.

PUBLIC TRUST

Often, your customers only hear from you when you send a utility bill or if there is a problem, leaving a little foundation for trust.

Water systems face many challenges, from increasing regulations and infrastructure repairs to affordability concerns and the spread of misinformation. Although you can't control these challenges, you can get ahead by keeping consumers engaged and informed about your local water system needs to build trust and community support.

We'll dive into strategies later, but it's important to remember that trust is at the epicenter of goodwill (best interest at heart), competency (have the knowledge and skills), integrity (do what's right), and those components you and your staff can control.

PUBLIC HEALTH

For decades water systems operated behind the scenes, resulting in customers taking their drinking water for granted—not understanding where it comes from, how it's treated, or how lead or other contaminants enter the system.

Safe, clean drinking water is vital to a community. You are more than just a billing company - you are the keeper of your community's public health. You provide value, and you drive life.

It's your job to provide safe, clean drinking water, but it's your responsibility to provide your community with transparent information to empower them to make the best decisions for their family's livelihood.



“The LCRR will require strategic communication to the customer...there is a chance to cause a lot of fear, so if you don't go about it in a way that easily explains [what is happening] and will help mitigate that, responses will be emotion-based,”

- Melissa Meeker, CEO of The Water Tower

TOUCHY SUBJECT

Communicating about lead exposure and exceedance can cause panic in the public's eyes, which means planning communication strategies need to be thought out and planned to avoid public relations crises.

Water systems willing to communicate effectively about their efforts around lead removal and remediation will likely find better understanding and trust from consumers and community stakeholders. Taking this compliance requirement one step further to promote community confidence around utility efforts will ultimately set you up for longer-term success.

Building trust begins with you. As you develop messages, talk to customers, and implement the strategies, do so purposefully and thoughtfully.

WAYS TO BUILD TRUST

- Give public tours of your water treatment plant
- Present to local organizations and schools
- Engage in public events to educate and build brand awareness
- Serve your tap water at events and meetings
- Get to know your customers in real life
- Host educational classes on topics that affect your customer's daily life (i.e. water conservation, water quality)
- Partner with other departments, local organizations, businesses, leaders to spread educational messages and awareness

WHAT IS COMMUNICATION?

Before we jump into the LCRR requirements, you need to understand the fundamentals. There are five types of communication: verbal, non-verbal, written, visual, and listening. All types should be considered when creating any form of face-to-face, printed, or digital communication on a website or social media channel.

Verbal	It occurs when we speak with others face-to-face, over the phone, or engage on Teams or Zoom. It can be formal (work meeting) or informal (lunch or coffee break). What and how we say it matters, but it also involves non-verbal communication.
Non-verbal	Includes facial expressions (smiles, frowns, perplexed looks), posture, eye contact, hand movements, body language, breathing (huffs or deep sighs), and touch.
Written	Examples include writing emails, reports, social posts, text messages, and notes. Written communication should be clear and concise to disseminate information. Whether it's Informal or formal communication, remember, in the digital space, it can live on forever, so it's essential to write well and be thoughtful.
Visual	Includes photos, videos, graphics, memes, imagery in ads.
Listening	Listening is the ability to receive and interpret information, and it's the key to understanding what people are trying to say. Active listening builds trust and understanding of others' feelings, encouraging openness and honesty.



View the AWWA Lead Communication Guide and Toolkit by scanning the QR Code in the Appendix



IMPROVE YOUR SKILLS

Developing compelling communication pieces starts with you. Here are nine communication skills you can improve on that don't cost a dime:

- Be respectful in the way you communicate
- Actively listen to others
- Have empathy for others
- Be aware of and project positive body language
- Encourage collaboration
- Be curious - ask questions
- Ensuring you adhere to email and phone etiquette
- Be open-minded to other peoples' ideas, feelings, and preferences
- Provide candid, respectful feedback



BEST PRACTICES

When developing communication pieces, follow these best practices:

TELL YOUR WATER STORY

Communicate where your water comes from, how your system operates, and your utility's efforts to ensure safe, reliable, and affordable service.

BE TRANSPARENT

Release positive or negative information as it becomes available to enhance your organization's accountability and build trust.

CONSIDER ALL DEMOGRAPHICS

Include disadvantaged communities in your messaging: translate materials and engage with different groups to better meet their needs.

PARTNER WITH OTHERS

Let schools, local organizations, health agencies, and HOAs be an ally to garner support and reach new audiences.

COMMUNICATE INTERNALLY

Educate internal departments about the LCRR requirements and work together to develop messages.

BE PROACTIVE

Communicate consistently and before concerns arise to establish your utility as the trusted source of information about lead and other issues.

COMMUNICATION CHANNELS

When you commit to implementing effective communication strategies, you end up with highly engaged community advocates. It's essential to pick the right strategies for your community that meet your needs. Below is a short list of options you can start developing.

- Press Release
- Community Presentation
- Flyers, Factsheets, One-Pagers
- Postcard
- Website: FAQs, Videos
- Social Media
- Direct Mail, Letters
- Email
- Printed or Digital Newsletter
- Town Hall, Public Meetings
- Text, Robo calls
- Face-to-Face Conversations
- Phone Calls
- Community Meetings

The matrix below can help you determine which strategy you need depending on your goal.

	Urgent	Action Needed	One-way	Feedback Needed	Education	Compliance
Letter						
Direct Mail						
Email						
Social Media						
Town Hall						
Door-to-door						
SMS						
Community Partnerships						



EXPLAINING COMPLEX TOPICS

The LCRR Requirements and drinking water, in general, are complex topics that pose a challenge to communicating with customers. There is a delicate balance between not saying enough, leaving the public to their imagination, and overwhelming them with too much information. Both can cause the spread of misinformation and misunderstandings.

LCRR MESSAGING

When developing your messages, it's essential to understand that most residents need more awareness of clean drinking water sources, what it takes to keep drinking water clean, and how lead and other contaminants even end up in their taps and fixtures.

Consumers need to be educated on the value of water and how it ends up in their homes and facilities. While public awareness of water quality and water-related issues has increased in recent years, the general public's knowledge and understanding of their water has not been in most cases. Particularly in the ongoing aftermath of the Flint water crisis, there is significant public fear around the cleanliness of drinking water.

Many consumers don't realize that not only do most lead and contaminants come from pipelines, plumbing, and fixtures rather than the water itself, but that in many cities, pipes were installed before when most staff began working at the utility.



In fact, the lead issue doesn't have anything to do with your water per say, it's with the [pipes and plumbing] it goes through...there's a big misconception about that

– Charlie Gray, CEO Chesterfield County Rural Water and President of the South Carolina Rural Water Association

POTENTIAL COMPLEX TOPICS

- Your Water System Process
- Potential Health Effects of Lead Exposure
- General LCRR Information and Updates
- Building a Service Line Inventory
- Sampling and Monitoring
- Triggers Levels
- 90th Percentile
- Action Level Exceedance
- School and Childcare Facility Requirements
- Lead Service Line Removal and Replacement
- Disturbances
- Corrosion Control Measures
- Filters and Point of Use Devices

COMMUNICATION TACTICS

Below is a list of actions to communicate the various complex LCRR topics. This is not an exhaustive list but a list to jump-start your communication tactics. Your team will determine what fits best for your organization.

