LEAD AND COPPER RULE REVISION REFERENCE GUIDE

Circuit Rider Edition
Based on EPA Guidance
Released in 2022

120Water™

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LCRR REFERENCE GUIDE

In August 2022, the Environmental Protection Agency (EPA) released a Lead and Copper Rule Revisions (LCRR) guidance and template to support utilities and states with their Service Line Inventory (SLI) efforts.

120Water developed this quick reference guide for circuit riders to educate rural water systems about the LCRR and the options available for compliance.

IMPORTANT DATE TO KNOW

Every public water system must compile and manage a preliminary inventory of public and private portions (including all commercial and residential) of all service lines within their service area by October 16, 2024.

STATE-SPECIFIC REQUIREMENTS

In August 2022, the Environmental Protection Agency (EPA) released guidance and a sample template to support utilities and states with their Service Line Inventory (SLI) efforts. The EPA deadline for the SLI submission is October 16, 2024.

LCRR definitions and requirements may vary state-to-state. 120Water is developing a web-based interactive map that will provide state-specific SLI resources in an easily accessible format.

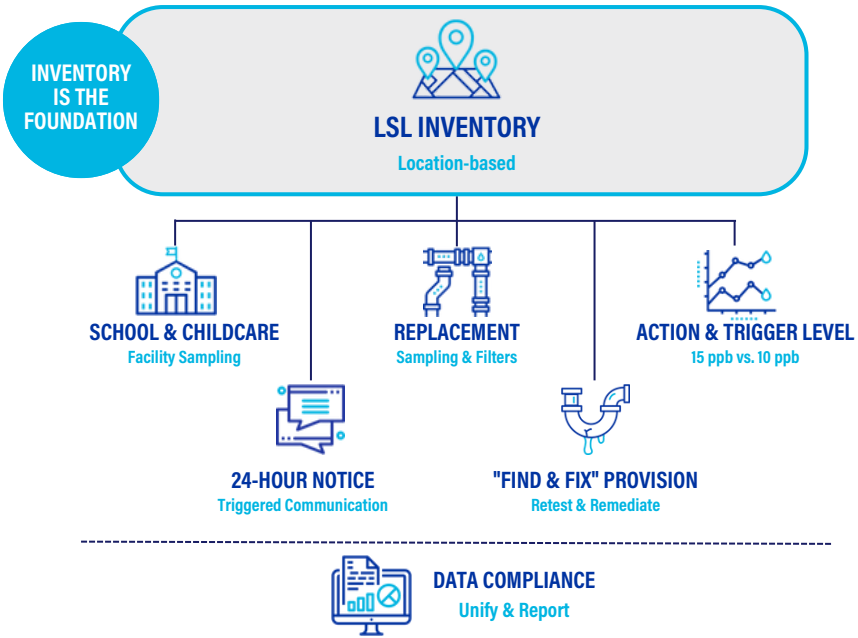
Water systems should confirm with their regulatory agency for state-specific information.

SCAN THE QR CODE WITH YOUR PHONE'S CAMERA

INVENTORY BASICS

INVENTORY IS THE FOUNDATION

The preliminary service line inventory is the basis for compliance. 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.



