



Lead Service Line Inventory Overview

May 17th, 2023

Public Water Supply Section



What is a Lead Service Line Inventory?

- All Community and Non-transient, Non-community water systems must conduct an inventory of service line materials in their distribution system.
- In North Carolina, there are about **2,300** water systems who are required to do an inventory.
- The Lead Service Line Inventory will help identify and reduce potential sources of lead in drinking water.
- The inventory is the first step towards Lead Service Line Replacement. More detail to come when the Lead and Copper Rule Improvements are released.



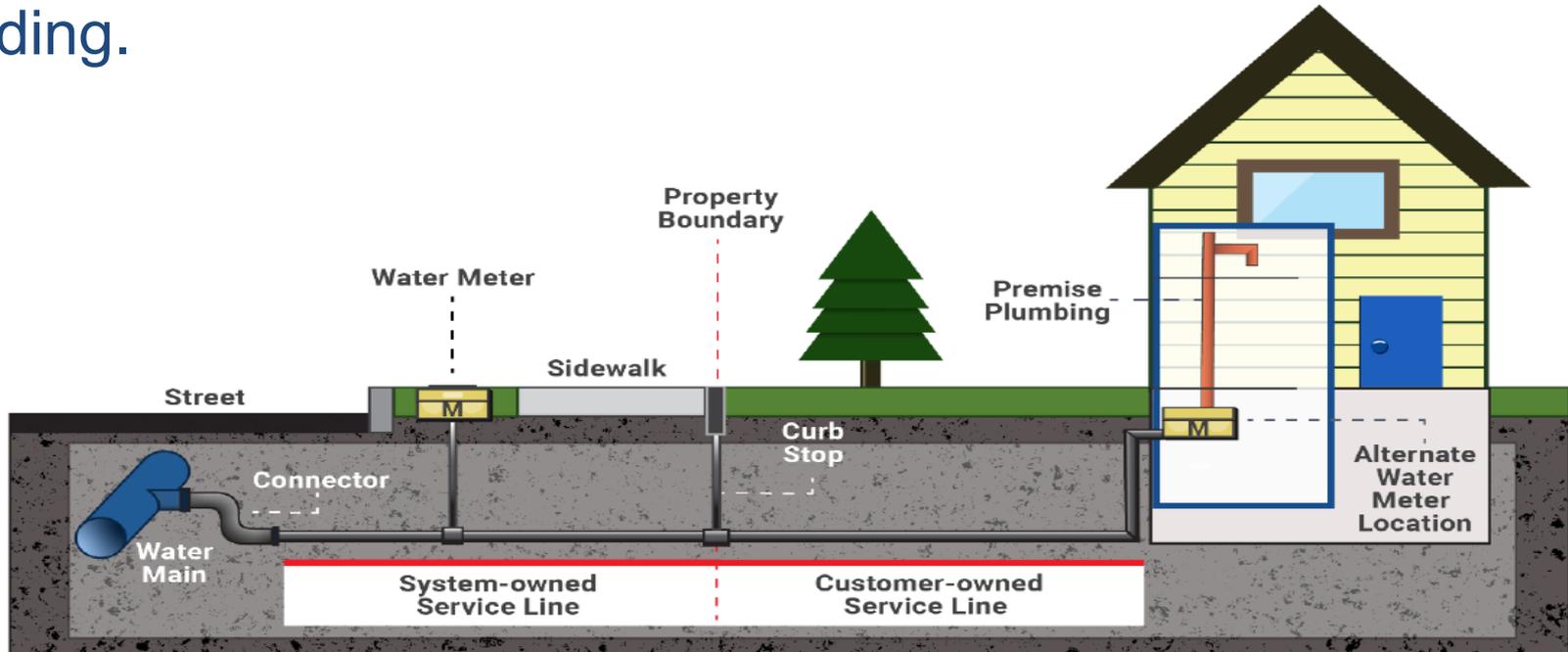
Inventory Requirements

- Initial inventory due by **October 16th, 2024**.
- All service line connections must be included regardless of ownership status.
- Include service lines intended for non-potable uses such as fire suppression.



