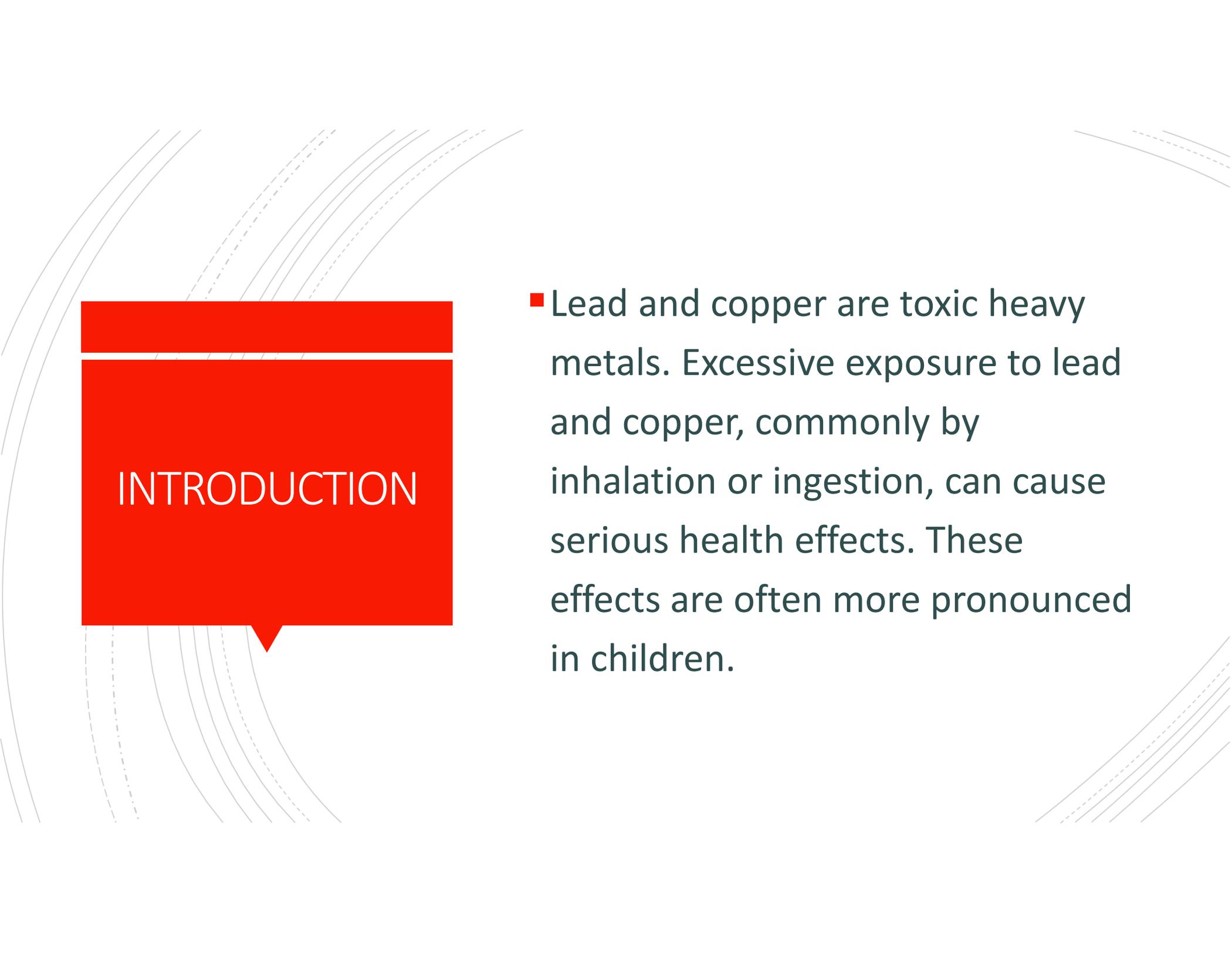


Understanding the Lead and Copper Rule Revisions

MSDH Bureau of Public Water Supply

2023

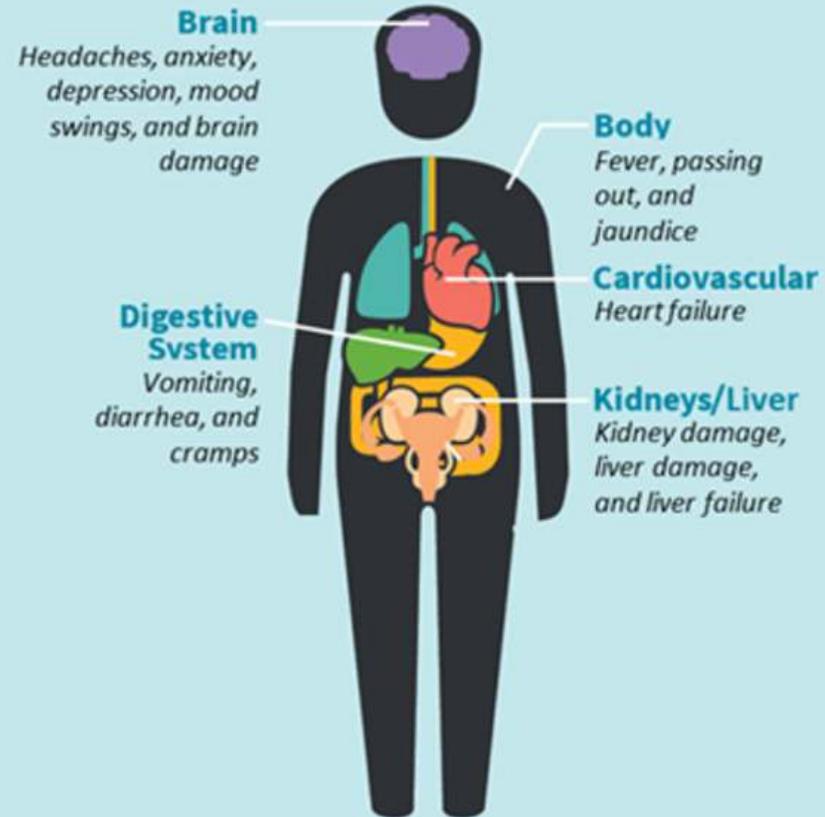
A decorative background featuring several sets of curved, concentric lines in shades of gray, some solid and some dashed, creating a sense of motion or depth. A prominent red speech bubble is positioned on the left side, containing the word 'INTRODUCTION' in white, uppercase letters.

INTRODUCTION

- Lead and copper are toxic heavy metals. Excessive exposure to lead and copper, commonly by inhalation or ingestion, can cause serious health effects. These effects are often more pronounced in children.