INVENTORY BASICS

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

FOUNDATIONS OF SUCCESSFUL INVENTORY

DOCUMENT SERVICE LINES DURING ROUTINE FIELD OPERATIONS

PARTNER, COLLABORATE, AND EDUCATE

DEVELOP STANDARDIZED DATA-ENTRY METHODS

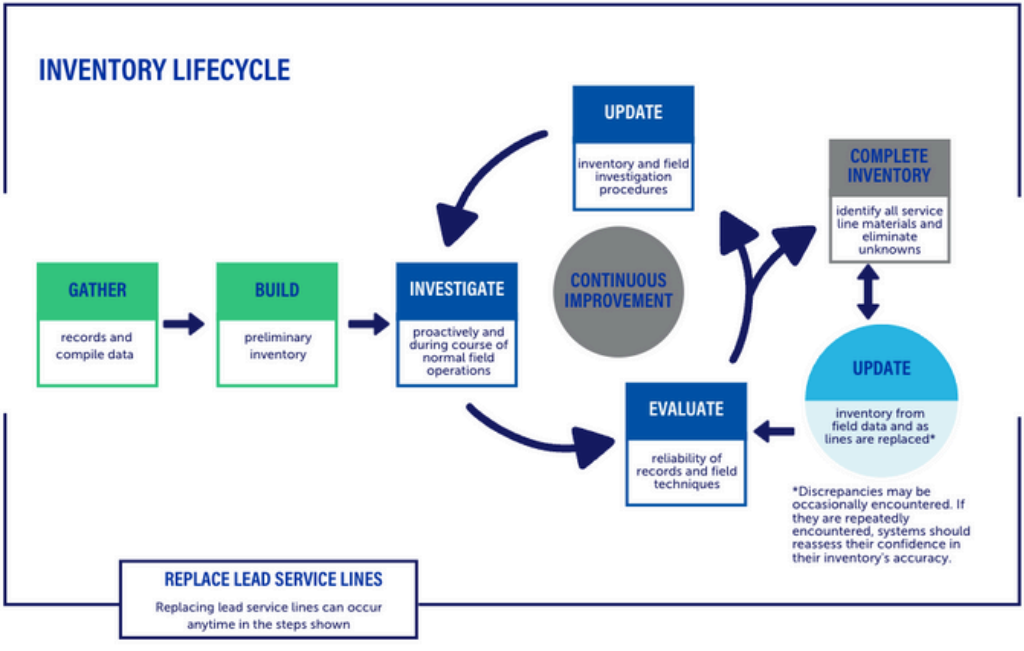
PITFALLS TO CONSIDER

What should you warn systems about?

- Time management
- Siloed work. Build partnerships and a support team
- Not communicating now. Build trust with consistent, frequent, transparent communication.
- Labeling too many service lines as unknowns
- Not developing a process to collect and manage data.

INVENTORY LIFECYCLE

You will continuously improve the inventory as you collect new and better data. You will gather information, build the initial inventory, investigate service lines proactively and during normal field operations, evaluate the reliability of records and field investigations, update the inventory, and ultimately complete the inventory for 100% known service lines.



INVENTORY BASICS

GATHER

Gather existing records and data

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.

EXAMPLES WHERE TO FIND DATA

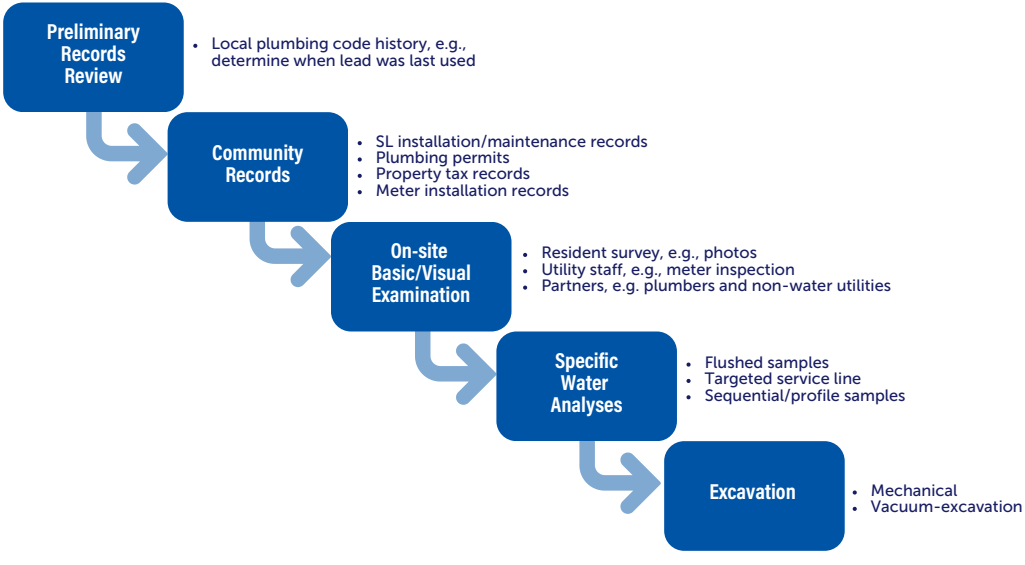
- Billing records
- Sampling/LIMS data
- GIS records
- Work order records
- Capital projects data
- Tier site information
- Schools and daycare facilities
- Contractor knowledge (plumbers, inspectors)
- Compliance reports
- Tap cards
- Paper records
- As-builts
- Tax parcel data
- Engineering schematics
- Inspection records
- Meter install dates