ACTIONS

- Provide **educational materials** to customers about your water system, how lead enters drinking water, the effects of lead, and how to reduce exposure.
- Use **existing content** from the expert sources such as the EPA, your primary regulators, and member associations.
- **Collaborate** with other departments, local governments, health departments, and neighboring water systems to develop materials and spread resources.
- **Visual content grabs attention** and keeps people engaged. Provide illustrations, graphics, pictures, and videos in place of texts or supplement text-heavy materials.
- Create **updated, easy-to-read instructions** on sampling or submitting information.
- **Develop "Frequently Asked Questions"** and provide a point of contact to make it easy for customers to ask follow-up questions.
- Distributing sampling kits for homeowners? Make it easy and convenient. **Identify a staff person** responsible for coordinating the delivery of sampling kits.
- Be prepared to provide testing results promptly. If your consumer requires notification within 24 hours, a **phone call** may be the best way to deliver it.
- Public meetings and **face-to-face conversations are potent opportunities** to connect. Be prepared to talk.
- **Know who's living in the home.** Is it the homeowner or a renter? Sending a notification to the homeowner rather than the renters (consumer) does not satisfy the requirements.
- When satisfying notification requirements, provide **humanized explanations** alongside the regulatory language. See Preparing for the Publics' Response.
- **Use the CCR** as your organization's "State of the Union" address or annual report to **tell your water systems story**: introduce staff, treatment processes, updates, and plans. Hire a designer to make it look good!
- **Embrace social media**-share scenes viewpoints or a "day in the life" of staff. The goal is to build "super fans," aka community advocates.
- Include a **QR Code** on door hangers and postcards that directs consumers to an LCRR-specific webpage that houses maps, inventory progress, and resources.
- Set up a **"library of resources" in publicly accessible locations** (billing, libraries, city hall, schools, etc.) BUT consistently remind consumers that it exists.
- **Engage in community events and meetings** to educate and get to know your community.



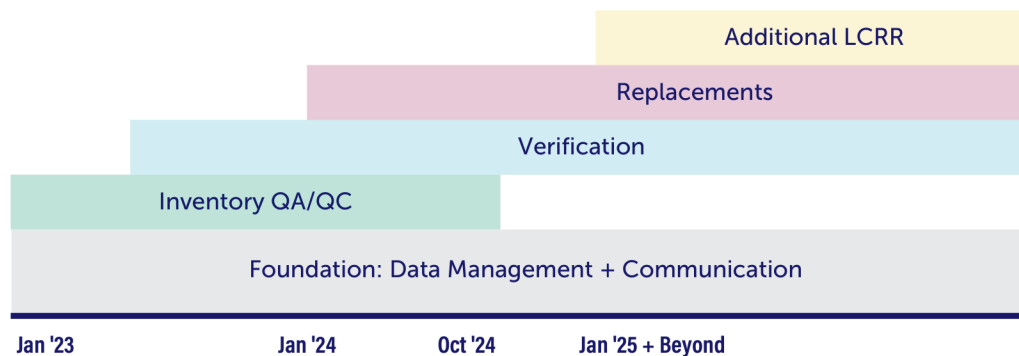
PRO TIP

Perform the "Grandma Test" before you send out new instructions and information. Let a friend or family member review the content and confirm if what you are saying is understandable.



LCRR COMMUNICATION REQUIREMENTS

To achieve LCRR compliance, you'll need to treat communication as a foundational component that begins now. Communication requirements occur at every step in your LCRR journey. Although many are only required after the October 16, 2024, deadline, at the very least right now, you need to start collecting customer information and introducing your community to their involvement in achieving compliance.



WORKING WITH CUSTOMERS TO INVENTORY AND BEYOND

Here are a few communication-related steps you can take now that will help you beyond the inventory deadline and set your communication efforts up for future success:

- Collect consumer contact information for the required annual notifications
- Work with customers to collect data and send pictures of their service lines for your inventory
- Initiate outreach to schools, daycares, and organizations to establish a point of contact for sampling requirements
- Identify the educational materials you need from agencies or develop in-house
- Introduce the community to your water system, staff, partners, and LCRR requirements

SERVICE LINE INVENTORY COMMUNICATIONS

The LCRR explicitly states specific notification requirements, but throughout the guidance, you'll notice that communication tactics are necessary for every step to achieve success. Please make sure you build your communication plan while building your inventory. The ultimate goal isn't to achieve compliance but to provide safe, clean drinking water to your well-informed community members who trust you.

WHAT'S REQUIRED?

- All water systems must make their LSL inventory publicly available by October 16, 2024, regardless of your water systems size.
 - Water systems serving **greater than 50,000 people** are required to make their **inventory available online**.
 - *Serving 50,000 or fewer? Mail to customers, upload to a website or social media, post in publicly accessible areas, and include in a newsletter.*
 - Water systems with only non-LSLs can meet this requirement with a publicly accessible statement that there are no LSLs and a general description of the methods used to make that determination.
- All water systems must include information on accessing the LSL inventory in their Consumer Confidence Report (CCR).
 - Systems with no lead, GRR, or lead status unknown service lines can instead provide a statement that they have no LSLs or GRRs with the description of methods used to make that determination.

WHAT'S ENCOURAGED?

Water systems should begin engaging customers and conducting proactive, on-site service line material investigations as soon as possible to improve their inventory, verify existing records, and reduce the number of unknowns.

Water systems should capture as much information as possible for unknowns and consider assigning a likelihood that they are lead.

Although it's not "required," most water systems will likely need to involve customers to acquire evidence-based records and meet specific requirements, for example:

- Non-lead service lines must be determined through an evidence-based record, method, or technique not to be lead or GRR.



ANNUAL LEAD SERVICE LINE NOTIFICATION REQUIREMENTS

 All water systems must notify and provide education materials annually to households with lead, galvanized service lines requiring replacement, or “lead status unknown” service lines.

Annual notices must include the following:

- Statement on the classification of the property’s service line
- Information on the health effects of lead
- Actions that can be taken to reduce exposure to lead

WHAT’S REQUIRED?

- For persons served by an **LSL** or a “**galvanized requiring replacement**” service line:
 - The notice must also provide information about opportunities for LSLR, including:
 - The water system requires to replace its portion of an LSL when notified by property owners that they intend to replace its portions of the LSL.
 - A description of financing solutions for property owners seeking to replace their portions of an LSL is also required, if available.
- For “**lead status unknown**” service lines:
 - The notice must include information about the following:
 - Ways that homeowners can verify the material of their service lines
 - A statement that the service line material is unknown but may be lead
 - Health effects of lead
 - Actions people can take to reduce their exposure to lead
- This notification must be **delivered within 30 days of the completed LSL inventory** and continue annually after that.
- **For new customers:** this notification must be delivered at the time-of-service initiation.



SERVICE LINE INVENTORY COMMUNICATIONS

BEST PRACTICES

- Publish simple explanations of your data and required language. The average American reads at a 7th-8th Grade reading levels—tools such as Grammarly and Microsoft Word to help you determine the complexity of information.
- Provide or create:
 - Educational resources for consumers served by LSLs to reduce lead or protect themselves from lead exposure.
 - A schedule for when staff plans to investigate unknowns in neighborhoods.
 - Information about tap sampling, opportunities for customers to participate in your LSL efforts, such as identifying customer-owned service lines, and actions your system is taking to reduce lead.
- Deploy opportunities for feedback and data submission.
 - Tactics: website forms, phone calls, emails, host public meetings, surveys
- Understand your community's demographics—partner with a local community member to translate your data and education materials or attend public meetings.
- Accessibility and inclusivity considerations should be made throughout the map development process, e.g., using a color-blind safe color scheme, providing alternate text that can be read aloud using software for the visually impaired, using simple or defined terminology, and offering text in multiple languages.
- An interactive online mapping application can effectively distribute inventory information and allows users to comprehensively evaluate a water system's service line materials anywhere there is access to a primary computer and the internet.
- Use your Consumer Confidence Report as an opportunity to educate customers. Go beyond the required regulatory language by providing simplified summaries of your customer's needs.