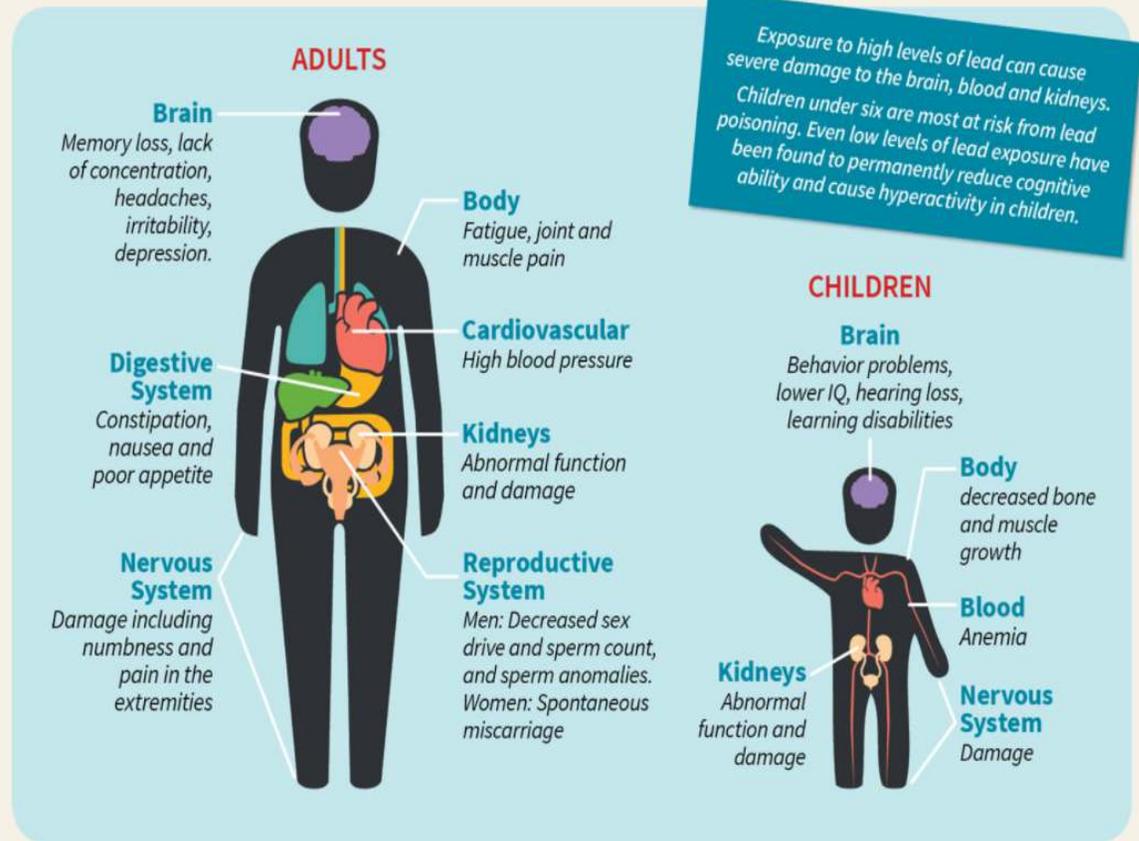
HEALTH EFFECTS - COPPER

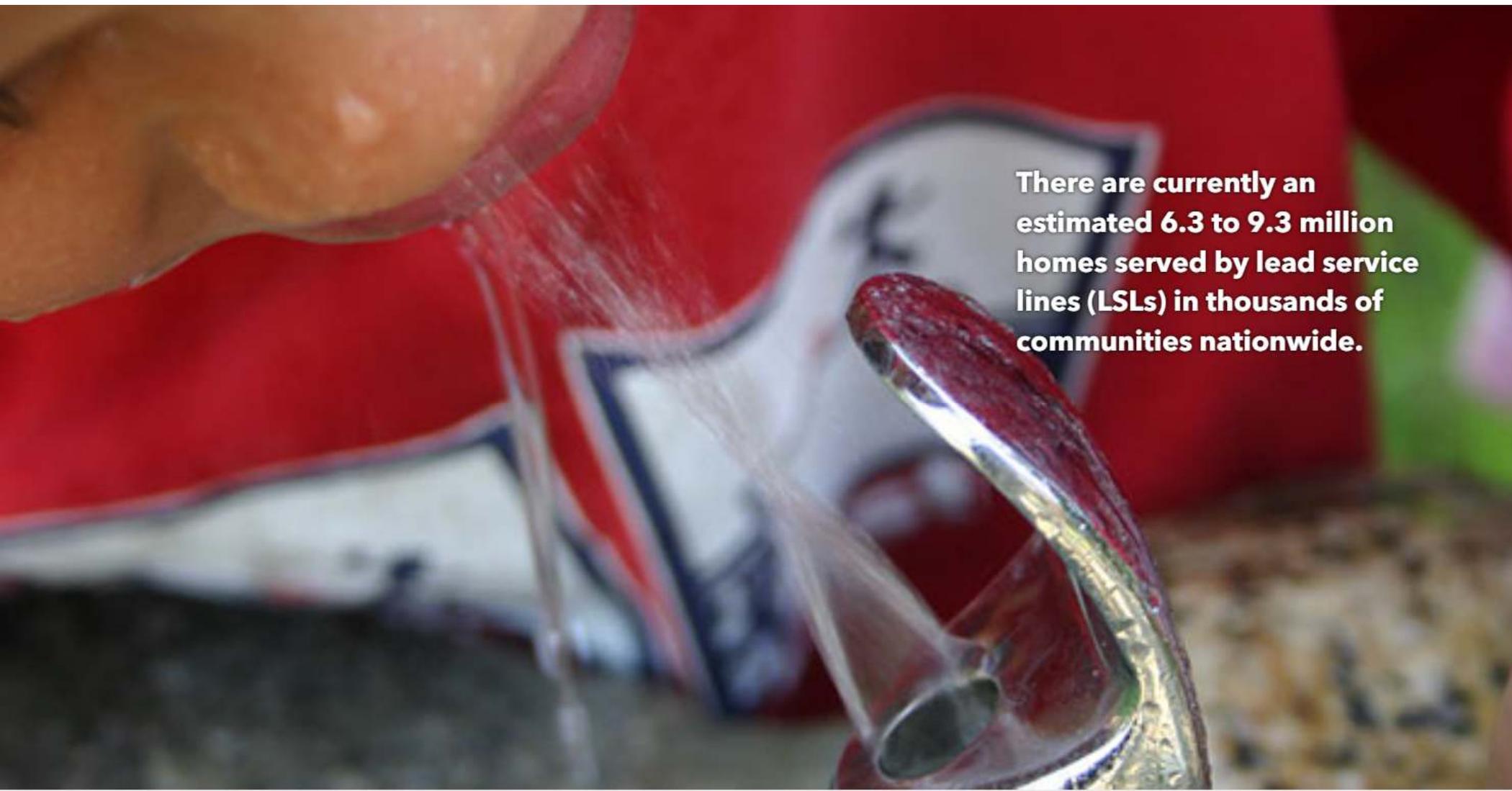
Health Impacts of Copper



HEALTH EFFECTS - LEAD

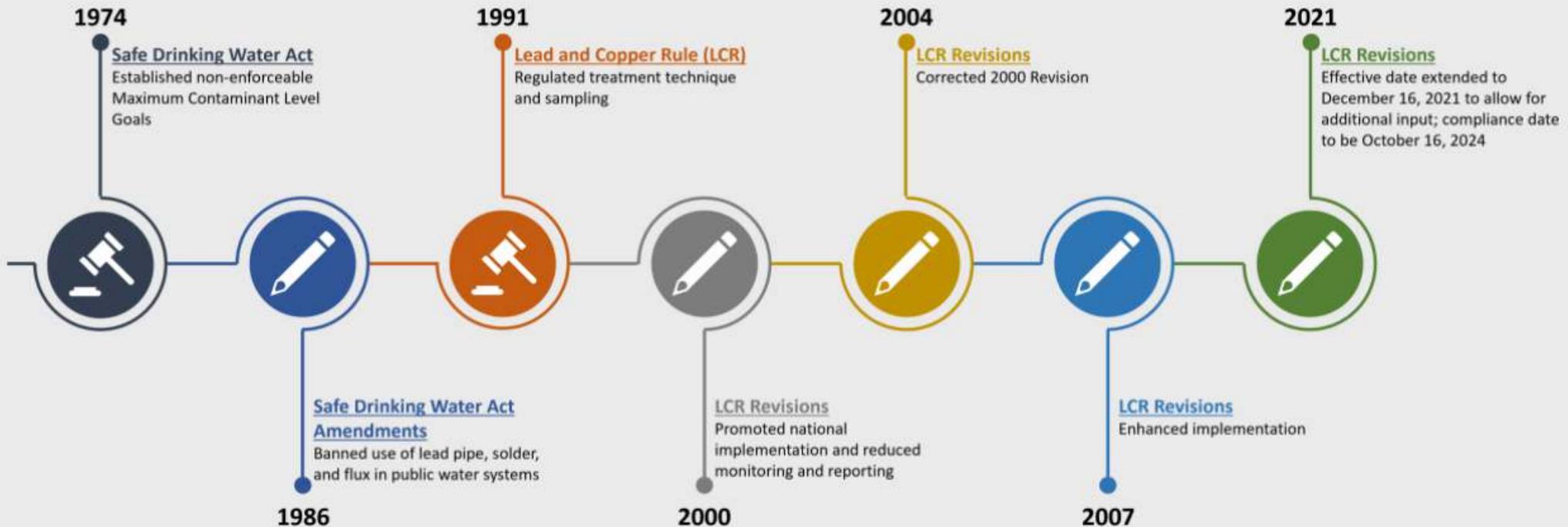
Health Impacts of Lead





There are currently an estimated 6.3 to 9.3 million homes served by lead service lines (LSLs) in thousands of communities nationwide.

Rule History



Rule Comparisons

On November 13, 2019, the U.S. Environmental Protection Agency (EPA) published a proposed revision to the Lead and Copper Rule (LCR) and requested comments. After the comment period, the EPA published the final rule on January 15, 2021 with an effective date of March 16, 2021. On June 10, 2021 the EPA delayed the effective date of the LCR revisions to December 16, 2021 to allow for additional review and feedback. The delay also changed the compliance date from January 16, 2024 to October 16, 2024.

Lead and Copper Rule Summary

1- Action Level (AL) and Trigger Level (TL)

2- Lead and Copper Tap Monitoring

3- Corrosion Control Treatment (CCT) and Water Quality Parameters (WQPs)

4- LSL Inventory

5- LSL Replacement Plan

6- Small System Flexibility

7- Public Education and Outreach

8- Change in Source or Treatment

9- Source Water Monitoring and Treatment

10- Lead in Drinking Water at Schools and Child Care Facilities

11- Primacy Agency Reporting

1- Action Level (AL) and Trigger Level (TL)

Current LCR

- 90th percentile (P90) level above lead AL of 15 µg/L or copper AL of 1.3 mg/L requires additional actions.

Final Revised LCRR

- 90th percentile (P90) level above lead AL of 15 µg/L or copper AL of 1.3 mg/L requires more actions than the previous rule.
- Defines lead trigger level (TL) of $10 < P90 \leq 15$ µg/L that triggers additional planning, monitoring, and treatment requirements.

2- Lead and Copper Tap Monitoring

Current LCR

Final Revised LCRR

Sample Site Selection

- Prioritizes collecting samples from sites with sources of lead in contact with drinking water.
- Highest priority given to sites served by copper pipes with lead solder installed after 1982 but before the state ban on lead pipes and/or LSLs.
- Systems must collect 50% of samples from LSLs, if available.

- Prioritizes collecting samples from sites with sources of lead in contact with drinking water.
- Highest priority given to sites served by copper pipes with lead solder installed after 1982 but before the state ban on lead pipes and/or LSLs.
- Systems must collect 50% of samples from LSLs, if available.

Collection Procedure

- Requires collection of the first-liter sample after water has sat stagnant for a minimum of 6 hours.

- Requires collection of the fifth-liter sample in homes with LSLs after water has sat stagnant for a minimum of 6 hours and maintains first-liter sampling protocol in homes without LSLs.
- Adds requirement that samples must be collected in wide-mouth bottles.
- Prohibits sampling instructions that include recommendations for aerator cleaning/removal and pre-stagnation flushing prior to sample collection.

Monitoring Frequency

- Samples are analyzed for both lead and copper.
- Systems must collect standard number of samples, based on population; semi-annually unless they qualify for reduced monitoring.
- Systems can qualify for annual or triennial monitoring at reduced number of sites. Schedule based on number of consecutive years meeting the following criteria:
 - Serves $\leq 50,000$ people and \leq lead & copper ALs.
 - Serves any population size, meets state-specified optimal water quality parameters (OWQPs), and \leq lead AL.
- Triennial monitoring also applies to any system with lead and copper 90th percentile levels ≤ 0.005 mg/L and ≤ 0.65 mg/L, respectively, for 2 consecutive 6-month monitoring periods.
- 9-year monitoring waiver available to systems serving $\leq 3,300$.

- Some samples may be analyzed for only lead when lead monitoring is conducted more frequently than copper.
- Copper follows the same criteria as the current rule.
- Lead monitoring schedule is based on P90 level for all systems as follows:
 - **P90 > 15 $\mu\text{g/L}$:** Semi-annually at the standard number of sites.
 - **P90 > 10 to 15 $\mu\text{g/L}$:** Annually at the standard number of sites.
 - **P90 ≤ 10 $\mu\text{g/L}$:**
 - Annually at the standard number of sites and triennially at reduced number of sites using same criteria as previous rule except copper 90th percentile level is not considered.
 - Every 9 years based on current rule requirements for a 9-year monitoring waiver.