INVENTORY BASICS

SOURCES	DESCRIPTION	POSSIBLE LOCATIONS
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	Water system / municipal water department, municipal building permit / code enforcement department
Service card or ticket	Subsequent to installation, repairs or replacement activity conducted by the water system describe action taken	Water systems / municipal water department
Construction records	Major main repair and construction project records will identify services replaced by those projects	Water system / municipal water department, municipal planning department (new subdivision construction)
Plumbing permits	Water system or local plumbing codes may require plumbers to obtain permits to replace service lines	Municipal building permit / code enforcement department, water system / municipal water department
CONSTRUCTION PRACTICES		
Utility construction standards and specifications	Water systems provide their own staff, contractors, and plumbers with standards for construction including service lines	Water system / municipal water department's administrative records; governing body (city or town council, etc.) records
Plumbing code; local ordinance	State and community plumbing codes specify, often by reference, pipe standards and specifications	Municipal building permit / code enforcement department administrative records; governing body records; agency overseeing state plumbing code's administrative records
Field experience	Interviews with experienced water system distribution system field staff and plumbers active in the system's service area	Existing and retired water system personnel; local plumbing companies; local plumbers union
Summary notations of practice	Reports to governing bodies, internal memoranda, purchasing records, annual reports, etc.	Water systems / municipal water department
PARCEL RECORDS		
Tax records	Municipal tax records provide a database that typically contains the date of home construction	Municipal tax assessor's office; centralized municipal government GIS office
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	Water systems / municipal water department
Capital improvement plans and maps	Historical CIPs can provide insight into historical installation patterns; current CIPs can be used to inform field investigations	Water systems / municipal water department
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	Municipal planning departments, regional planning agencies, public library, local historical society
Newspaper accounts	Changes in policy on topics of interest to the public, like lead, are sometimes captured in local media accounts	Newspaper, public libraries, local historical society

STEPWISE APPROACH

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



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

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

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.

RECOMMNEDED SUBCLASSIFICATIONS

Lead Status Unknown's "LSL Likelihood"

Examples:
- Unknown-Unlikely Lead
- Unknown-Likely Lead

GRR Known or Unknown to Have Been Downstream of an LSL

Track and differentiate GRR indicate:
- 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

CLASSIFICATION

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

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

INVENTORY BASICS

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. You can proactively track service line material(s) encountered during normal field operations and where the ownership is divided, including 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 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

Your LCRR team should evaluate which LSL identification method is best for your water system and evaluate the reliability of your records if you find multiple discrepancies.

Below is a table that compares each service line identification method. 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

BEST PRACTICES

KNOWLEDGE IS POWER

- Know your state's lead ban
- Know your state's compliance dates
  - Some states differ from the EPA's October 16, 2024 deadline.

SCAN THE QR CODE TO VIEW 120WATER'S STATE-SPECIFIC INFORMATION

FUTUREPROOFING

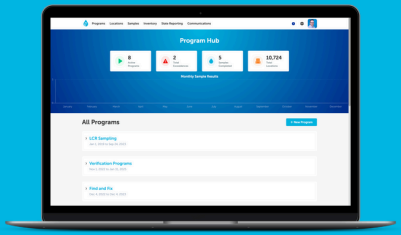
While you are collecting data for the preliminary inventory, you can future-proof yourself by identifying other service line materials relevant to lead levels, including brass, lead alloy, tube alloy, all galvanized, pigtails or gooseneck, copper and lead solder, and detail actual materials for non-lead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

OPTIMIZE NORMAL FIELD OPERATIONS

Water systems should identify and track service line materials to build their preliminary inventory as they are encountered during routine operations.

MANAGE YOUR LCRR WITH TRUSTED PARTNERS

120Water is National Rural Water Association's trusted advisor and partner who assists utilities with water programs nationwide.

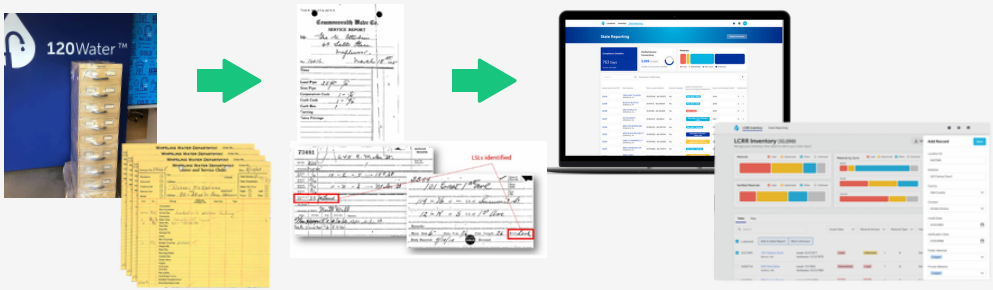


LEAN ON TECHNOLOGY

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

Using a digital database (for example, 120Water) transforms your physical data assets speedily and at scale to inform your service line inventory.

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.