MARKETING RULE OF 7

Customers need to "hear/see" your message at least seven times before they'll take action. If you want their help, engage often!



SAMPLING & MONITORING

The water system should consider providing outreach to consumers about the LCRR sampling changes. You will likely need to update sampling instructions, explain the new first- and fifth-sampling protocols, the expected frequency of sampling, and provide materials encouraging customers to fix their lead problem if found in their plumbing. LCRR Sampling changes include:

- The LCRR requires a first-liter sample for copper and a fifth-liter sample for lead to be collected at sites served by LSLs
- Sampling is required every six months after adding a new water source or a long-term change in treatment unless the state determines that these changes do not warrant more frequent monitoring.

WHAT'S REQUIRED?



- Systems must notify customers with an individual LCR tap **sample result > 15 µg/L within three days (72 hours)**.
 - System-wide notice is required within 24 hours for an Action Level Exceedance. See the "Action Level Exceedance | 24-Hour Notification" section for details
- For individual samples **≤ 15 µg/L**, provide sampling results to each sampling site **within 30 days**.

NEW TRIGGER LEVEL COMMUNICATIONS

The LCRR introduces a new Trigger Level of 10 µg/L (micrograms per liter) and the Lead Action Level of 15 µg/L. Different parameters depend on whether you are a water system serving 10,000 people or more versus serving 10,000 people or less.

WHAT'S REQUIRED?

- Water systems serving **more than 10,000 persons** that fail to meet their annual LSLR goal must conduct public outreach activities until they meet their replacement goal or are no longer required to perform a goal-based LSLR program.
- When the Trigger Level exceedance occurs:
 - Water systems with LSLs galvanized requiring replacement and "lead status unknown" service lines must **provide information within 30 days of the end of the monitoring period** to consumers about their LSLR program and opportunities for LSLRs.
 - This **information must continue annually** until the system exceeds the Trigger Level.
- Suppose small water systems select the Point of Use compliance alternative. In that case, they must **provide public education materials** to inform users how to properly use POU devices to maximize the units' effectiveness in reducing lead levels in drinking water.

ACTION LEVEL EXCEEDANCE | 24-HOUR NOTIFICATION

The LCRR adds exceedances of the Lead Action Level of 15 µg/L to the Tier 1 violation list requiring the distribution of system-wide notices within 24 hours.


WHAT'S REQUIRED?

24-hour notice is required when the 90th percentile value of lead sample results exceeds 15 µg/L as opposed to the three-day notice requirement for individual sample results exceeding 15 µg/L.

In addition to the significant changes, several communication requirements, in terms of content and delivery, apply to water systems that exceed the Action Level.

These requirements include **delivering public education materials** to organizations such as:

- pediatricians
- local welfare agencies
- Obstetricians-Gynecologists
- Midwives

 Water systems must deliver Tier 1 notices to **all customers within 24 hours** of receiving and calculating the 90th percentile value exceeding the Lead Action Level.

Water systems must **submit a copy of the notice water system's primacy agency and the EPA** within 24 hours.

- The **mandatory health effects language** must be included in public notifications.
- Water systems **must translate** their public education materials into other languages upon request by a customer.

HOW TO MANAGE REQUIREMENTS



- Prepare materials and messaging ahead of the requirements
- Develop your distribution list
- Understand your communities demographics and translate materials in advance.
- Develop a distribution plan you can sustain in advance.



LSL REMOVAL & REPLACEMENT

The LCRR requires that all water systems with LSLs or “lead status unknown” service lines develop and submit an LSL replacement plan (LSLR plan). At this time, water systems must develop a strategy to inform customers before full or partial LSLRs.

WHAT'S REQUIRED

- Water systems must provide customers with a procedure to flush service lines and premise plumbing during LSLRs before the service line is returned to service.
 - The notification must explain that consumers may experience a temporary increase in lead levels in their drinking water due to the replacement.
 - It must also include information about the health effects of lead and actions consumers can take to minimize their exposure to lead in drinking water.
 - When multi-family dwellings are served by the lead service line to be replaced, the water system may post the information at a conspicuous location instead of providing individual notice to all residents.

POTENTIAL LSLR REQUIREMENTS THAT TRIGGER COMMUNICATIONS

TESTING

The water system must offer the customer a follow-up tap sample between three and six months after a lead service line replacement is completed.

FILTERS AND POINT-OF-USE DEVICES

- If a partial LSLR occurs, the water system must provide the consumer with a pitcher filter or point-of-use (POU) device, six months of replacement cartridges, and instructions for use until the whole replacement is completed.
- If a full LSLR occurs, the water system must provide the consumer with a pitcher filter or POU device and six months of replacement cartridges before the service line is returned to service.
- Water systems **must provide a filter within 24 hours** of learning of a customer replacement that left a system-owned LSL in place within the past six months.

CUSTOMER-INITIATED LSLR

Suppose a customer replaces their section of an LSL. In that case, water systems must complete their side of the LSL within 45 days of being notified by the customer, with a possible extension to 180 days after notification to the primary regulator.

REPLACEMENT RATE

- Water systems must fully replace at least 3% of their total LSLs, galvanized requiring replacement, and lead status unknown service lines annually after a Lead Action Level Exceedance. States must set this replacement rate higher if it is feasible.
- The water system **must provide the sample results** to the consumer within 30 days if below 15 µg/L.
- If a customer doesn't answer or is non-responsive, please speak with your primacy agency to see how they want to handle the situation.

IF A DISTURBANCE IS CAUSED

If a disturbance is caused to a customer served by lead, "galvanized requiring replacement," or "lead status unknown" service lines, notification is required. Provide materials in advance of water disturbances.

Disturbances include:

1. The service line being shut off or bypassed
2. Partial or full LSLR
3. The replacement of an inline water meter, water meter setter, gooseneck, pigtail, or connector.

WHAT'S REQUIRED?

The notice must include information on reducing exposure to potentially elevated lead levels.



FILTERS AND POINT OF USE DEVICES COMMUNICATION TIPS

Currently, the LCRR requires water systems to distribute filters in certain circumstances to reduce the risk of lead. Although it doesn't state specific communication requirements, there are a few necessary communication-related actions to take:



- Guide on what the filter should be used for (i.e., drinking water, ice, cooking, and preparing infant formula) and what it may not need to be used for (i.e., watering plants).
- Provide information on the potential sources of lead with all filter-related communications.
- Provide information on properly maintaining the filter and highlight the filter's certification.

Pro Tip

Create a webpage describing filter use and maintenance with "Frequently Asked Questions" or a video to assist customers.



SCHOOL & CHILDCARE FACILITIES

Under the LCRR, all community water systems must sample for lead in elementary schools and licensed childcare facilities in your service area once during the first five years after October 16, 2024.