3- Corrosion Control Treatment (CCT) and Water Quality Parameters (WQPs)

Current LCR	Final Revised LCRR
CCT	
<ul style="list-style-type: none"> • Systems serving > 50,000 people were required to install treatment by January 1, 1997 with limited exception. • Systems serving ≤ 50,000 that exceed lead and/or copper AL are subject to CCT requirements (e.g., CCT recommendation, study if required by primacy agency, CCT installation). They can discontinue CCT steps if no longer exceed both ALs for two consecutive 6-month monitoring periods. • Systems must operate CCT to meet any primacy agency-designated OWQPs that define optimal CCT. • There is no requirement for systems to re-optimize 	<ul style="list-style-type: none"> • Specifies CCT requirements for systems with 10 < P90 level ≤ 15 µg/L: <ul style="list-style-type: none"> ○ No CCT: must conduct a CCT study if required. ○ With CCT: must follow the steps for re-optimizing CCT, as specified in the rule. • Systems with P90 level > 15 µg/L: <ul style="list-style-type: none"> ○ No CCT: must complete CCT installation regardless of their subsequent P90 levels. ○ With CCT: must re-optimize CCT. • CWSs serving ≤ 10,000 people and non-transient water systems (NTNCWSs) can select an option other than CCT to address lead. See Small System Flexibility.
CCT Options	
<ul style="list-style-type: none"> • Includes alkalinity and pH adjustment, calcium hardness adjustment, and phosphate or silicate-based corrosion inhibitor 	<ul style="list-style-type: none"> • Removes calcium hardness as an option and specifies any phosphate inhibitor must be orthophosphate.
Regulated WQPs	
<ul style="list-style-type: none"> • No CCT: pH, alkalinity, calcium, conductivity, temperature, orthophosphate (if phosphate-based inhibitor is used), silica (if silica-based inhibitor is used). • With CCT: pH, alkalinity, and based on type of CCT either orthophosphate, silica, or calcium. 	<ul style="list-style-type: none"> • Eliminates WQPs related to calcium hardness (i.e., calcium, conductivity, and temperature)

WQP Monitoring

- | | |
|--|---|
| <ul style="list-style-type: none">• Systems serving $\geq 50,000$ people must conduct regular WQP monitoring at entry points and within the distribution system• Systems serving $\leq 50,000$ people conduct monitoring only in those periods > lead or copper AL.• Contains provisions to sample at reduced number of sites in distribution system with less frequency for all systems meeting their OWQPs. | <ul style="list-style-type: none">• Systems serving $\geq 50,000$ people must conduct regular WQP monitoring at entry points and within the distribution system.• Systems serving $\leq 50,000$ people must continue WQP monitoring until they no longer > lead and/or copper AL for two consecutive 6-month monitoring periods.• To qualify for reduced WQP distribution monitoring, P90 must be $\leq 10 \mu\text{g/L}$ and the system must meet its OWQPs. |
|--|---|

Sanitary Sewer Review

- | | |
|--|---|
| <ul style="list-style-type: none">• Treatment must be reviewed during sanitary surveys; no specific requirement to assess CCT or WQPs. | <ul style="list-style-type: none">• CCT and WQP data must be reviewed during sanitary surveys against most recent CCT guidance issued by EPA. |
|--|---|

Find-and-Fix

- | | |
|--|---|
| <ul style="list-style-type: none">• No required follow-up samples or additional actions if an individual sample exceeds $15 \mu\text{g/L}$. | <ul style="list-style-type: none">• If individual tap samples $> 15 \mu\text{g/L}$, find-and-fix steps are as follow:<ul style="list-style-type: none">○ Collect tap sample at the same tap sample site within 30 days.○ For LSL, collect any liter or sample volume.○ If LSL is not present, collect 1 liter first draw after stagnation.○ For systems with CCT○ Conduct WQP monitoring at or near the site $> 15 \mu\text{g/L}$.○ Perform needed corrective action.○ Document customer refusal or nonresponse after 2 attempts.○ Provide information to local public health officials. |
|--|---|



5- LSL Replacement Plan

Current LCR

Final Revised LCRR

LSLR

- Systems with LSLs with P90 > 15 µg/L after CCT installation must annually replace ≥7% of number of LSLs in their distribution system when the lead action level is first exceeded.
- Systems must replace the LSL portion they own and offer to replace the private portion at the owner's expense.
- Full LSLR, partial LSLR, and LSLs with lead sample results ≤ 15 µg/L ("test-outs") count toward the 7% replacement rate.
- Systems can discontinue LSLR after 2 consecutive 6-month monitoring periods ≤ lead AL.

- Rule specifies replacement programs based on P90 level for CWSs serving > 3,300 people:
 - If P90 > 15 µg/L: Must fully replace 3% of LSLs per year based upon a 2 year rolling average (mandatory replacement) for at least 4 consecutive 6-month monitoring periods.
 - If P90 > 10 to 15 µg/L: Implement an LSLR program with replacement goals in consultation with the primacy agency for 2 consecutive 1-year monitoring periods.
- Small CWSs and NTNCWSs that select LSLR as their compliance option must complete LSLR within 15 years if P90 > 15 µg/L. **See Small System Flexibility.**
- Annual LSLR rate is based on number of LSLs and galvanized requiring replacement when the system first exceeds the action level plus the current number of lead status unknown service lines.
- Only full LSLR (both customer-owned and system-owned portion) count toward mandatory rate or goal-based rate.
- All systems replace their portion of an LSL if notified by consumer of private side replacement within 45 days of notification of the private replacement. If the system cannot replace the system's portion within 45 days, it must notify the state and replace the system's portion within 180 days.
- Following each LSLR, systems must:
 - Provide pitcher filters/cartridges to each customer for 6 months after replacement. Provide pitcher filters/cartridges within 24 hours for full and partial LSLRs.
 - Collect a lead tap sample at locations served by replaced line within 3 to 6 months after replacement.
 - Requires replacement of galvanized service lines that are or ever were downstream of an LSL.

LSL-Related Outreach

- When water system plans to replace the portion it owns, it must offer to replace customer-owned portion at owner's expense.
- If system replaces its portion only:
 - Provide notification to affected residences within 45 days prior to replacement on possible elevated short-term lead levels and measures to minimize exposure.
 - Include offer to collect lead tap sample within 72 hours of replacement.
 - Provide test results within 3 business days after receiving results.
- Inform consumers annually that they are served by LSL or lead status unknown service line.
- Systems subject to goal-based program must:
 - Conduct targeted outreach that encourages consumers with LSLs to participate in the LSLR program.
 - Conduct an additional outreach activity if they fail to meet their goal.
- Systems subject to mandatory LSLR include information on LSLR program in public education (PE) materials that are provided in response to P90 > AL.



6- Small System Flexibility

Current LCR

No provisions for systems to elect an alternative treatment approach but sets specific requirements for CCT and LSLR.

Final Revised LCRR

- Allows CWSs serving $\leq 10,000$ people and all NTNCWSs with P90 $> 10 \mu\text{g/L}$ to select their approach to address lead with primacy agency approval:
 - o Systems can choose CCT, LSLR, provision and maintenance of point-of-use devices; or replace all lead-bearing plumbing materials.

7- Public Education and Outreach

Current LCR

- All CWSs must provide education material in the annual Consumer Confidence Report (CCR).
- Systems with P90 > AL must provide PE to customers about lead sources, health effects, measures to reduce lead exposure, and additional information sources.
- Systems must provide lead consumer notice to individuals served at tested taps within 30 days of learning results.
- Customers can contact the CWS to get PE materials translated in other languages.

Final Revised LCRR

- CWSs must provide updated health effects language in all PE materials and the CCR.
 - Customers can contact the CWS to get PE materials translated in other languages.
- All CWSs are required to include information on how to access the LSL inventory and how to access the results of all tap sampling in the CCR.
- Revises the mandatory health effects language to improve accuracy and clarity.
- If P90 > AL:
 - Current PE requirements apply.
 - Systems must notify consumers of P90 > AL within 24 hours.
- In addition, CWSs must:
 - Deliver notice and educational materials to consumers during water-related work that could disturb LSLs.
 - Provide information to local and state health agencies.
 - Provide lead consumer notice to consumers whose individual tap sample is > 15 µg/L as soon as practicable but no later than 3 days.

8- Change in Source or Treatment

Current LCR

- Systems on a **reduced** tap monitoring schedule must obtain prior primacy agency approval before changing their source or treatment.

Final Revised LCRR

- Systems on **any** tap monitoring schedule must obtain prior primacy agency approval before changing their source or treatment. These systems must also conduct tap monitoring biannually.

9- Source Water Monitoring and Treatment

Current LCR

- Periodic source water monitoring is required for systems with:
 - Source water treatment; or
 - P90 > AL and no source water treatment.

Final Revised LCRR

- Primacy Agencies can waive continued source water monitoring if the:
 - System has already conducted source water monitoring for a previous P90 > AL;
 - Primacy agency has determined that source water treatment is not required; and
 - System has not added any new water sources.

10- Lead in Drinking Water at Schools and Child Care Facilities

Current LCR

Does not include separate testing and education program for CWSs at schools and child care facilities
Schools and child cares that are classified as NTNCWSs must sample for lead and copper.

Final Revised LCRR

- CWS must conduct sampling at 20% of elementary schools and 20% of child care facilities per year and conduct sampling at secondary schools on request for 1 testing cycle (5 years) and conduct sampling on request of all schools and child care facilities thereafter.
- Sample results and PE must be provided to each sampled school/child care, primacy agency and local or state health department.
- Excludes facilities built or that replaced all plumbing after January 1, 2014.

11- Primacy Agency Reporting

Current LCR

Primacy Agencies must report information to EPA that includes but is not limited to:

- All P90 levels for systems serving > 3,300 people, and only levels > 15 µg/L for smaller systems.
- Systems that are required to initiate LSLR and the date replacement must begin.
- Systems for which optimal corrosion control treatment (OCCT) has been designated.

Final Revised LCRR

Expands current requirements to include:

- All P90 values for all system sizes.
- The current number of LSLs and lead status unknown service lines for every water system.
- OCCT status of all systems including primacy agency-specified OWQPs.