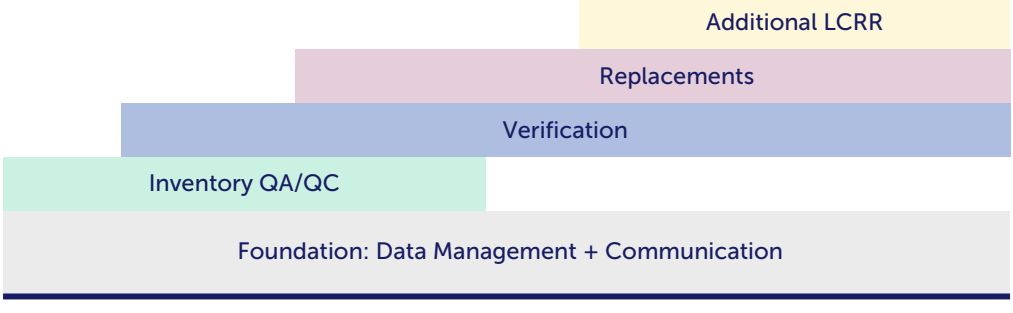
TIMING: SEQUENCE YOUR LCRR PLAN

Every water system's LCRR Plan will look different from one another. Water systems will develop a plan that makes logical sense based on existing knowledge and the current operations of that specific system.

The first major hurdle in compliance is meeting the October 16, 2024, deadline. Achieving this and all future compliance requirements depends on your team managing the timeline.

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.

The graphic below shows how the LCRR requirements overlap on the timeline versus completing them in a series and some elements will continue throughout the duration of the timeline.



BEST PRACTICES

AM I ON THE RIGHT TRACK?

Water systems may feel overwhelmed with the new revisions and need guidance on where to start. 120Water offers a free LCRR Planning Assistance Session that connects you with one of our state-specific experts to learn more about the revisions, identify resources you may already have, and receive clear guidance on your best next steps.

ABOUT THE LCRR PLANNING SESSION:

With so much to do in such little time, our state specialists can offer 1:1 guidance on how you can start building your preliminary inventory with the data and tools you already have at your disposal today.

After the session, our team can make solution recommendations where relevant, which may include solutions provided by 120Water or members of our partner network.

Book a free Planning Assistance Session here:
https://120water.com/lcrr-assistance/

Here's what you'll walk away with from this free 30-minute session:

- A detailed overview of LCRR and the definitions of compliance
- Comprehensive understanding of where you are at in the LCRR journey
- Identify data and resources you already have and can start using to build your preliminary inventory
- Insights into what other utilities are doing to tackle LCRR and any state-specific guidelines
- Best practices for managing your data
- Clear vision and recommendations for best next steps

TO INVENTORY AND BEYOND! WEBINAR SERIES

In May 2023, 120Water offered a weekly webinar series: To Inventory + Beyond, covering the following topics:

- Verification Methods + Fireside Chat with Buffalo Water
- Replacement Plan Best Practices + LSLRP Insights from Pittsburgh Water and Sewer Authority
- Lead in Schools and Childcare Facilities
- How Technology Can Make Your Data Actionable + 120Water Software Demo

SCAN THE QR CODE TO ACCESS WEBINARS

BEYOND INVENTORY

7 SUBSTANTIAL LCRR CHANGES

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 (LCRR) to further protect children and communities from lead exposure.

The EPA considers the LCRR part of a series of "long-term" revisions to significantly reduce water contaminants, enhance education, and protect children at schools and daycare facilities. The LCRR includes the seven key updated areas shown below.

LSL INVENTORY
Due Oct 16, 2024
(in most states)

ACTION & TRIGGER LEVEL
15 ppb, 10 ppb

"FIND & FIX" PROVISION
5 days

DATA COMPLIANCE
Store & Report

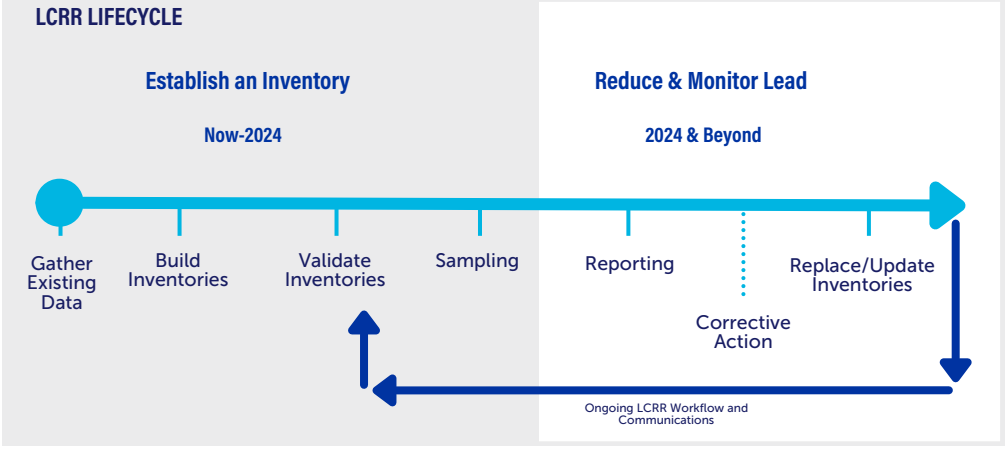
TRANSPARENT NOTICE
24 hour notification

SCHOOL & CHILDCARE
Facility Sampling

REPLACE LSLS
No "test out"

LCRR LIFECYCLE

Between now and the inventory deadline, October 16, 2024, water systems must gather data, build and validate inventories, and begin sampling under the new LCRR protocols. However, the work doesn't end on the October deadline. Instead, the LCRR workflows and communications continue while the focus shifts to reducing and monitoring lead service lines, which includes reporting, corrective action, inventory updates, and lead service line replacements.