Service Line Definition

- The pipe connecting the water main to the interior plumbing in a building.



- The service line may be owned only by the water system or customer or split between the water system and the customer.
- Follow local ordinance for access to private property.

Small System Guidance

- If the system owns the entire service line, use the same material classification for both “System-Owned” and “Customer-Owned”.
- When filling out the template inventory, classify **all** service lines.
- If the system is served by a direct connection to a well, classify the material from the well to the building inlet.
- EPA intends to release simplified guidance tailored to small CWSs and NTNC systems. More information to come.



Classification

- Service lines must fall into one of four categories:
 - Lead
 - Galvanized Requiring Replacement (GRR)
 - Non-lead
 - Unknown



Plastic



Scratched Lead



Copper



Galvanized Steel & valve

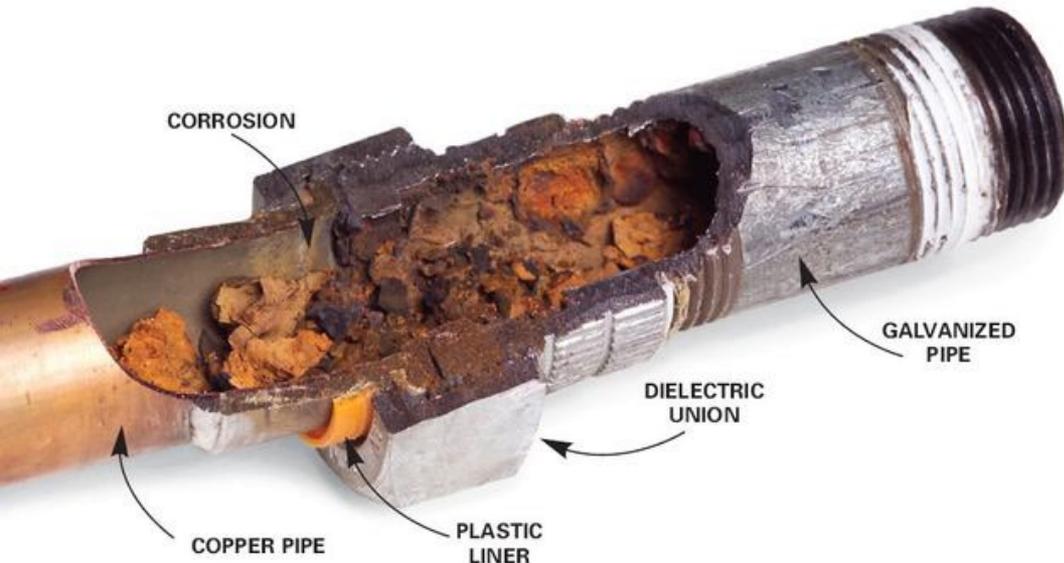
Lead

- If any portion of the service line is made of **lead**, it is a **Lead Service Line**.