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LCRR HIGHLIGHTS

Do the changes apply to me?

Category	Examples of Potentially Affected Entities
Community Water Systems	A public water system that (A) serves at least 15 service connections used by year-round residents of the area served by the systems; or (B) regularly serves at least 25 year-round residents .
Non-transient, Non-community Water systems	A public water system that is not a community water system and that regularly serves at least 25 of the same people over 6 months per year .

Action Level (AL) and Trigger Level (TL)

90th percentile (P90)
action level exceedances
require more actions
than the previous rule.

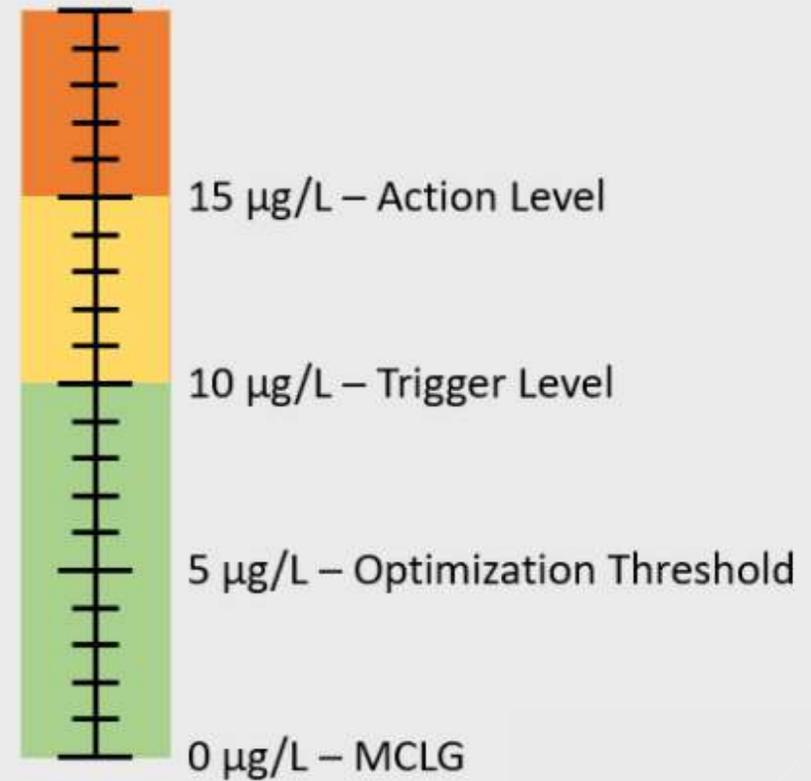
Lead and Copper Action Levels

Pb
Lead
15 $\mu\text{g}/\text{L}$

Cu
Copper
1.3 mg/L

<https://www.epa.gov/ground-water-and-drinking-water/national-primary-drinking-water-regulations>

New trigger level requires additional planning, monitoring, and treatment requirements.



Lead and Copper Tap Monitoring

Sample Site Selection Changes

All samples must be collected from sites served by LSLs, if available.

Improved tap sample site selection tiering criteria.



REVISED LEAD AND COPPER SITE SELECTION CRITERIA

Tier	CWS		NTNCWS	
	Proposed rule	Final rule	Proposed rule	Final rule
Tier 1	Collect samples from SFSs served by LSLs. Tier 1 samples can be collected from MFRs if they represent at least 20 percent of structures served by the water system.	Collect samples from SFSs served by LSLs. Tier 1 samples can be collected from MFRs if they represent at least 20 percent of structures served by the water system.	Collect samples from building served by LSL.	Collect samples from buildings served by LSL.
Tier 2	Collect samples from buildings and MFRs served by LSLs.	Collect samples from buildings and MFRs served by LSLs.	N/A	N/A.
Tier 3	Collect samples from SFSs with copper pipes with lead solder installed before <i>the effective date of the state's lead ban</i> .	Collect samples from SFSs with galvanized service lines downstream of an LSL, currently or in the past or known to be downstream of a lead connector.	Collect samples from buildings with copper pipe and lead solder installed before <i>the effective date of the state's lead ban</i> .	Collect samples from SFSs with galvanized service lines downstream of an LSL, currently or in the past or known to be downstream of a lead connector.
Tier 4	Representative sample where the plumbing is similar to that used at other sites served.	Collect samples from SFSs with copper pipes with lead solder installed before <i>the effective date of the state's lead ban</i> .	Representative sample where the plumbing is similar to that used at other sites served..	N/A.
Tier 5	N/A	Representative sample where the plumbing is similar to that used at other sites served.	N/A	Representative sample where the plumbing is similar to that used at other sites served.

Acronyms: CWS = community water system; LSL = lead service line; MFR = multi-family residence; N/A = not applicable; NTNCWS = non-transient non-community water system; SFS = single family structure.

Collection Procedure Changes

Test 5th liter sample for lead in homes with LSLs.

Test 1st liter sample for copper (and lead in homes w/out LSLs).

Must use wide-mouth bottles.

- PREMISE PLUMBING
- SERVICE LINE
- WATER MAIN

Testing where the Lead is

For homes with lead service lines, the 5th liter of water must be tested for lead, not the 1st liter like the old rule.

1 2 3 4 5 6 7 8 9 10

FIRST LITER FIFTH LITER

= LITER

Premise Plumbing: Premise plumbing is located inside the house.

Lead Service Line: A lead service line is a pipe that runs from the water main to the home's internal plumbing.

No aerator cleaning/removal or pre-stagnation flushing

WATER METER

MAIN WATERLINE

Image Source: <https://www.epa.gov/sites/default/files/2020-12/documents/fifthliterinfographic-lcr-final.pdf>

Monitoring Frequency Changes

In certain situations, lead monitoring occurs more frequently than copper monitoring.



Lead Monitoring Requirements

P90 > 15 µg/L	P90 > 10 to 15 µg/L	P90 ≤ 10 µg/L
Semi-annually at the standard number of sites.	Annually at the standard number of sites.	Annually at the standard number of sites and triennially at reduced number of sites using the same criteria as the previous rule. Every 9 years based on current rule requirements for a 9-year monitoring waiver.

System Size (number of people served)	Number of sites (standard monitoring)	Number of sites (reduced monitoring)
>100,000	100	50
10,001 to 100,000	60	30
3,301 to 10,000	40	20
501 to 3,300	20	10
101 to 500	10	5
≤100	5	5

REQUIRED SAMPLE SITE COUNTS
FOR
STANDARD & REDUCED MONITORING

Water Quality Parameters (WQPs)

Regulated Water Quality Parameters
pH
Alkalinity
Calcium
Conductivity
Temperature
Orthophosphate (if phosphate-based inhibitor is used)
Silica (if silica-based inhibitor is used)

Revised rule eliminates WQPs related to calcium hardness.

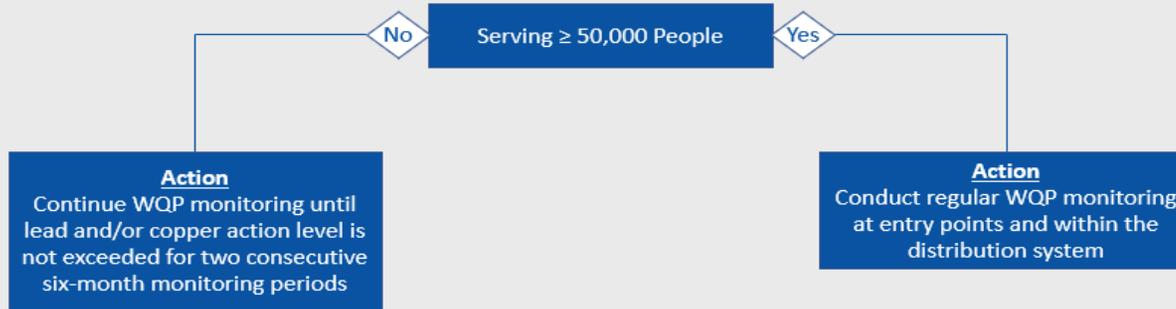
Why eliminate these WQPs?



“...calcium carbonate stabilization treatment does not form a consistent scale on lead and copper pipes to a level that makes it effective as a CCT option.” – US EPA

“...[calcium carbonate-based indices such as LSI] have no value as corrosivity indicators and should not be used to evaluate lead or copper control.” – US EPA Optimal Corrosion Control Treatment Evaluation Technical Recommendations (OCCT)

WQP Monitoring



Note:
 P90 must be ≤ 10 µg/L and the system must meet its Optimal Water Quality Parameters (OWQPs) to qualify for reduced WQP distribution monitoring

NUMBER OF WATER QUALITY PARAMETER SITES IN DISTRIBUTION SYSTEM

System size (number people served)	Standard monitoring (number WQP sites)	Reduced monitoring (number WQP sites)	Find-and-fix threshold (number WQP sites)
>100,000	25	10	50
10,001–100,000	10	7	20
3,301–10,000	3	3	6
501–3,300	2	2	4
101–500	1	1	2
≤100	1	1	2

Find-and-Fix (If individual tap samples > 15 µg/L)

Root: Action Level Exceedance for Individual Tap Sample

Actions

- Notify persons served at the sample site as soon as practicable but no later than three days after receiving the sampling results
- Perform needed corrective action
- Document customer refusal or nonresponse after 2 attempts
- Provide information to local public health officials

+

LSL at site?

If Yes, Collect tap sample at the same tap within 30 days – collect any liter or sample volume

If No, Collect tap sample at the same tap within 30 days – collect 1 liter first draw after stagnation

CCT in place?