BEYOND INVENTORY

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.

THREE TYPES	CONSIDERATIONS	FACTORS

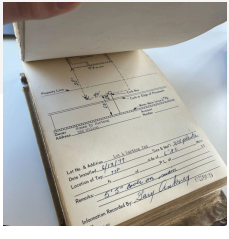
• Digital
• Interior
• Exterior
	• Which practices make most sense
	  ◦ Staff
	  ◦ Budget
	  ◦ Community
	• Utility control vs. rely on community actions
	• Some time- and cost-effective vs. a lot of money and time-intensive
		• Inventory goals – Compliance or LSL removal
		• Meter location
		• SL ownership
		• Budget and resources
		• Community and demographics

DIGITAL VERIFICATION METHODS

Digital ways to validate data are valuable if the PWS has access to robust digital and physical datasets.

DATA MINING OF EXISTING INTERNAL & EXTERNAL DATABASES

- GIS
  - Work order that indicate SL materials
- Digital billing
  - Gather addresses
- Outside community agencies
  - List of schools and daycares

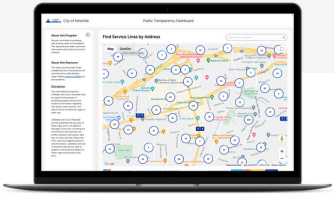


PHYSICAL ASSET DIGITIZATION AND TRANSCRIPTION

- Tap cards and as-built records
  - Recommended best practice
- Turning paper-based records into fully digital database
- Requires scanning and transcribing the record, then standardizing the data to match the state reporting template
  - Attach scans to the location record

PREDICTIVE MODELING

- Looks for patterns in data and predict outcomes
- Use attributes from known SL materials at specific locations to infer unknowns
- Compile several layers of data then estimate the probability that a service line is a lead, which can help systems prioritize their investigations.



BEYOND INVENTORY

INTERIOR VERIFICATION METHODS

Interior verification methods are valuable if the resident population can be engaged to assist in mostly private-side data collection.

VISUAL INSPECTIONS

- Gather data during normal services
- Meter reads
- Repairs
- Replacements
- Inspections
- Door-to-door
- Request access to home or building

COMMUNITY PARTICIPATION

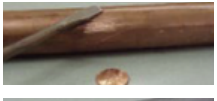
- Customer-side data
- Marketing & education materials
- Complete surveys
- Send photos
- Perform water tests
- Lead check swabs
- Schedule inspections

LEAD CHECK SWABS & MAGNETS

- Good if exposed lines
- Customer-friendly

WATER SAMPLING

- Targeted SL sampling
  - Flushing out the volume of water in the premise plumbing and collecting and analyzing a sample from the service line
- Flushed sampling
  - Collecting a sample from the customer's tap after a set flushing time *Simple, recommended at initial screening
- Sequential sampling
  - Uses series of consecutive sampling after from interior after stagnation period
  - Sampling 8-15 liters consecutively after 6 or more hours of stagnation



Lead	• Dull silver gray • Soft - easily scratched (appear shiny) • Magnet will not stick
Copper Pipes	• Copper/bronze color • Magnet will not stick
Galvanized	• Silver gray • Difficult to scratch • Magnet will stick

EXTERIOR VERIFICATION METHODS

Exterior methods are valuable if the PWS has a large capital budget and wants to optimize planned investments.

If a service line is not accessible for visual inspection, the water system may need to excavate soil and potentially remove portions of the road, sidewalk, or other obstacles to determine service line materials. Excavation methods require different levels of disturbance, time investment, and cost, as well as coordination with the property owner.