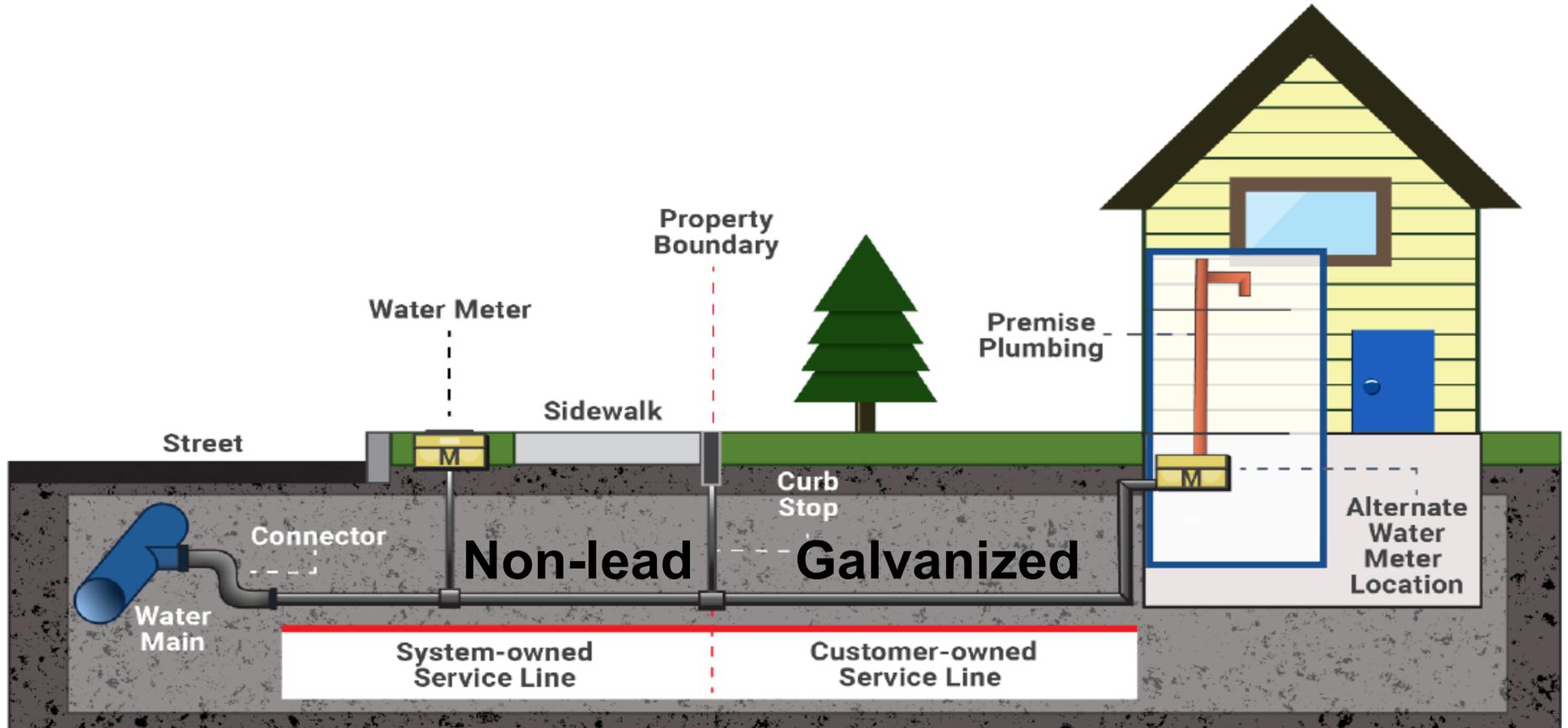


Galvanized Requiring Replacement

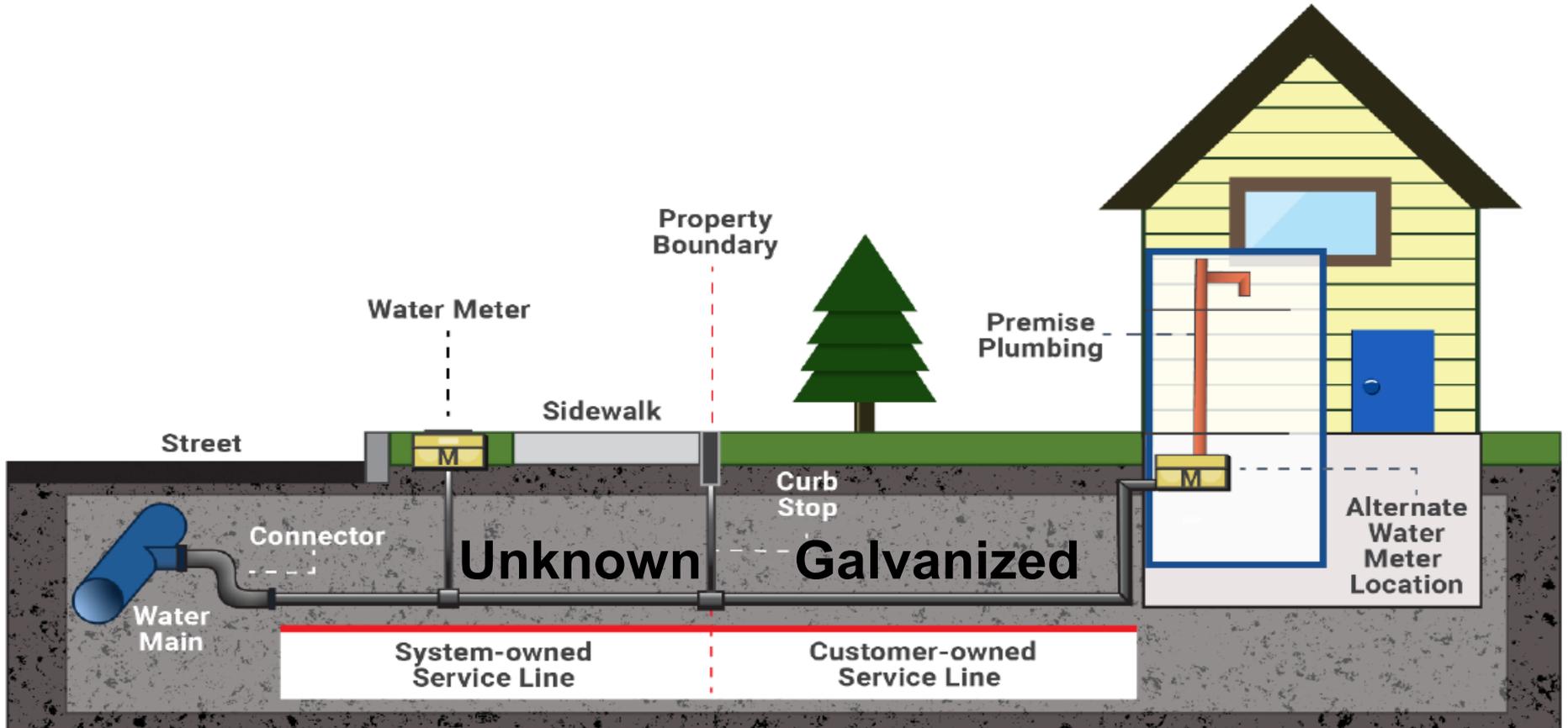
- If a **galvanized service line** is or ever was downstream of a **lead service line** or is currently downstream of an **unknown service line**, then the service line is **Galvanized Requiring Replacement**.
- If the water system is unable to prove that the galvanized service line was never downstream of a lead service line, then it must assume there was an upstream lead service line.



Galvanized Requiring Replacement



Galvanized Requiring Replacement



Non-Lead

- The service line is determined through an evidence-based record, method, or technique that it is not lead or GRR, then it is a **Non-lead Service Line**.
- Non-lead options on template:
 - Galvanized
 - Non-lead - Plastic
 - Non-lead - Copper
 - Non-lead - Other



Unknown

- If the service line material is not known to be a lead, GRR, or non-lead service line, then it is a **Lead Status Unknown Service Line**.
- Unknown options on template:
 - Unknown – Likely Lead
 - Unknown – Unlikely Lead
 - Unknown – Lead Status Unknown