WHAT'S REQUIRED

- Water systems are required to **contact all elementary schools and licensed childcare facilities**, and
 - **Provide information** about the health risks of lead in drinking water within the first 5 years after the compliance date
 - **Complete testing** at 5 water outlets per school and 2 water outlets per childcare facility
 - **Provide EPA's 3T's Toolkit**
- At secondary schools, water systems must:
 - Contact with **information about the health risks of lead** in drinking water
 - Provide **information on how to request a sampling**
- Water systems must **contact** and attempt to test 20% of elementary schools and 20% of licensed childcare facilities per year such that all facilities are sampled once over the five years.
- After the water system has met the requirements for elementary schools and licensed childcare facilities once, the water system must
 - Provide **annual information on the health risks of lead** in drinking water
 - Provide **information on how to request sampling**.
- A water system must **provide analytical results** as soon as practicable but no later than 30 days after receipt of the results to the school or childcare facility,
 - Along with **information about remediation options**

WAYS TO SUCCEED


- Compile a list of all schools and licensed childcare facilities they serve.
- Partner with school districts, private schools, PTAs/PTOs, after-school programs, day nurseries, drop-in care centers, indoor recreational facilities, teenage parenting programs, school-age centers housed in faith-based facilities, non-public kindergarten programs, Head Start programs, shelters, and juvenile detention facilities.
 - Also consider: elected officials, municipal and state level partners, local government, and non-profit agencies such as social justice and advocacy organizations or agencies that administer assistance programs for low-income households to create information-sharing campaigns.
- Take a proactive and transparent communication approach with the school and childcare facilities to strengthen community trust and alleviate concerns.
 - Align on existing communication tactics deployed by schools and childcare facilities.
 - Build a testing regimen with the school systems.
 - Create targeted messages and materials for the various demographics and cultures.
 - Develop and practice crisis communication plans.

CONSUMER CONFIDENCE REPORT

Consumer Confidence Reports can serve as a great outreach strategy. Many water systems use them to tell their water systems story, introduce staff, provide updates on long-term projects, and a reflection on the previous year's achievement. The LCRR includes requirements for the CCR.

WHAT'S REQUIRED?

The LCRR requires additional information to be added to the CCR related to the LSL inventory, sampling results, and mandatory health effects statement.

-  All water systems must **include information on accessing the LSL inventory** in their Consumer Confidence Report (CCR).
- Each CCR must **include the 90th percentile concentration** of the most recent rounds of sampling, the number of sampling sites exceeding the Action Level, and the range of sampling results for lead and copper.
 - If water systems are on a six-month monitoring schedule, both rounds of results must be included.
- The report must **include information on accessing the complete lead tap sampling data**.

CCR AND PUBLIC EDUCATION HEALTH EFFECTS LANGUAGE

Water systems must include the following **mandatory health effects language** in Consumer Confidence Reports, public notices, and public education materials:

“Exposure to lead in drinking water can cause serious health effects in all age groups. Infants and children can have decreases in IQ and attention span. Lead exposure can lead to new learning and behavior problems or exacerbate existing learning and behavior problems. The children of women who are exposed to lead before or during pregnancy can have increased risk of these adverse health effects. Adults can have increased risks of heart disease, high blood pressure, kidney, or nervous system problems.”



PRO TIP

When creating your CCR, a good practice is to include summaries of the required language and data from the charts reassuring customers of the overall quality of water.



STATE AND LOCAL HEALTH AGENCIES

The LCRR requires water systems to conduct annual outreach (in the form of a letter is acceptable) to state and local health agencies to discuss the sources of lead in drinking water, the health effects of lead, steps to reduce exposure to lead in drinking water, information on find-and-fix activities, and any changes made to corrosion control.

State and local health agencies include:

- State health department
- City or county health department

For tribal systems, this includes:

- Indian Health Service Area
- Division of Environmental Health Services program or applicable tribal program

WHAT'S REQUIRED?

- The **annual outreach to local and state health agencies** must include information about
 - Find-and-fix activities conducted in the previous calendar year, including
 - the location of tap sample sites that exceeded 15 µg/L,
 - the result of the initial tap sample,
 - the result of the follow-up tap sample,
 - the result of water quality parameter monitoring,
 - any distribution system management actions or corrosion control treatment adjustments made.
- Water systems must also **provide school sampling results to local and state health agencies.**




PREPARING FOR THE PUBLICS RESPONSE

You will likely encounter frustrated customers during your LCRR journey—not everyone will see or hear your message, trust your intentions, or willingly participate. Training your staff on how to handle upset customers, especially as public servants, is essential. Below are a few tactics your team can practice when responding to community members.

RESPOND WITH EMPATHY

Empathy helps you connect with others and show compassion for them. Identifying your audience is the first step, but to deliver compelling messages, you must have the ability to empathize with your audience.

 Empathy is understanding or being aware of what another person is experiencing from their point of view, and it's placing yourself in someone else's shoes.



ACTIVITY: EMPATHY MAPPING

Complete an empathy map provided at the back of the chapter for a specific community group as they relate to an LCRR situation.

WORST PRACTICES

- Waiting to respond or leaving customers "in the dark" which grows fear and skepticism
- Failing to inform elected officials, board members, city council, and stakeholders
- Responding in "corporate speak" rather than humanized and with empathy or compassion

TEMPLATES

The Covello Center for Risk Communication developed templates to serve as a guide when talking or writing about challenging topics like lead.

AAF TEMPLATE

You can use it when your goal is to build, maintain or restore trust.

- **Acknowledge Uncertainty Message:**
 - Identify knowledge gaps and challenges.
- **Action Message:**
 - State actions you have, are, or will take to address the issue. For example, the message might indicate that you are cooperating with other organizations or investigating the situation.
- **Follow-Up Message:**
 - Provide information on where people can obtain timely and credible information.

CAP TEMPLATE

Use if responding to a high-concern question or statement.

- **Caring Message:**
 - Provide a message indicating caring, concern, empathy, or compassion. It would be best if you communicated the seriousness of the situation.
- **Action Message:**
 - State actions you have, are, or will take to address the issue or problem.
- **Perspective Message:**
 - Provide information that puts the issue in perspective or context.



KNOWLEDGE CHECK

QUESTION 1: MULTIPLE CHOICE

In the new communication requirements, water systems are required to notify any customer with an individual LCR sample result greater than 15 µg/L within _____.

- a.) 3 days (72 hours)
- b.) 1 day (24 hours)
- c.) 1 week
- d.) 30 days

QUESTION 2: MULTIPLE CHOICE

In the new LCRR, Water systems must deliver Tier 1 notices to _____ within _____ of receiving and calculating the 90th percentile value exceeding the Lead Action Level.

- a.) All consumers / 24 hours
- b.) Only consumers with lead / 24 hours
- c.) All consumers / 30 days
- d.) Only consumers with lead / 30 days

QUESTION 3: FILL IN THE BLANK

All _____ must notify and provide education materials _____ to households with lead, galvanized service lines requiring replacement, or “lead status unknown” service lines.

QUESTION 4: TRUE OR FALSE

Only systems greater than 50,000 are required to include information on how to access the LSL inventory in their Consumer Confidence Report (CCR).

- a.) True
- b.) False

QUESTION 5: TRUE OR FALSE

Empathy is understanding or being aware of what another person is experiencing from their point of view, and it's placing yourself in someone else's shoes.

- a.) True
- b.) False

ACTIVITY SECTION 6: EMPATHY MAPPING

An empathy map is a tool used to articulate what we know about a particular group of people in regards to a specific experience or situation. After you complete the activity, use the data to help you formulate messages that will resonate with the target audience.

TARGET AUDIENCE:

SITUATION:

<p>SAY List what the persona "says" out loud about the experience or situation.</p>	<p>THINK What is the persona thinking throughout the experience?</p>
<p>DO List the actions the persona takes. How do they act? What do they do?.</p>	<p>FEEL List the persona's emotional state. How do they feel about the situation?</p>

A photograph of a kitchen faucet with water flowing from it. The faucet is black and the water is clear. In the background, there are some colorful fruits like tomatoes and lemons on a counter. The image is partially obscured by a large white circular graphic on the left side of the page.

07

FUNDING YOUR LCRR PLAN

**Understanding the
Available Funding**



HOW DO WE FUND LCRR?

You've spent the day learning about the LCRR requirements. Now begs the question, how do you fund these requirements? Each water system's answer may be different. The type and amount of funding your water system will need to complete your inventories and compliance plans depends on how you and your system plans to tackle the requirements.