POTHOLING OR HYDROVACING

- Exposes a visible portion of the pipe without needing to excavate an entire yard
- Visual inspection and photos
- Less disruptive and cheaper than digging up entire SL

MECHANICAL EXCAVATION

- Requires backhoe or excavator
- Pros: results in higher accuracy
- Cons: labor- and time-intensive and possibly results in disturbance or damage to the yard, service lines, and nearby infrastructure

CAMERA CURB BOX INSPECTION

- Low-impact
- Con: locating/ accessing curb box and clear images

CAMERA PIPE SCOPE

- Fiber optics CCTV for visual inspections
- Pro: You can see the entire service line
- Con: Concealed pipe walls

SELF VERIFICATION WORKFLOW

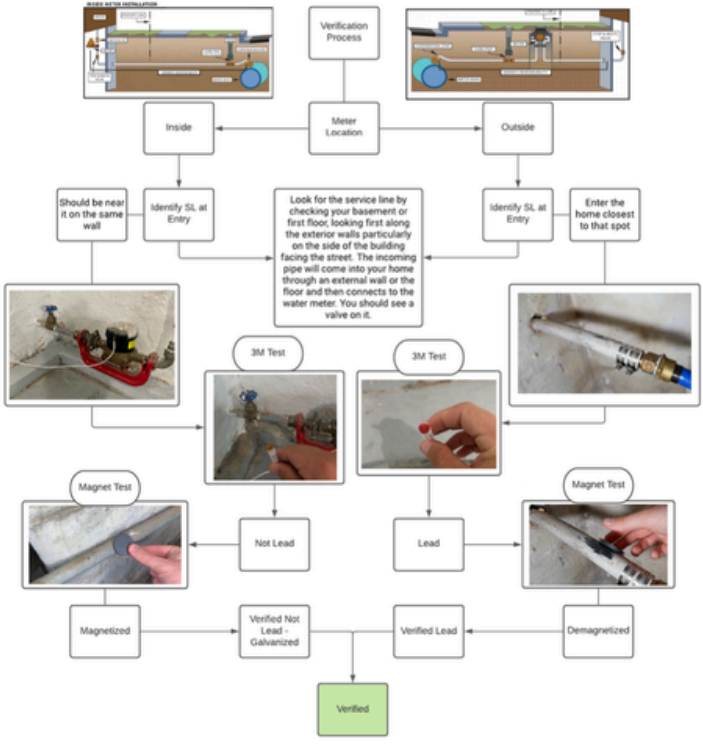
Gather private-side inventory data efficiently by engaging customers to self verify.

CENTRALIZE YOUR SERVICE LINE INVENTORY DATA

One central place to house all data is vital, keeping critical components together so you can manage ongoing compliance requirements, such as replacement programs, successfully.

CENTRALIZED + ORGANIZED DATA:

- Optimizes the private-side communication strategy
- Helps utilities prioritize replacement efforts
- Helps save time and money on unnecessary digs
- Creates long-term data management efficiencies



BEYOND INVENTORY

RESIDENTAL SAMPLING

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.

Action Level of 15 ppb = Same

New Trigger Level of 10 ppb = New

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

New Tier Sites

Previously, there were three tiers, defined in the "Old Requirements for CWS," but the EPA has redefined the first three and added two more for five tiers. The updated tier sites are shown under "New Requirements for CWS" and will go into effect after October 16, 2024.

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) • 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

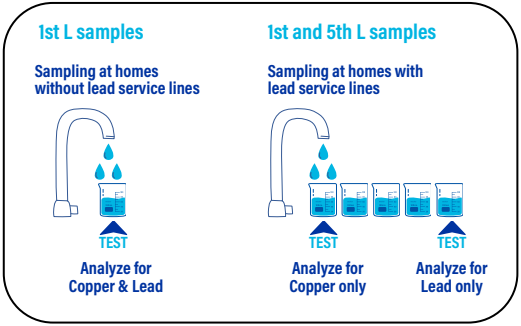
FIRST- AND FIFTH-LITER SAMPLING

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

(See the new tiers on the previous page)

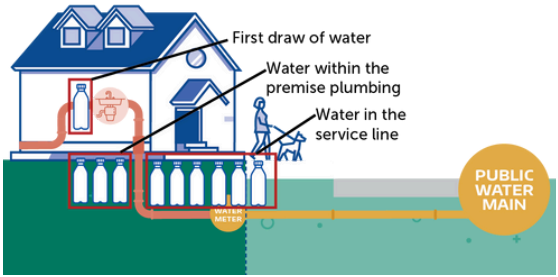


WHY THE FIRST- AND FIFTH-LITER SAMPLING?

Taking the first and fifth samples gives you more insights into your system!

Typically customers collect the first draw of water. However, a first-liter draw only tells us what's going on in the internal plumbing of the home's water lines.

Collecting a five-liter sample tells us what's going on deeper in the service line and can provide more accurate information.



BEYOND INVENTORY

FACILITY, SCHOOL, AND DAYCARE SAMPLING

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.

WHAT'S NEW:

- Its existence
- Sample 20% of Elementary Schools and 20% of all licensed childcare facilities in your service area each year over 5 years.
- Water system to provide results and public education to each sampled facility, primacy agency, and health department

RECOMMENDATIONS

- Does your primacy agency have a testing program that meets final LCRR requirements?
- Build a list of schools and licensed childcare facilities.
- Training & Education
- Sampling Schedule
- Notification with Stakeholders

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.