If Yes, Conduct WQP monitoring near the sample site within 5 days

Corrective Actions:

Source of Lead: Sampling Location or Unknown

No action required

Source of Lead: Corrosive WQPs

Change distribution system management

- Flush
- Adjust CCT

Submit recommendation to the state within six months after the end of the tap sampling period that the site(s) exceeded 15 µg/L

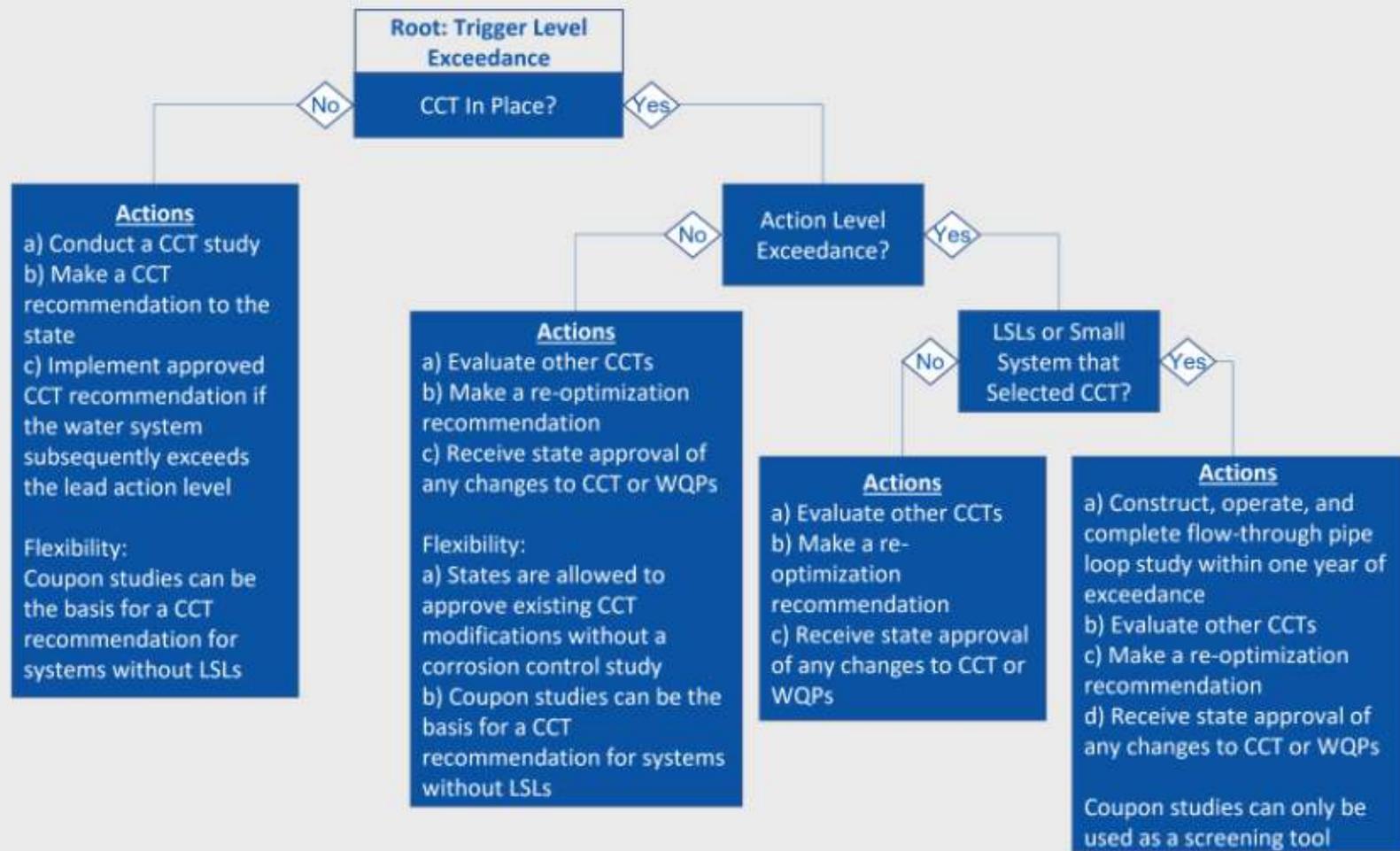
Corrosion Control Treatment (CCT)

Corrosion control treatment requirements set for small, medium, and large systems with and without corrosion control treatment based on P90 lead and copper data.

Defines specific steps for (i) systems without corrosion control treatment and (ii) systems reoptimizing corrosion control treatment.

Steps for Re-optimizing Treatment

- 1 Recommend re-optimized treatment w/out a corrosion control study if criteria are met
- 2 Perform a corrosion control study if criteria are met (must perform pipe loop testing w/ LSLs)
- 3 Must perform a corrosion control study if lead AL is exceeded w/ LSLs (any water system)
- 4 State designates re-optimized treatment
- 5 Complete treatment modifications
- 6 Complete follow-up sampling
- 7 State designates OWQPs
- 8 Operate in compliance with OWQPs and continue tap sampling and WQP monitoring



PUBLIC OUTREACH

-  **1** Provide updated health effects language in all PE materials and the CCR.
-  **2** Add information on how to access the LSL inventory and all tap sampling results to the CCR.
-  **3** Deliver notice and educational materials to consumers during work that could disturb LSLs.
-  **4** Provide information to local and state health agencies.
-  **5** Provide lead consumer notice to consumers whose individual tap sample is $> 15 \mu\text{g}/\text{L}$, as soon as practical but no later than 3 days.

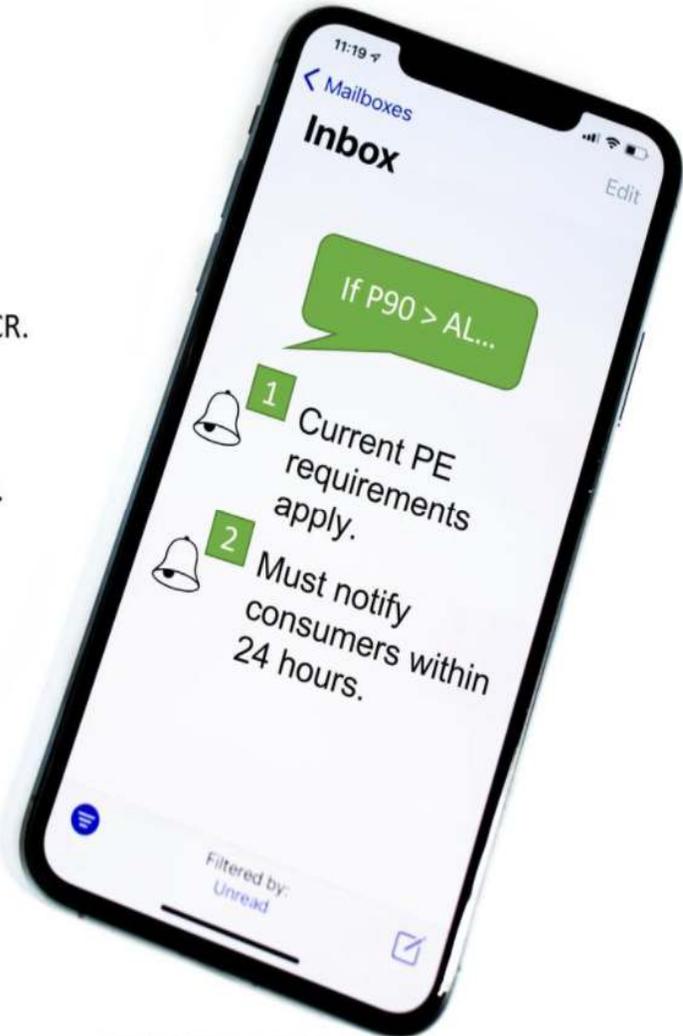


Photo Credit: solen-feyissa-LBN18qHlBA-unsplash

Additional Revisions

**Lead Service
Line Inventory**

**Lead Service Line
Replacement**

**LSL-Related
Outreach**

**Sanitary Survey
Review**

**Small System
Flexibility**

**Source Water
Monitoring**

**Sampling at
Schools and
Child Care
Facilities**

**Consumer
Confidence
Report**

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LEAD SERVICE LINE INVENTORY

FIRST PHASE OF COMPLIANCE WITH THE LCRR

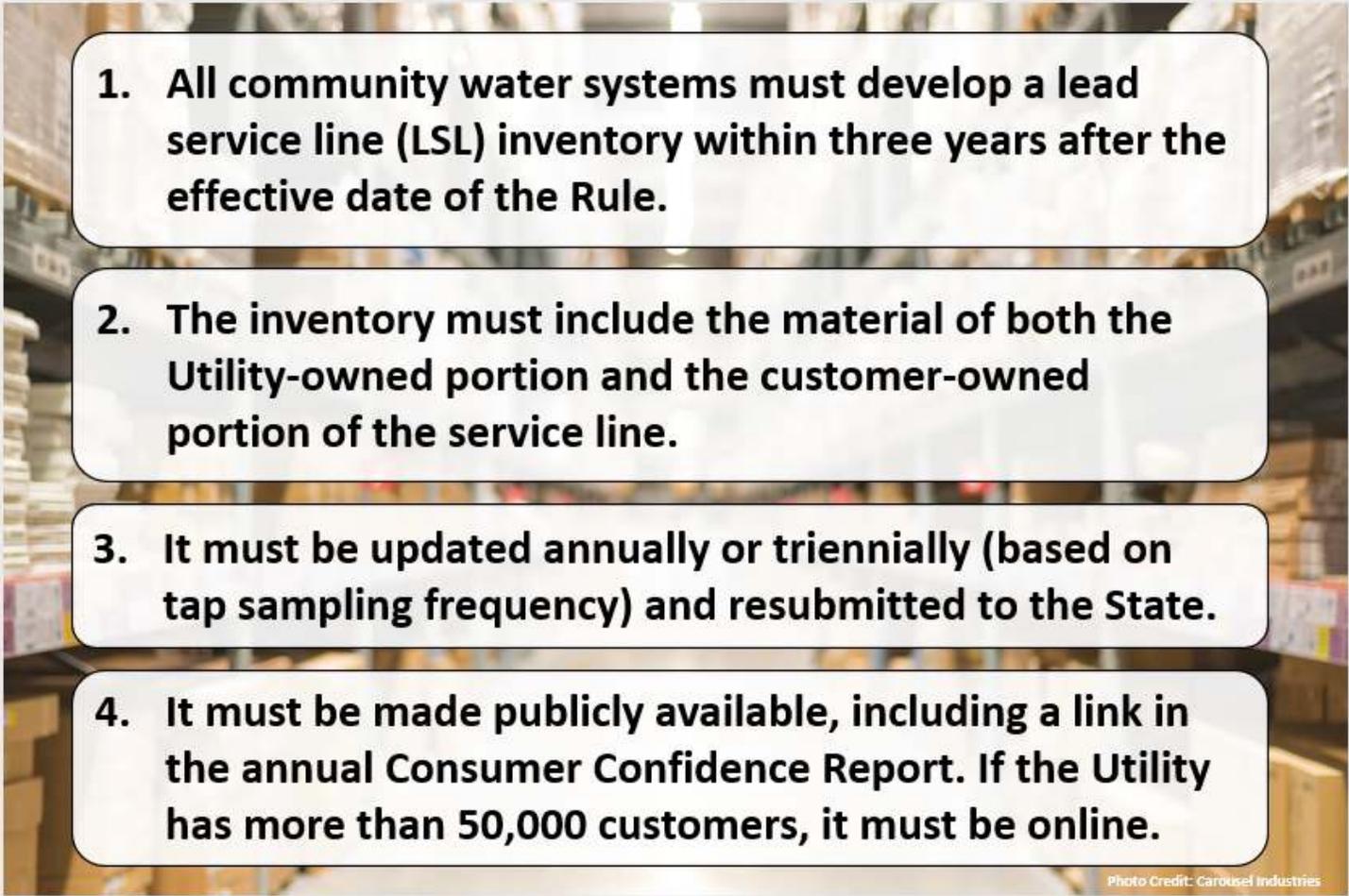
- 
- 1. All community water systems must develop a lead service line (LSL) inventory within three years after the effective date of the Rule.**
 - 2. The inventory must include the material of both the Utility-owned portion and the customer-owned portion of the service line.**
 - 3. It must be updated annually or triennially (based on tap sampling frequency) and resubmitted to the State.**
 - 4. It must be made publicly available, including a link in the annual Consumer Confidence Report. If the Utility has more than 50,000 customers, it must be online.**