For the first time in years, water professionals finally have significant federal funding to support their efforts of providing clean, safe water, giving them an unparalleled opportunity to eliminate lead from our infrastructure.

We will review the funding mechanisms being made available for you so that you can figure out which type of funding will suit your needs the best.

YOU'RE NOT ALONE

The LCRR is new to everyone, and remembering that requirements of this magnitude have never occurred before is essential.

Our goal is to help you understand the different mechanisms in place so that you can work with your state contacts to locate, apply and receive the funding you need to catalyze your program now and in the future.

Applying for funding may be confusing and labor-intensive, but you can access experts within your state to guide you.

OVERVIEW OF FUNDING SOURCES

Several federal and non-federal funding sources are available to assist states and water utilities with these efforts, including lead service line replacement (LSLR).

The new LCRR is a funded mandate backed by two noteworthy acts of legislation in 2021. Many municipalities already use the **American Rescue Plan Act (ARPA)** to fund lead pipe replacement.

At the same time, the passage of the **Infrastructure Investment and Jobs Act (also known as the Bipartisan Infrastructure Act, or BIL)** has positioned an additional \$15 billion for lead pipe replacement.

The following charts are overviews of the funding options available for LCRR-related projects.

FUNDING OPTIONS FOR LCRR RELATED PROJECTS:

- **Government Subsidized Loans**
 - Drinking Water State Revolving Funds (SRFs)
 - Water Infrastructure Finance and Innovation Act (WIFIA)
 - USDA Rural Development (RD)
- **Newer Sources (since 2021)**
 - Infrastructure Investment and Jobs Act
 - Drinking Water
 - Wastewater
 - American Rescue Plan Act
 - Coronavirus State and Local Fiscal Recovery Funds
- **Government Grants**
 - Water Infrastructure Improvements for the Nation Act (WIIN Act)
 - Community Development Block Grant (CDBG) program



View additional funding resources by scanning the QR Code in the Appendix

GOVERNMENT SUBSIDIZED LOANS OVERVIEW

Program/Features	State Revolving Funds (SRFs)	WIFIA	USDA RD - Water & Waste Disposal Loan & Grant Program
Administered by	U.S. Environmental Protection Agency (EPA)	EPA	U.S. Department of Agriculture (USDA)
Loan From	State SRF	U.S. Treasury	U.S. Treasury
Subsidized Interest Rates	At or below market, established by each state	U.S. Treasury rate	Tiered national rates, established by USDA
Additional Subsidy	Principal Forgiveness, Grants	NA	Grants
Communities & Project Size	All communities, all sized projects	Trends toward larger projects	Communities with 10,000 or fewer people



NEWER SOURCES OVERVIEW

Program/Features	Infrastructure Investment and Jobs Act (Drinking Water and Clean Water portions)	Coronavirus State and Local Fiscal Recovery Funds
Administered by	U.S. EPA / States	U.S. Treasury/ States/ Counties/ Local Governments (NEUs)
Communities	Many programs target systems with smaller population sizes and/or disadvantaged communities	All
Projects	Drinking Water/Wastewater	Drinking Water/Wastewater

GOVERNMENT GRANTS OVERVIEW

Program/Features	Small & Disadvantaged Communities Drinking Water	Reducing Lead in Drinking Water	Lead Testing in School and Child Care Program Drinking Water	Community Development Block Grants (CDBG)
Administered by	U.S. EPA / States (WIIN Act)	U.S. EPA / States (WIIN Act)	U.S. EPA / States (WIIN Act)	U.S. Department of Housing & Urban Development (HUD) / States / Municipalities
Communities	Communities that are disadvantaged or have fewer than 10,000 people	Disadvantaged communities	Schools and child care facilities	Must benefit low and moderate income people, trends toward more urban areas
Projects	Drinking Water	Drinking Water	Drinking Water	Variety

WATER INFRASTRUCTURE IMPROVEMENTS FOR THE NATION ACT (WIIN ACT)

Programs	Small, Underserved, and Disadvantaged Communities Grant Program	Reduction in Lead Exposure Via Drinking Water	Lead Testing in School and Child Care Program Drinking Water
Focus	Provide grants to eligible entities for use in carrying out projects and activities the primary purposes of which are to assist public water systems in meeting Safe Drinking Water Act requirements	Reducing lead in drinking water through drinking water infrastructure, treatment improvements, and facility remediation in schools and child care facilities	Funding to states and tribes to assist local and tribal educational agencies in voluntary testing for lead contamination in drinking water at schools and child care programs
Project Eligibility	Projects and activities eligible for assistance can include infrastructure projects; technical, managerial, and financial capacity building activities; and activities necessary for a state to respond to a contaminant.	Lead Service Line Replacement Projects or Lead in Schools and Childcare Facilities Projects	The EPA's 3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities guidance

DRINKING WATER STATE REVOLVING FUND

The Drinking Water State Revolving Fund (DWSRF) has provided loans that directly supported lead pipe replacement projects in cities across the United States. Over the years, EPA has provided states \$20 billion through the DWSRF program for infrastructure improvements, including lead service line replacement projects nationwide, totaling \$1.126 billion for the fiscal year 2019.

ELIGIBLE PROJECTS

- **Infrastructure Replacement:**
 - Complete service line replacement is an eligible DWSRF expense, regardless of pipe material and ownership of the property on which the service line is located. The entire service line from the public water main to the point it connects with premise plumbing is DWSRF-eligible.
- **Corrosion Control Optimization**
- **Lead Testing and Education**
- **Interim/Emergency Protocols**

APPLY FOR FUNDING

Water systems receive DWSRF assistance directly from state agencies. Each state has its own application procedure. You can visit the DE SRF program for program specifics.

CONTACT DELAWARE'S SRF PROGRAM AT:



Email: dhss_dph_dwsrf@delaware.gov



Website:
<https://www.dhss.delaware.gov/dhss/dph/hsp/dwsrf.html>

BIPARTISAN INFRASTRUCTURE LAW

There are still an estimated 6 to 10 million lead service lines in cities and towns across the country, many of which are in low-income neighborhoods and communities of color. The Bipartisan Infrastructure Law will deliver resources to remove these lead pipes, in line with President Biden's goal of removing 100% of lead service lines.

The Bipartisan Infrastructure Law invests \$15 billion towards Lead Service Line Replacement through the DWSRF. With this investment, 49% of funds will be provided to communities as grants or principal forgiveness loans, and 51% will be available to communities for low-interest loans, and state match is not required.

FY	Drinking Water SRF (supp)	Lead Remediation (DWSRF)
2022	\$1.902B	\$3.0 B
2023	\$2.202 B	\$3.0 B
2024	\$2.403 B	\$3.0 B
2025	\$2.603 B	\$3.0 B
2026	\$2.603 B	\$3.0 B

The BIL is the largest bucket of funding for LCRR through the DWSRF.

As you can see, the funding increases each fiscal year through 2026. Take some time to familiarize yourself with the different programs within the BIL.



FUNDING AND TECHNICAL RESOURCES FOR LEAD SERVICE LINE REPLACEMENT IN SMALL AND DISADVANTAGED COMMUNITIES

EPA developed this guide to help small and disadvantaged communities identify potential federal funding sources for lead service line replacement (LSLR) and technical assistance related to LSLR.



View the list of Federal Funding Programs by scanning the QR Code in the Appendix

HUD COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG)

The Community Development Block Grant (CDBG) program is flexible and provides communities with resources to address a wide range of unique community development needs. Beginning in 1974, the CDBG program is one of HUD's longest continuously run programs. The CDBG program provides annual grants on a formula basis to 1209 general units of local government and States.