COMMUNICATIONS

Communication strategies are crucial to achieving LCRR compliance. Proactive communication 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.

WHAT'S NEW: CUSTOMER NOTIFICATIONS

- 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. If the population is greater than 50,000 inventory must be made available online.
- Water systems must provide public education materials when doing mandatory LSLR.

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

– Mike McGlll, President of WaterPIO

BEYOND INVENTORY

LEAD SERVICE LINE REPLACEMENT

WHAT'S NEW:

- LSLR Plan includes a replacement goal (percentage of required annual replacements) enacted by Trigger Level
- The partial replacement does not count toward the replacement rate
- Systems cannot "Test Out."
- Replacement based on the total number of LSLs, eligible galvanized, and unknown
- Follow-up samples and pitcher filter kits are required after the replacement.

NO LEAD SERVICE LINES?

You can submit approved/compliant evidence of no lead service lines to receive waivers with an "initial inventory" and methods used.

LSL REPLACEMENT PLAN

As it stands now, the LCRR mandates annual inventory updates and the creation of an LSL Plan. Additionally, replacement activities are tied to concentration levels.

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%).

HOW DO YOU FUND LCRR?

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

Government Subsidized Loans	Newer Sources	Government Grants

• Drinking Water State Revolving Funds (SRFs)
• Water Infrastructure Finance and Innovation Act (WIFIA)
• USDA Rural Development (RD)
	• Infrastructure Investment and Jobs Act
	  ◦ Drinking Water
	  ◦ Wastewater
	• American Rescue Plan Act
	  ◦ Coronavirus State and Local Fiscal Recovery Funds
		• Water Infrastructure Improvements for the Nation Act (WIIN Act)
		• Community Development Block Grant (CDBG) Program

POPULAR FUNDING OPTION

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 with $20 billion through the DWSRF program for infrastructure improvements, including lead service line replacement projects throughout the country, totaling $1.126 billion for the fiscal year 2019.

Applying for funding may be confusing and labor-intensive, but water systems should access experts within their state for guidance.

SOFTWARE & SERVICES

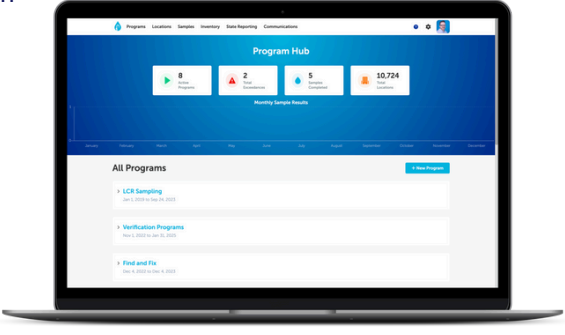
120WATER IS YOUR TRUSTED ADVISOR

120Water offers digital water solutions to protect public health and serve as water utilities trusted advisors. We offer software, services, and products to public and private water utilities, state agencies and SRFs, state and national industry associations, engineering and consulting firms, school and daycare facilities, and residential homeowners and renters.

SOFTWARE

120Water currently supports the management and data of the following programs:

- Lead and Copper Rule Revision
- School & Daycare Sampling
- Customer Relationship Management
- Water Quality Compliance



PRODUCTS

120Water provides the tangible, physical pieces necessary to fully run a program.

Examples include the following:

- USPS Letters & Postcards
- Lead Swabs
- Water Testing
- Pitcher filters/ replacement filters

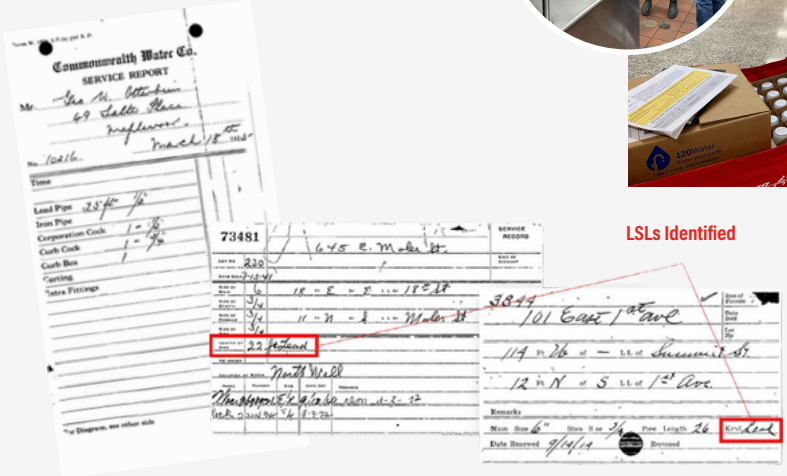
SOFTWARE & SERVICES

SERVICES

120Water's services can be used to enhance the software and products.