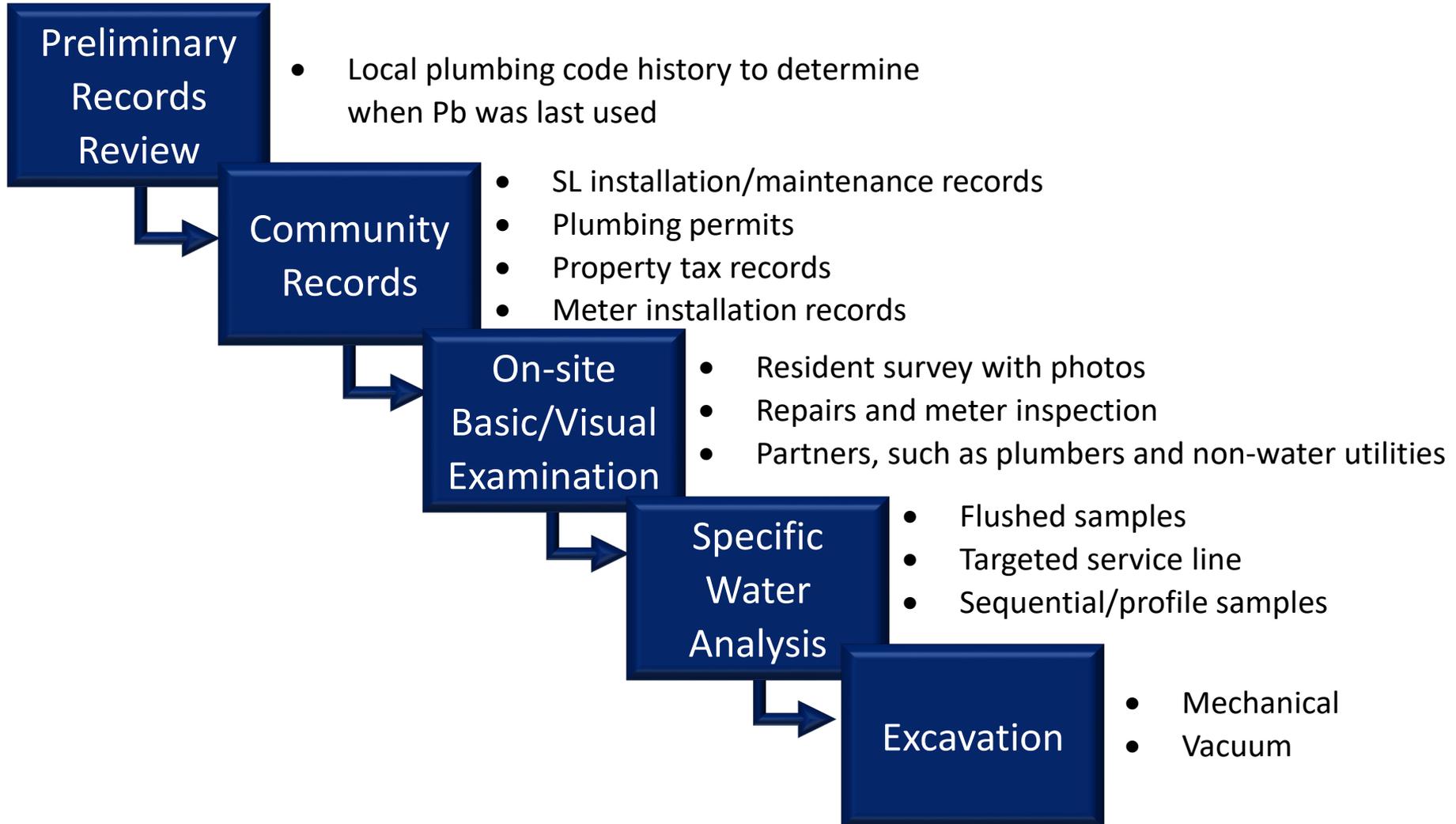


Goosenecks, Pigtails, & Connectors

- Lead goosenecks, pigtails, or connectors **do not** count towards lead or GRR service lines for **inventory** purposes.
- Lead goosenecks, pigtails, or connectors may be eligible for **funding**.
- Water system must replace any lead gooseneck, pigtail, or connector it owns when encountered. Water system must offer to replace a customer-owned one but is not required to pay.