CDBG is an important tool for helping local governments tackle serious challenges facing their communities. The CDBG program has made a difference in the lives of millions of people and their communities across the Nation.



ASSISTANCE FOR SMALL AND DISADVANTAGED COMMUNITIES GRANT

Authorized under the Water Infrastructure Improvements for the Nation (WIIN) Act, EPA's Assistance for Small and Disadvantaged Communities Drinking Water Grant program assists public water systems in underserved, small, and disadvantaged communities in meeting Safe Drinking Water Act (SDWA) requirements. The grant will include approximately \$42.8 million in funding for 2019.

For this Grant Program, a disadvantaged community is determined by the State to be disadvantaged under the affordability criteria established by the State under section 1452(d)(3) of the SDWA or may become a disadvantaged community due to carrying out a project or activity.

ELIGIBLE PROJECTS

A project in a small community is eligible for assistance if the community served has a population of less than 10,000 individuals and lacks the capacity to incur debt sufficient to finance a project to comply with the SDWA.

APPLY FOR FUNDING

The Grant Program is noncompetitive. Eligibility to apply for and receive funds is limited to the geographical 50 states, Puerto Rico, the U.S. Virgin Islands, Guam, American Samoa, the Commonwealth of the Northern Mariana Islands, and tribes within the U.S.

Applications from states are now being accepted at www.Grants.gov, CFDA 66.442.

Additionally, the Grant Program includes a tribal allotment of 2% of the funds appropriated. Federally recognized tribes can receive tribal grant funds to support community activities that meet the grant program's requirements.





LEAD TESTING IN SCHOOL AND CHILD CARE DRINKING WATER GRANT

Authorized under the Water Infrastructure Improvements for the Nation (WIIN) Act, EPA's [Lead Testing in School and Child Care Program Drinking Water Grant](#) creates a voluntary program to assist with testing for lead in drinking water at schools and child care programs. The grant will include approximately \$43.7 million in funding.

ELIGIBLE PROJECTS

Grant funds can be used to test under EPA's 3Ts for Reducing Lead in Drinking Water in Schools and Child Care Facilities guidance or applicable state regulations or guidance regarding reducing lead in drinking water in schools and childcare programs that are not less stringent.

These grant funds may be used for testing in school and childcare facility efforts. This may include sample collection and analysis, first draw and flush sampling, the development of sampling plans, training in preparation of sampling, communication-related to sampling efforts, use of a contractor to support sampling efforts, and sampling after remediation.

Grant funding cannot replace fountains, fixtures, lead lines, or any remediation activity.

APPLY FOR FUNDING

The Grant Program is noncompetitive. Eligibility to apply for and receive funds under the grant program is limited to the 50 states, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, and the Northern Mariana Islands. Please take a look at the state agencies implementing this grant program.

Additionally, 6.44 percent of appropriated funding will be distributed to assist tribal education agencies (including Alaska Native Villages) in testing for lead contamination in drinking water at schools and childcare programs.



REDUCING LEAD IN DRINKING WATER GRANT

In 2018 and 2019, Congress appropriated \$25 million, authorized under the Water Infrastructure Improvements for the Nation (WIIN) Act, for reducing lead in drinking water across the country, including activities such as complete lead service line replacement. Section 2105 of the WIIN Act, Reducing Lead in Drinking Water, creates a new EPA grant program for lead reduction projects.

This grant program is designed to facilitate reducing lead in drinking water in disadvantaged communities through infrastructure and treatment improvements or facility remediation in schools and childcare facilities.

These projects aim to address conditions that contribute to increased concentrations of lead in drinking water.

ELIGIBLE PROJECTS

Eligible projects include projects or activities that primarily aim to reduce lead concentration in water for human consumption.

Priority will be given to disadvantaged communities with an action level exceedance in the last three years or to address lead levels in school, daycare, or another facility primarily serving children.

ELIGIBLE ENTITIES

- Community water systems
- Non-governmental organizations
- Tribal water systems
- Nontransient noncommunity water systems
- Municipalities or States
- Interstate or inter-municipal agencies





WATER INFRASTRUCTURE FINANCE AND INNOVATION ACT (WIFIA)

Established by the Water Infrastructure Finance and Innovation Act of 2014, the WIFIA program is a federal loan and guarantee program administered by EPA. WIFIA provides long-term and low-cost supplemental credit assistance for regionally and nationally significant projects. The WIFIA program has an active pipeline of pending applications for projects that will result in billions of dollars in water infrastructure investment and thousands of jobs.

ELIGIBLE ENTITIES

- State
- SRF programs
- County
- Municipal
- Tribal
- Utilities

FUNDING SOURCES FOR SCHOOLS AND CHILDCARE FACILITIES

EPA has compiled a list of funding sources for improving drinking water quality in schools and childcare facilities. This compiled list of 200 sources is from federal partners, associations, non-profits, and organizations. These can be used to test drinking water, implement remediation measures, and replace old plumbing fixtures and service lines.



View the list of Potential Funding Sources for Reducing Lead in Drinking Water in Schools & Child Care Facilities by scanning the QR Code in the Appendix.

CORONAVIRUS STATE AND LOCAL FISCAL RECOVERY FUNDS PROGRAM

Established by the American Rescue Plan of 2021, the Coronavirus State and Local Fiscal Recovery Funds Program (SLFRF) provides resources to state, local, and tribal governments nationwide to maintain vital public services and support recovery from the COVID-19 pandemic. Eligible uses for SLFRF funds include investment in water infrastructure to improve access to clean, safe drinking water.

WATER TECHNICAL ASSISTANCE

OVERVIEW

EPA's free water technical assistance (TA) supports communities in identifying water challenges, developing plans, building technical, financial, and managerial capacity, and developing application materials to access water infrastructure funding. EPA collaborates with states, tribes, territories, community partners, and other key stakeholders to implement water TA efforts.

The result: more communities with applications for federal funding, quality water infrastructure, and reliable water services.

TA SUPPORT

EPA has a history of providing water TA to support communities to build their capacity and address compliance challenges—and is now expanding its TA efforts to help more communities. The [Bipartisan Infrastructure Law](#) presents an unprecedented opportunity to address water infrastructure needs by providing \$50 billion in new funding, the most significant federal [investment in water](#) in our nation's history. New and existing EPA water TA programs will be utilized to support the effective implementation of the Bipartisan Infrastructure Law.

- Communities may request (subject to availability) free EPA water TA by filling out a simple interest form.

WHO CAN RECEIVE WATER TA SERVICES?

- Local governments/communities
- Drinking water utilities/systems
- Wastewater utilities/systems
- Stormwater utilities/systems
- States, tribes, territories
- Non-governmental organizations (in pursuit of Clean Water SRF financing)

SERVICES PROVIDED

EPA Water TA provides various services to address water and wastewater challenges.

These services include:

- Identifying water infrastructure or water quality improvement needs,
- Planning for capital improvements,
- Building technical, managerial, and financial capacity, and
- Preparing and developing application materials for financing a project through the State Revolving Funds (SRF) and other EPA-supported funding opportunities.

Challenges that TA can help your community address include:

- Lead service line identification and replacement, among others



View for more information about the Water Technical Assistance Program by scanning the QR Code in the Appendix



FUNDING LANDSCAPE IN DELAWARE

The Bipartisan Infrastructure Law (BIL) appropriated 15 billion dollars nationwide over the next five years. The EPA will administer the money through the state Drinking Water State Revolving Funds (DWSRF) through the Department of Natural Resources and Environmental Control (DNREC) and the Department of Health and Social Services (DHSS).

The following section is an overview of Delaware's DWSRF Programs, including supplemental funding from the Bipartisan Infrastructure Bill (BIL), the application criteria, the Annual Project Priority List (PPL) Process, and what to expect throughout the loan process.