Photo Credit: Carousel Industries

Service Line Material

- Lead Service Line
- Non-lead
- Galvanized requiring replacement
- Lead status unknown



Lead

Copper

Galvanized

		Customer-Owned Portion			
		Lead	Galvanized	Unknown	Non-Lead
Utility-Owned Portion	Lead	Lead	Galvanized	Unknown	Non-Lead
	Galvanized	Lead	Galvanized	Unknown	Non-Lead
	Unknown	Lead	Galvanized	Unknown	Non-Lead
	Non-Lead	Lead	Galvanized	Unknown	Non-Lead

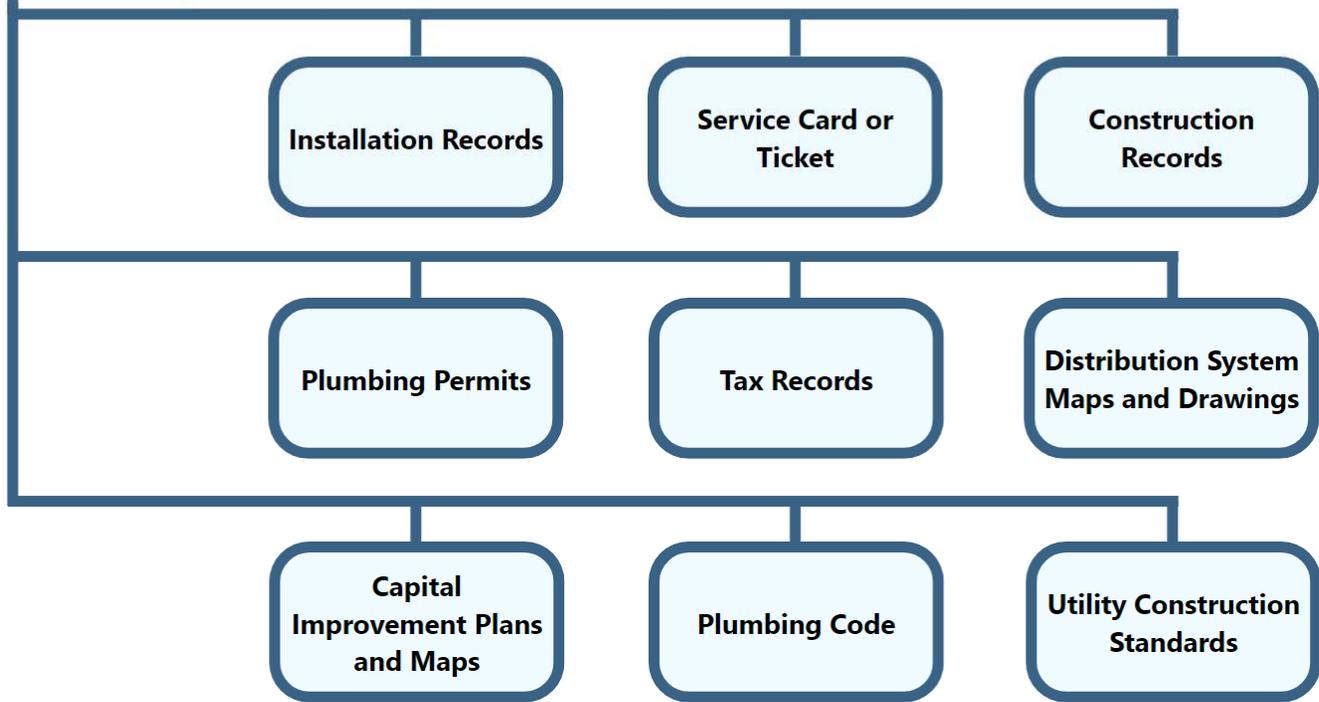
	= "Lead"
	= "Galvanized Requiring Replacement"
	= "Unknown"
	= "Non-lead"

	= These categories are included in LSL "count"
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Data Collection Tools (Required)



Historical Records



)

Installation Records

Type of Data	Possible Places
<ul style="list-style-type: none">- Ledgers- Cards- Records describe length, location and construction material	<ul style="list-style-type: none">- Water System- Municipal Water Department- Municipal Building Permit- Code Enforcement Department

**Service Card or
Ticket**

Type of Data	Possible Places
<ul style="list-style-type: none">- Installation- Repair- Replacement	<ul style="list-style-type: none">- Water System- Municipal Water Department

Construction Records

Type of Data	Possible Places
<ul style="list-style-type: none">- Major main repair records- Construction project records- Service replacement records	<ul style="list-style-type: none">- Water System- Municipal Water Department- Municipal Planning Department

Plumbing Permits

Type of Data	Possible Places
<ul style="list-style-type: none">- Permits to replace service lines	<ul style="list-style-type: none">- Water System- Municipal Water Department- Municipal Planning Department

Tax Records

Type of Data	Possible Places
<ul style="list-style-type: none">- Municipal tax records typically provide the date of home construction	<ul style="list-style-type: none">- Municipal Tax Assessor's Office- Centralized Municipal Government GIS Office

Distribution System Maps and Drawings

Type of Data

- Source of service line and connection information including materials, size and installation dates

Possible Places

- Water System
- Municipal Water Department

**Capital
Improvement Plans
and Maps**

Type of Data	Possible Places
<ul style="list-style-type: none">- Historical CIPs- Historical installation- Service line patterns- Current CIPs	<ul style="list-style-type: none">- Water System- Municipal Water Department

Plumbing Code

Type of Data	Possible Places
<ul style="list-style-type: none">- Pipe standards- Pipe specifications	<ul style="list-style-type: none">- Municipal Building Permit- Code Enforcement Department- Administrative Records- Governing Body Records

**Utility Construction
Standards**

Type of Data	Possible Places
<ul style="list-style-type: none">- Required standards for constructing service lines	<ul style="list-style-type: none">- Water System- Municipal Water Department- Governing Body Records

Data Verification Tools (Optional)

LSL Data Verification



Field Work



Customer-Driven Data



Predictive Model



**Water Quality
Sampling**

Vacuum Excavation

Visual Inspection

Water Quality Sampling

Action Level:

- 90th percentile (P90) level above lead AL of 15 $\mu\text{g/L}$ or copper AL of 1.3 mg/L requires more actions than the previous rule.

Monitoring Frequency:

- **P90 > 15 $\mu\text{g/L}$:** Semi-annually at the standard number of sites.
- **P90 > 10 to 15 $\mu\text{g/L}$:** Annually at the standard number of sites.
- **P90 \leq 10 $\mu\text{g/L}$:**
 - Annually at the standard number of sites and triennially at reduced number of sites
 - Every 9 years based on current rule requirements for a 9-year monitoring waiver.



Vacuum Excavation

- Potholing:

- AL of 1.3 mg/L requires more actions than the previous rule.

- Vacuum Excavation:

- High velocity, high pressure air
- High velocity, high pressure water



Visual Inspection

Visually check the potential sources of lead

- Service line connecting the water main
- Solder in the plumbing
- Older brass faucets and valves



Data Verification Tools (Optional)

LSL Data Verification



Field Work



Customer-Driven Data



Predictive Model

Information volunteered by customers

- Scratch and magnet test
- Information found during maintenance and repair
- Plans and drawings
- Construction records



Visual scratch testing

Lead is a dull gray color and very soft. If scraped with a key it will turn a bright silver color. Even a very strong magnet will not stick to lead.

DC Water: Understanding your Water Service Pipe

Types of water pipes

Follow the guidance below or contact a licensed plumber to determine the material of your water pipes. To identify the material of your service pipe material on private property, check your household water service connection, typically located in the basement.

Homeowners should identify and replace old household pipes, particularly galvanized plumbing and sources of lead. The type of household plumbing can vary throughout your household.

Lead



A dull, silver-gray color that is easily scratched with a coin. Use a magnet - strong magnets will *not* cling to lead pipes.

Galvanized



A dull, silver-gray color. Use a magnet - strong magnets *will* typically cling to galvanized pipes.

Copper



The color of a copper penny.

Plastic



White, rigid pipe that is joined to water supply piping with a clamp.

Source: DC Water

Data Verification Tools (Optional)

LSL Data Verification



Field Work



Customer-Driven Data



Predictive Model

Predictive Modeling

- Use regression or classification models to predict the likelihood that a location has lead service line.

- Property Age
- Property Value
- Property Location
- Water Sampling Records
- Utility Records
- Physical Inspection
- etc.