Services include the following:

- One-Time Services (such as digitization)
- Full Program Management
- Service Provider Network
- Predictive Intelligence



SOFTWARE & SERVICES

PRICING SCENARIOS

120Water is a digital water platform with cloud-based software, products — such as water testing kits, lead validation kits, and remediation kits — and services water systems and state agencies use to execute water quality programs.

120Water is the only solution for 100% compliance management of the EPA's revised Lead and Copper Rule.

They currently work with over 600 water systems ranging from rural water communities that serve less than 3000 - to cities like Denver, Pittsburgh, and Newark. They also manage city and statewide drinking water programs such as lead in schools and daycares.

UTILITY EXAMPLE 1	UTILITY EXAMPLE 2	UTILITY EXAMPLE 3
Serving 1,000 connections (or fewer)	Serving 1,001 - 5,000 connections	Serving 5,001 - 10,000 connections
$5,500	$10,000 - $15,000	$15,000 - $25,000

*Prices are examples only and are subject to change. The ranges do not include modeling, Rural Water Association discounting, kitting, or communication.

GLOSSARY

SERVICE LINE CLASSIFICATION DEFINITIONS

The following definitions are based on the EPA's LCRR Guidance. Some states have their own. Verify the definition your state is using before building your inventory.

LEAD

The service line is made of lead.

Keep in Mind:

- The LCRR updates the definition of an 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."

LEAD STATUS UNKNOWN

The service line material is not known to be a lead, GRR, or non-LSL, such as where there is no documented evidence supporting material classification.

Keep in Mind:

- Water systems can use the "unknown" terminology 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.

NON-LEAD

The service line determined through an evidence-based record, method, or technique that it is not lead or GRR.

Keep in Mind:

- 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 in solder, connectors, and other plumbing materials.

GALVANIZED REQUIRING REPLACEMENT

The galvanized service line is or ever was at any time downstream of an LSL or is currently downstream of a lead status unknown service line.

If the water system cannot demonstrate that the galvanized service line was never downstream of an LSL, it must presume there was an upstream LSL.

Keep in Mind:

- 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.

GLOSSARY

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.
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 applicable at the time of the replacement.
Galvanized service line	Iron or steel piping that has been dipped in zinc to prevent corrosion and rusting.
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.
Service line	The pipe connecting the water main to the interior plumbing in a building. 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.
Water meter	An instrument, mechanical or electronic, used for recording the quantity of water passing through a particular pipeline or outlet.

QUICK REFERENCE TO LCRR CHANGES

LEAD SERVICE LINE INVENTORY	PUBLIC COMMUNICATION
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. • Includes lead pipes, galvanized pipes previously connected to lead, non-lead pipes, and unknowns.	Systems must notify customers with individual LCR sample results over 15 µg/L within three days (72 hours).
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). • 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.	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.
Inventories must be made publicly available, and each customer serviced by an LSL or a line with an unknown material must be notified annually. • Over 50k population must be publicly available online.	You'll have to distribute annual notifications to customers served by known lead and unknown service lines.
Systems must develop a Replacement Plan by identifying an LSLI validation strategy and annual replacement goal.	Your LSLR plan must include targeted outreach when monitoring results if you exceed your trigger level.
	LSLI info must be made public and included in the CCR.
	Systems must provide public education materials when doing mandatory LSLR.

QUICK REFERENCE TO LCRR CHANGES, CONTINUED

RESIDENTIAL SAMPLING	SCHOOL & DAYCARE FACILITY SAMPLING
New Trigger Level of 10 ppb • The Action Level of 15 ppb remains the same at this time.	Identify – Every water system will be required to create an inventory of facilities they serve – elementary schools, middle schools, high schools, preschools, daycares, etc.
The monitoring schedule is based on the P90 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 ◦ You will be required to replace a minimum of 3% of your lead service lines annually.	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 • Secondary school sampling must also be provided when requested.
• 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, ◦ Reoptimize your corrosion control treatments, and ◦ Work with state officials to set an annual lead service line replacement goal.	Schools - Sample: • 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
New Tier Sites - The EPA redefined the first three and added two more for five tiers. • The list is based on the LSL inventory, and all Tier 1 samples must be collected from any home served by an LSL.	Child care facilities – Sample: • 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
	Share –The water system must provide results and public education to each sampled facility, primary agency, and health department.

ABOUT THIS LCRR REFERENCE GUIDE

The publication serves as a quick reference guide for circuit riders to use when educating rural communities about the Lead and Copper Rule Revision. This guide utilizes the EPA Guidance for Developing and Maintaining a Service Line Inventory, which may differ from certain states' guidance. Always be sure to check the specific rules in your state.

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