SECTION HIGHLIGHTS

- Drinking Water SRF Program Overview
- DWSRF Annual Project Priority List (PPL) Process
- DWSRF Loan Approval Process
- Binding Loan Commitment, Loan Agreement, & Closing Process
- Loan Reimbursement and Repayment Process
- DWSRF Bidding and Contracting Process
- Other DWSRF Grant and Funding Programs



View more information about Delaware's Drinking Water State Revolving Fund by scanning the QR Code in the Appendix

DRINKING WATER SRF OVERVIEW

DNREC and DHSS jointly administer the Drinking Water SRF programs.

- **DWSRF- Base Program \$7,000,000 (2022)**
- **BIL - Supplemental Funding - \$17,992,000 (2022)**
 - **Lead Service Line Replacement - \$28,350,000 (2022)**

SOLICITING FOR DRINKING WATER PROJECTS

Once a year, project Notices-of-Intent (NOIs) are solicited for drinking water projects. SRF funding workshops typically occur in January, and pre-application or NOIs are solicited in February or March. Drinking Water NOIs are ranked and scored to prepare DWSRF Project Priority Lists (PPLs).

These are ranked on our PPL and submitted to the EPA with our grant application. Once the award is granted, the SRF can provide it as loans or subsidized loans to water systems. Specific to awards from the Lead Service Line Replacement (LSLR) Bipartisan Infrastructure Law (BIL) grant, systems must manage projects to ensure that any work outside LSLR is identified and utilized by the other BIL buckets of funding. Only LSLR work can be funded from the LSLR BIL funds.

The following page includes a non-exhaustive list of DWSRF-eligible projects and activities under the BIL DWSRF LSLR capitalization grants.

- For a project or activity to be eligible for funding under this appropriation, it must be otherwise DWSRF eligible and be an LSLR project or associated activity directly connected to the identification, planning, design, and replacement of lead service lines.
- Any project funded under this appropriation involving replacing a lead service line must replace the entire lead service line, not just a portion, unless a portion has already been replaced.



FOR DELAWARE-SPECIFIC QUESTIONS

Office of Drinking Water:
302-741-8630

Drinking Water State Revolving Fund:
302-744-4817
dhss_dph_dwsrf@delaware.gov

Office of Engineering:
302-741-8640



The rest of the pages in this section are highlights from the SRF Funding Workshop.



View SRF Funding webinar slides in the Chapter 7 resources by scanning the QR Code in the Appendix.

FROM THE DWSRF SET-ASIDES:

- Planning and design for LSLR infrastructure projects
- Developing or updating lead service line inventories, including locating and mapping lead service lines
- Providing technical assistance to small water systems undertaking lead service line inventories or construction projects
- Funding state staff and contractors to work on LSLR education, outreach and inventory plans, etc.
- Non-routine lead sampling (if not for compliance purposes)

FROM THE DWSRF INFRASTRUCTURE FUND:

- Complete removal of lead service lines (public and privately owned portion) or service lines made of galvanized iron or galvanized steel (that are currently or have previously been downstream of lead components) and replacement with a pipe that meets the requirements established under 40 CFR 143 and which complies with state and local plumbing codes and or building codes
- Removal of lead or galvanized goosenecks, pigtails, and connectors, and replacement with an acceptable material that meets the requirements established under 40 CFR 143 and which complies with state and local plumbing codes and or building codes
- Replacement of curb stops, curb stop boxes, and other service line appurtenances that are removed as part of full LSLR
- Site restoration, including landscaping, sidewalks, driveways, etc., if the removal was necessary to replace the lead service line
- Permit fees if fees are usually required and specific to the LSLR. It is recommended that communities waive these fees.
- Temporary pitcher filters or point-of-use (POU) devices certified by an American National Standards Institute accredited certifier to reduce lead during or for a short period after LSLR projects.
- Develop or update lead service line inventories, including locating and mapping lead service lines.
- Methods of investigation to develop inventories could include visual observation, water quality sampling (non-compliance), excavation, vacuum or hydro-excavation, statistical analysis, or other emerging technologies.
- Planning and design for infrastructure projects listed above
- Non-routine lead sampling (if not for compliance purposes) as part of an LSLR project.

INCREASE INVESTMENT IN DISADVANTAGED COMMUNITIES

A key priority of BIL is to ensure that disadvantaged communities benefit equitably from this historic investment in water infrastructure:

- The BIL mandates that 49% of funds provided through the DWSRF General Supplemental Funding and DWSRF LSLR Funding must be provided as grants and forgivable loans to disadvantaged communities.
- The BIL also requires that at least 25% of funds provided through the DWSRF Emerging Contaminants Funding be provided as grants and forgivable loans to disadvantaged communities or public water systems serving fewer than 25,000 people.
- The SDWA requires states to define disadvantaged communities that can receive this additional subsidization.

TECHNICAL ASSISTANCE FUNDING

EPA recommends states use the entire DWSRF 2% small system technical assistance set aside and the newly available CWSRF 2% technical assistance funds to enhance or build programs that proactively identify, reach out to, and provide assistance to rural, small, and tribal publicly owned treatment works and drinking water systems, particularly in disadvantaged communities.

The programs should be designed to help disadvantaged communities identify needs, develop projects, apply for funding, design and implement projects, build capacity, and create training and career pathways.





DWSRF INTEREST RATE POLICY

Project affordability criteria and interest rates apply to new public, private/public use, investor-owned, and private/private use CWSRF loan applications.

- Interest rates shall be set at 2.0 percent per annum.
- Administrative Fees shall be at 50% of the overall interest rate
- A lower interest rate may be made available based on projected residential user rates as a percentage of Median Household Income (MHI) above 1.5 percent and 3.0 percent for wastewater and drinking water user rates combined only after other alternatives such as extended repayment terms, principal forgiveness, or supplemental grants are exhausted.
- Proposed 0% interest rate for all LSLR loans

DWSRF AFFORDABILITY CRITERIA

Delaware has established affordability criteria to assist in identifying municipalities that would experience a significant hardship in raising the revenue necessary to finance wastewater projects. Affordability criteria for the DWSRF are based on income.

Income –1.5% of Median Household Income (MHI) will be considered affordable for wastewater or drinking water residential user rates; 3.0% of MHI will be considered affordable for combined wastewater and drinking water residential user rates.

Additional Subsidization –The State may provide additional subsidization to an eligible recipient that meets the Disadvantaged Community definition of the State.

DWSRF LOAN TERMS

- DWSRF loans are made at or below-market interest rates, at terms not to exceed the lesser of 20 years and the projected useful life (refer to the Interest Rate Policy effective January 1, 2021). 30-year loans are limited to specific entities that are considered disadvantaged.
- **Starting in 2023, the BIL LSLR loans are set at zero (0) percent interest fee.**
- The Base DWSRF funding assistance may subsidize at least 12% and up to 35% (of the capitalization grant award) for Disadvantaged Communities and 14% for initial financing/purchase/refinance loans under the Congressional Authority.
- The State shall use the Supplemental DWSRF funds to provide subsidies to eligible recipients through assistance agreements with forgiveness of principal or grants (or any combination of these) using 49% of the DWSRF capitalization grant.
- For the LSLR funds, 49% of the funds made available to each State for DWSRF capitalization grants shall be used by the State to provide subsidies to eligible recipients through assistance agreements with 100% forgiveness of principal or grants (or any combination of these).

DWSRF ANNUAL PROJECT PRIORITY LIST (PPL) PROCESS

PPL CRITERIA

The Standard Operating Procedures define the criteria for PPLs established by DNREC and DHSS. Projects are ranked by year of inception and then by the number of priority points. Generally, the highest-ranking project should deliver the greatest environmental and public health benefit to the State.