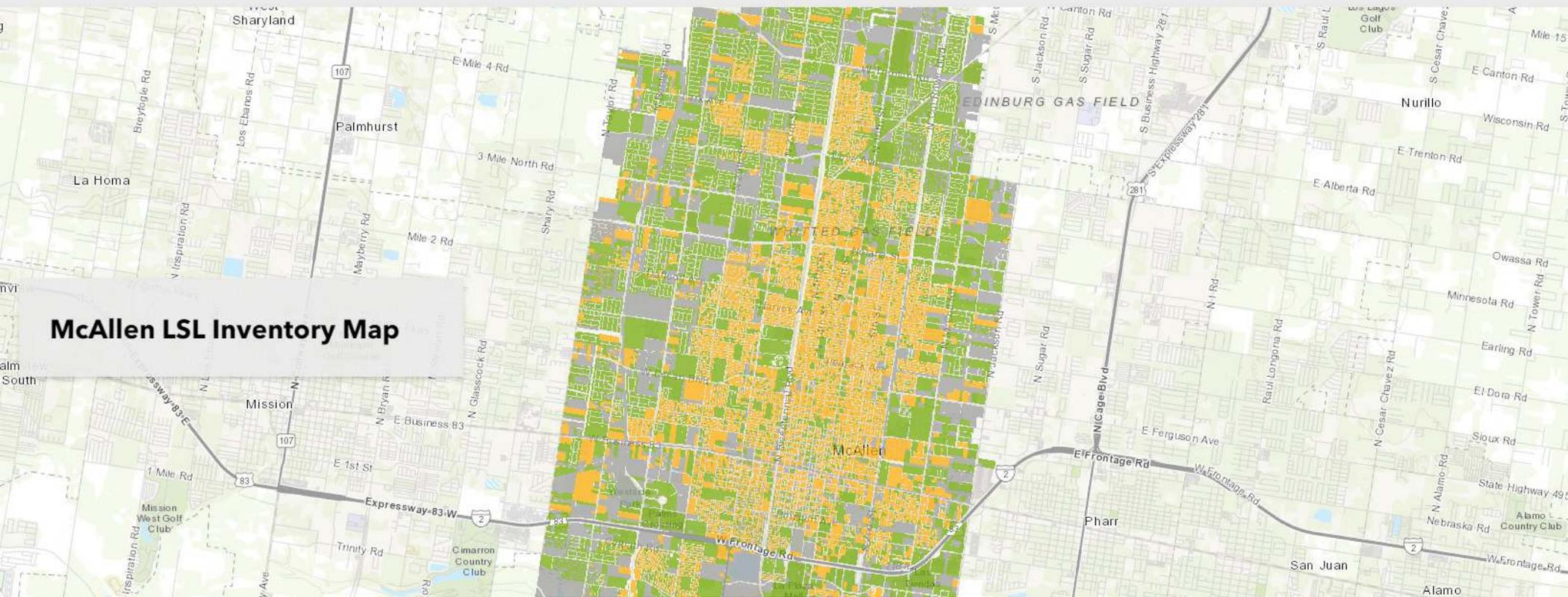
Predictive Algorithms



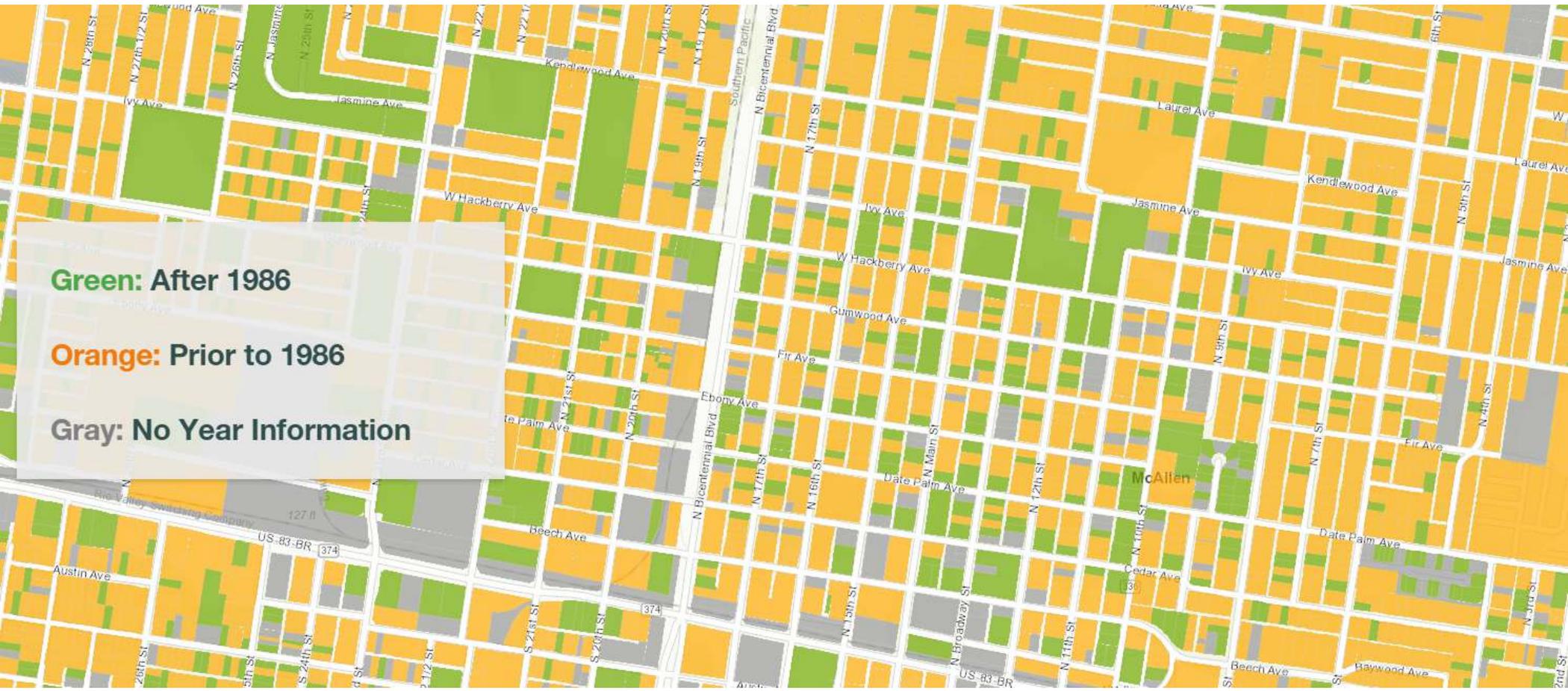
Lead
or
Copper
or
etc.



Inventory Map



McAllen LSL Inventory Map



Green: After 1986

Orange: Prior to 1986

Gray: No Year Information

McAllen

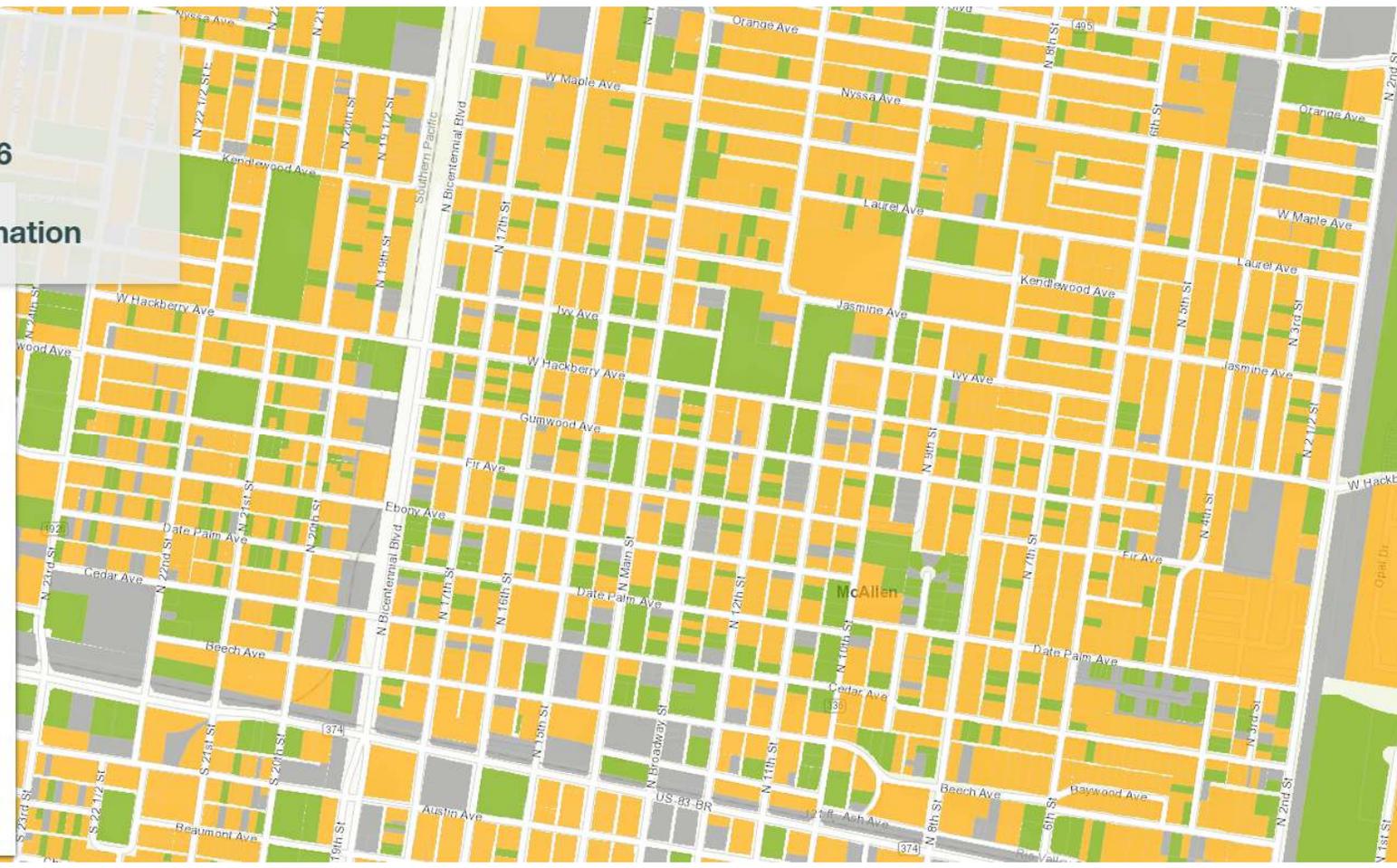
Green: After 1986

Orange: Prior to 1986

Gray: No Year Information

McAllenParcels

contident	
file_as_na	GARCIA JUKIC & PARDAL
addr_line1	ALANIZ
addr_line2	1515 COYOTE HILLS APT C
addr_line3	
addr_city	EDINBURG
addr_state	TX
zip	78,539
exemptions	
entities	CAD CML DR1 GHD JCC R15 SML SST
deed_dt	4/7/2021
deed_type_	GVL
deed_num	3210302
F2022_mark	202,250
F2022_asse	202,250
F2022_impr	133,717



Zoom to

The background features a series of concentric, overlapping curved lines in shades of light gray and white, creating a sense of motion and depth. The lines are more densely packed on the right side and become more sparse towards the left.