Methodology



Historical Records Review

Required by the LCRR

- Previous Materials Evaluation
 - Construction Materials Report
- Construction Records and Plumbing Codes
 - Lead Ban Date: **March 1987**
 - Pipe Diameter: **>2 in**
- Water System Records
 - Maps
 - Installation Records
 - SOPs
- Distribution System Inspection Records
 - Responses to leaks
 - Meter investigations



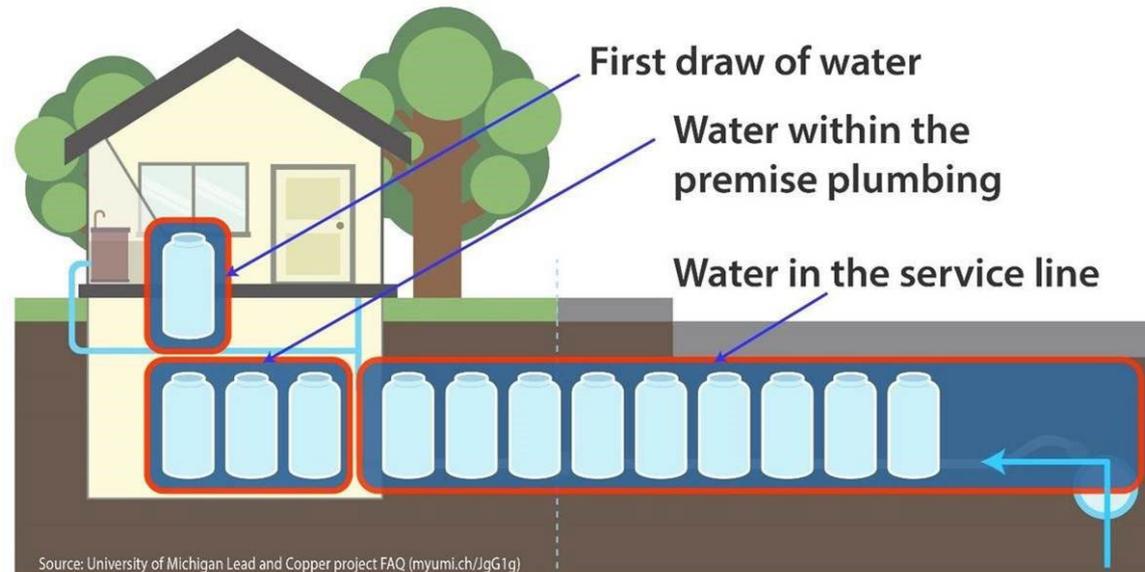
Visual Inspection

- Customer Survey
 - Send instructions on what to look for
 - Consider having photos submitted
- Inspections at meter box
- Inspections during routine maintenance
- Partner with plumbers and other utilities



Water Quality Sampling

- Targeted sampling
 - Flush volume of water in the premise plumbing and collecting and analyzing a sample from the service line.
- Flushed sampling
 - Collect a sample from the customer's tap after a set flushing time.
- Sequential sampling
 - Uses a series of consecutive sampling collected from an interior tap after a stagnation period.