PRIORITY POINTS CATEGORIES

- I. Growth
- II. Affordability
- III. Quality Deficiencies
- IV. System Information
- V. Regionalization
- VI. Storage
- VII. Treatment
- VIII. Distribution
- IX. Source
- X. Safety & Vulnerability
- XI. Sustainability

DWSRF APPLICATION PROCESS

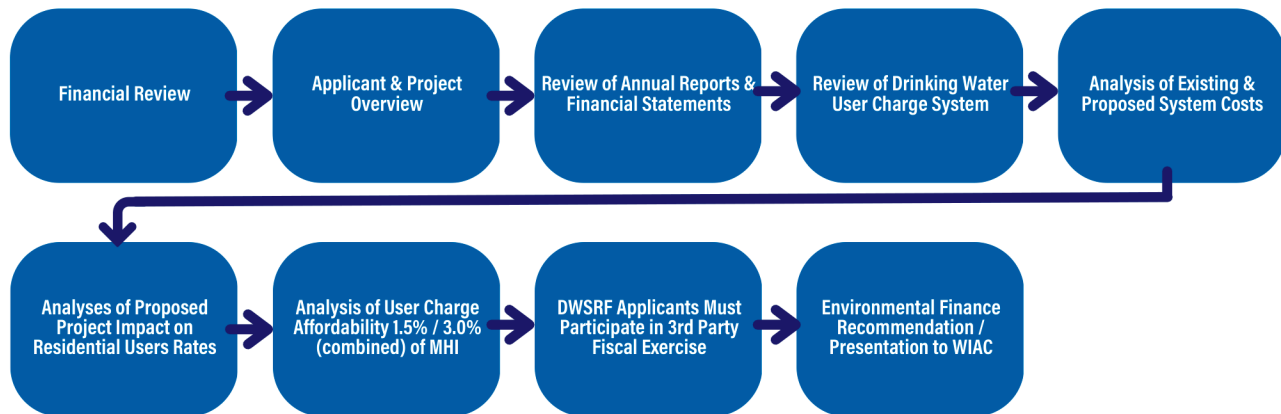
1. Projects on the fundable PPL will be solicited to apply for an SRF loan
2. SRF Loan applications undergo an engineering/technical review and loan underwriting process
3. The technical review consists of the following:
 - Review of Capacity Development Report
 - Environmental Review
4. The loan underwriting process consists of the following:
 - Financial review
 - Funding package proposal



Check out the Delaware DWSRF Ranking Criteria in the Chapter 7 resources section by scanning the QR Code in the Appendix.



DWSRF LOAN APPROVAL PROCESS



BINDING LOAN COMMITMENT, LOAN AGREEMENT, & CLOSING PROCESS

BINDING LOAN COMMITMENT LETTER

- The commitment of fund resources for the proposed project (borrower can solicit project construction bids)
- Project Description
- Loan Amount
- Loan Terms
- Estimated timing (120 days) to close the loan

LOAN CLOSING

- Typically, after project construction bids are solicited and accepted.
- Scheduled loan closing with legal counsel.
- Borrower incurs loan closing expense for borrower and fund.
- Financing Agreement—project description and budget, operation of the system, special covenants, loan disbursement schedule.
- A General Obligation Bond, or Revenue Bond, sets forth loan terms and a final maturity date.
- Final maturity date—cannot be extended once the loan is closed; therefore, if construction is delayed, the loan will be amortized over fewer years.



LOAN REIMBURSEMENT AND REPAYMENT PROCESS

LOAN REIMBURSEMENT

- Eligible project expenses must be incurred but are not required to be paid in advance
- A reimbursement draw requisition form must be used
- Copies of supporting project expenses should be included for the withdraw request



LOAN REPAYMENT PROCESS (DEPENDING ON LOAN AGREEMENT)

- Interest-only payments during project construction
- Amortized loan (principal and interest) repayment are due 6 to 12 months after the completion of the project
- Final Disbursement and Initiation of Operations
- Upon substantial completion and release of any retainage, recipients submit for final disbursement
- The project engineer will ensure that the program requirements are met and that all specifications have been followed

DWSRF PROGRAM REQUIREMENTS

- EO 11246 Equal Employment Opportunity –non-discrimination based on race, color, religion, sex, or national origin
- Requirement for Certification of Non-segregated Facilities
- Civil Rights Act of 1964
- Rehabilitation Act of 1973
- Delaware Prevailing Wage Regulations
- Davis-Bacon Wage Rates
- Build America Buy America (BABA) and American Iron and Steel (AIS)
- DBE (formerly MBE/WBE)
- Suspension and Debarment and other responsibility matters
- Two Project Signs (DWSRF Project and Investing in America)
- Access to Project Site
- Single Audit Requirement –Applies to loan recipients receiving federal assistance greater \$750,000+ threshold in a federal fiscal year.
- Prohibition on certain telecommunication & video surveillance services or equipment



DWSRF BIDDING AND CONTRACTING PROCESS

PROJECT BID PROCESS

- All plans and specifications must be reviewed and approved by program staff before advertisement.
- A mandatory Pre-Bid meeting must be held to explain program requirements to potential bidders at least 15 days before bid opening.
- The project is bid for a minimum of 30 days.
- Sealed bids are received and shall be opened publicly and read aloud at the time and place designated.

CONTRACT AWARD PROCESS

- Bids are tabulated, and the contract is awarded to the low-responsive bidder
- Bid Package submitted for approval must contain:
 - Bid tabulation
 - Certification of all Bonds
 - Certification that all easements have been obtained
 - Submission of required DBE documents (if applicable)
 - Other documents, as required
- Schedule and conduct a Pre-construction conference

CONSTRUCTION AND INSPECTION

- Monthly progress meetings must be held.
- The project engineer will conduct interim inspections to ensure compliance with the program requirements, and significant project delays or issues must be disclosed to the project engineer.



OTHER DWSRF GRANT AND FUNDING PROGRAMS

ASSET MANAGEMENT GRANTS - DWSRF

Asset management is the practice of managing infrastructure capital assets to minimize the total cost of ownership and operations while delivering the service level customers desire

- Must be a Publicly-Owned Drinking Water Utility
- Governing Municipal Government must sign a five-year agreement with DWSRF to develop and implement a system-wide Asset Management Plan based on the following core components:
 - Asset Inventory
 - Level of Service
 - Critical Assets
 - Revenue Structure
 - Capital Improvement Project Plan
- A municipality may contract with consulting firms following their procurement procedures; however, the scope must be approved by DWSRF before solicitation.
- No cash match is required for up to a \$100,000 municipal planning grant to develop and implement an Asset Management program.
- Required to annually submit an annual Asset Management Plan for the 5-year grant agreement
- Insurance Requirements apply to the program.

DRINKING WATER MATCHING PLANNING GRANTS -DWSRF

- Patterned after the Wastewater Matching Planning Grant Program, funded by the DWSRF Non-Federal Administrative Account
- The program is designed to assist municipal and county drinking water utilities relative to determining infrastructure needs and conducting feasibility studies
- Funding can be used to assist with drinking water planning in general and for specific project planning and designs necessary to submit a loan application for DWSRF funding consideration
 - SFY 22 allocated \$300,000 for programs
 - 50% cash match required
 - Grant applications may be submitted at any time and will be reviewed at the next WIAC meeting, as allocated balances allow
 - Insurance Requirements apply to the program



APPENDIX

To reduce the size of the manual we uploaded several resources referenced throughout this manual to a webpage.

Scan this QR Code to view additional resources, toolkits, templates, and guides.