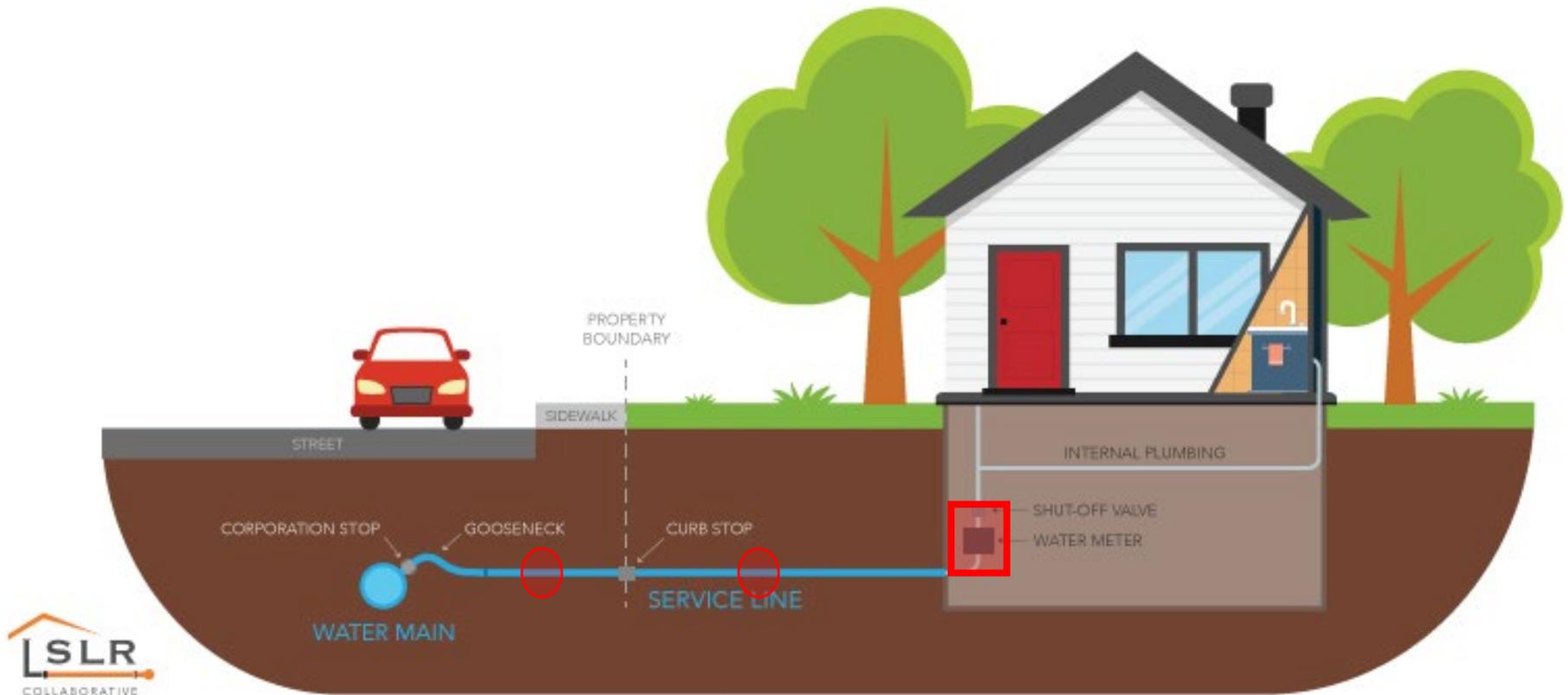
Excavation

- Mechanical Excavation
 - Using a backhoe or other mechanical excavator to dig a “pothole” or test pit to expose the service line.
- Vacuum Excavation
 - Using a water jet or compressed air to loosen soil, which is vacuumed up resulting in a small hole to access the service line.



Excavation

- Recommend excavating at least 18 in. from meter box (curb stop) on both sides, and 18 in. before shutoff valve (if applicable).



Alternative Methodology

Systems must contact the Public Water Supply Section before using one of the following:

- Predictive modeling
 - Uses information from known locations to estimate unknowns using machine learning.
- Emerging methods (very little field testing)
 - Cumulative (Passive) Sampler
 - Ground Penetrating Radar
 - Acoustic Wave Technology
 - Electrical Conductivity and Eddy Current Technology
- CCTV Inspection
 - Unreliable based on results from Pittsburgh.

Prioritizing Areas of Investigation

- Vulnerable or environmental justice populations
 - Unknowns where childcare facilities are present
 - Populations disproportionately exposed to lead
 - Low-income areas
- Areas with the most unknowns
- Areas with the highest likelihood of lead
- Areas currently undergoing LSLR
- Field investigations to verify historical records
 - Select random addresses where material has been determined through historical record
 - Compare field results to historical records

Public Notification

- Persons served by a **lead**, **GRR**, or **unknown** service line must be notified within **30 days** of inventory completion.
- Notice must include a statement about service line material, lead health effects, and steps to minimize lead exposure.
- Notification requirements depend on service line material.
- Notices must be repeated annually.



Lead Service Line Notice

- Notice must include:
 - Information about opportunities to replace the service line
 - Available programs providing financing solutions to assist with replacement.
 - Statement that the system must replace its portion if property owner notifies the system they are replacing their portion.



GRR and Unknown Service Line Notice



- Galvanized Requiring Replacement Service Line notice must include information about opportunities to replace the service line.
- Unknown Service Line notice must include information about opportunities to verify the service line material.

Submitting Proof of Public Notice

- Submit copy of notification to the Public Water Supply Section by July 1st for the previous calendar year.
- Systems must upload a copy of the Public Notice to the state.
- Upload will be through ECERT.

Publicly Available Inventory

- All water systems are required to make their inventories publicly accessible.
- Location identifiers must be included for LSLs and GRRs.
- Community Water Systems must include instructions on how to access inventory in CCR.



Public Inventory Format Requirements

- Small systems (up to 50,000 people):
 - Do **NOT** have to post inventories online.
 - Non-web-based postings include printed service line data, or information on water utility mailings and newsletters.
- Large systems (more than 50,000 people):
 - **MUST** post inventories online.
 - Interactive map user-friendly.
 - Could also use a cloud-based app, an online spreadsheet, or a web-hosted download.
- Non-lead systems can release a statement that they have no lead, GRR, or unknown service lines and include a summary of methodology.
 - Community Systems must include this in CCR.

Inventory Template

- Systems **MUST** use the official North Carolina Template.
 - Template available at: <https://deq.nc.gov/lead-service-line-inventory>

Lead Service Line Inventory Template

Water systems in North Carolina are required to use the appropriate template provided by the Public Water Supply Section. Please contact the Public Water Supply Section's Lead and Copper compliance team at pwss.lcr@ncdenr.gov if you need assistance in accessing your template.

- [Template for water systems with 500 or fewer connections](#)
- [Template for water systems with greater than 500 but no more than 50,000 connections](#)
- [Template for water systems with greater than 50,000 connections](#)

Template

Template Organization

Worksheet Type	Worksheet Name	Description
Background	Template Instructions_System	Contains detailed instructions for systems.
	Classifying SLs	Summarizes requirements for classifying the entire service line when ownership is split (<i>i.e.</i> , when the system owns a portion and the customer owns a portion).
Templates for Water Systems	PWS Information	For systems to document basic system information.
	Inventory Methods	For systems to document the methods and resources they used to develop and update their inventory.
	Inventory Summary	For systems to provide a summary of their service line inventory, including information on ownership, inventory format, and the number of service lines for each of the four required materials classifications. Totals are automatically generated based on information entered in the Detailed Inventory worksheet.
	Detailed Inventory	For systems to track materials for each service line in their distribution system. Each row equals one service line connecting the water main to the customer's plumbing. Separate columns track location information, the system-owned portion, the customer-owned portion, other possible sources of lead, information for assigning a tap sample tiering classification, and information for lead service line replacement (LSLR).
	Public Accessibility Doc.	For systems to provide documentation to the state on how they met the public accessibility requirements of the LCRR.

Template – Detailed Inventory

Required Fields:

- Location Identifier – Street Address
- System-Owned Portion Service Line Material Classification
- Customer-Owned Portion Service Line Material Classification
- Entire Service Line Material Classification

Important Field:

- Was the service line ever previously lead?



Available Resources

More information is available at:

1. North Carolina Department of Environmental Quality, Public Water Supply Section: <https://deq.nc.gov/lead-service-line-inventory>.
2. Lead Service Line Inventory/Replacement Funding: <https://deq.nc.gov/about/divisions/water-infrastructure/lead-service-line-replacement-funding>.
3. U.S. Environmental Protection Agency Lead Service Line Inventory Guidance: <https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule>.
4. Lead and Copper Rule Revisions: <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-141/subpart-I>.



Summary

- All service lines must be classified as Lead, Galvanized Requiring Replacement, Non-Lead, or Unknown by **October 16, 2024**.
- Historical Records Review is **required** for inventories. Other recommended methods are visual inspection, water quality sampling, and excavation. Any alternative method should be approved by the Public Water Supply Section before use.
- Systems should be aware of the public notice and availability requirements.
- Systems are **required** to use the official NC template for inventories.



Contact Information

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