LSL REPLACEMENT & OUTREACH

An LSL Replacement Plan must be submitted with the initial inventory.

It must include:

- A strategy for determining the material for LSLs designated as “Unknown”.
- Procedures to conduct a full LSLR.
- A strategy for informing customers prior to LSLR.
- A recommended LSLR goal rate if the trigger level is exceeded.
- Procedures for customers to flush their lines.
- A LSLR prioritization strategy.
- A funding strategy for customers who cannot afford to replace their portion.



LSL Replacement (LSLR)

Requirements vary depending on population size and whether the Trigger Level (TL) or Action Level (AL) is exceeded and include goal-based and mandatory requirements:

- Annual LSLR rate is based on the number of LSLs when the system first exceeds the action level plus the current number of service lines of "Unknown" or "Galvanized Requiring Replacement" materials.
- Only full LSLR (both customer-owned and system-owned portions) count toward the mandatory replacement rate of 3% per year.
- If a system is notified about a private side LSLR, the system must replace its portion of the LSL within 45 days.



Following LSLR, systems must:

- Provide pitcher filters and 6-month supply of cartridges to each customer within 24 hours of a full or partial LSLR.
- Collect a lead tap sample at each LSLR location within 3-6 months.
- Replace galvanized service lines that are or ever were downstream of an LSL.



LSL-Related Outreach

- Inform customers annually that they are served by LSL or lead status unknown service lines.
- If subject to goal-based program, conduct targeted outreach.
- If subject to mandatory LSLR, include information on LSLR program in public education materials.



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

- Drinking-Water State Revolving Fund (DWSRF)
- Funding and Technical Resources for Lead Service Line Replacement in Small and Disadvantaged Communities
- HUD Community Development Block Grant (CDBG)
- Assistance for Small and Disadvantaged Communities Grant
- Lead Testing in School and Child Care Drinking Water Grant
- Reducing Lead in Drinking Water Grant
- Water Infrastructure Finance and Innovation Act (WIFIA)
- Additional Lead in Drinking Water Funding



A large red oval is centered on the page, containing the text "FINAL WRAP UP" in white, uppercase letters. The oval is surrounded by several thin, light gray curved lines that sweep across the background, creating a sense of motion or a wrap-up effect. A thick, dark gray curved shape is positioned behind the bottom-left edge of the red oval.

FINAL WRAP UP

What do we do when...

- Revisions Are Finalized
- Tap Sample Exceeds Trigger Level
- Tap Sample Exceeds Action Level
- 90th Percentile Exceeds Trigger Level
- 90th Percentile Exceeds Action Level

Revisions Are Finalized

Lead Service Line Inventory

Lead Service Line Replacement Plan

Corrosion Control Treatment

Tap Water Sampling

Water Quality Parameter Monitoring

Public Education and Notification

Public Education and Sampling at Schools and Childcare Facilities

Revisions Are Finalized

Lead Service Line Inventory

Create a publicly accessible inventory of all service lines in the distribution system by the compliance date.

Revisions Are Finalized

Lead Service Line Replacement Plan

Create and submit a LSLR plan to the state by the compliance date.

Revisions Are Finalized

Corrosion Control Treatment

Note: Calcium carbonate is no longer a
CCT alternative.

Revisions Are Finalized

Tap Water Sampling

Update tap sampling sites based on tiered structure and LSL inventory and submit to state for approval by the compliance date.

Update collection procedure and schedule and submit to state for approval by the compliance date.

Revisions Are Finalized

Water Quality Parameter Monitoring

Note: Parameters associated with calcium carbonate stabilization are no longer considered WQPs.

Revisions Are Finalized

Provide annual notice and public education materials to households served by lead, galvanized requiring replacement, or lead status unknown service line.

Notify customers impacted by a disturbance to a lead, galvanized requiring replacement, or lead status unknown service line and provide information on how to reduce exposure to potentially elevated lead levels.

Conduct annual outreach to state and local health agencies

Update Consumer Confidence Report content.

Public Education and Notification

Revisions Are Finalized

Create a list of schools and licensed childcare facilities served by the system.

Contact elementary schools and licensed childcare facilities at least annually to schedule sampling and to provide information on health risks of lead in drinking water and the 3Ts Toolkit.

Contact secondary schools at least annually and provide information on health risks of lead in drinking water and on how to request sampling.

Sample all elementary schools and childcare facilities once during the first five years after the compliance date and secondary schools when requested.

Public Education and Sampling at Schools and Childcare Facilities

Tap Sample Exceeds Trigger Level

- No specific actions required.

Tap Sample Exceeds Action Level

Root: Action Level Exceedance for Individual Tap Sample

Tap Water Sampling

Notify persons served at the sample site as soon as practicable but no later than three days after receiving the sampling results.

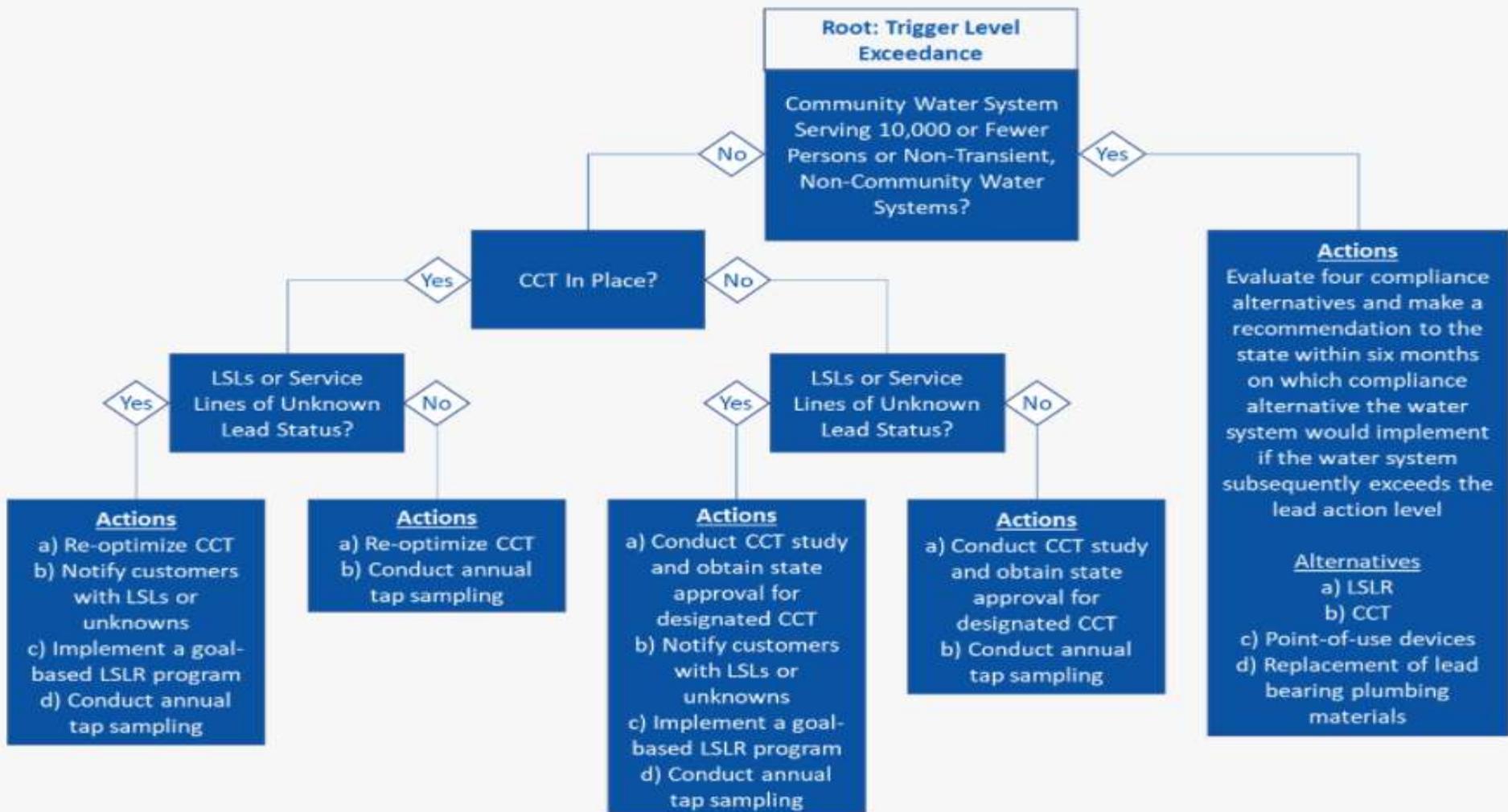
Implement Find-and-Fix program.

Step 1: CCT assessment.

Step 2: Site assessment.

Step 3: Evaluate results to identify source of lead at sampling site.

90th Percentile Exceeds Trigger Level



90th Percentile Exceeds Action Level

Lead Service Line Replacement

Replace full LSLs at an annual rate of three percent (rolling, two-year average) until 90th percentile lead levels are at or below the action level for two years and the required number of LSLs have been removed.

Source Water Monitoring

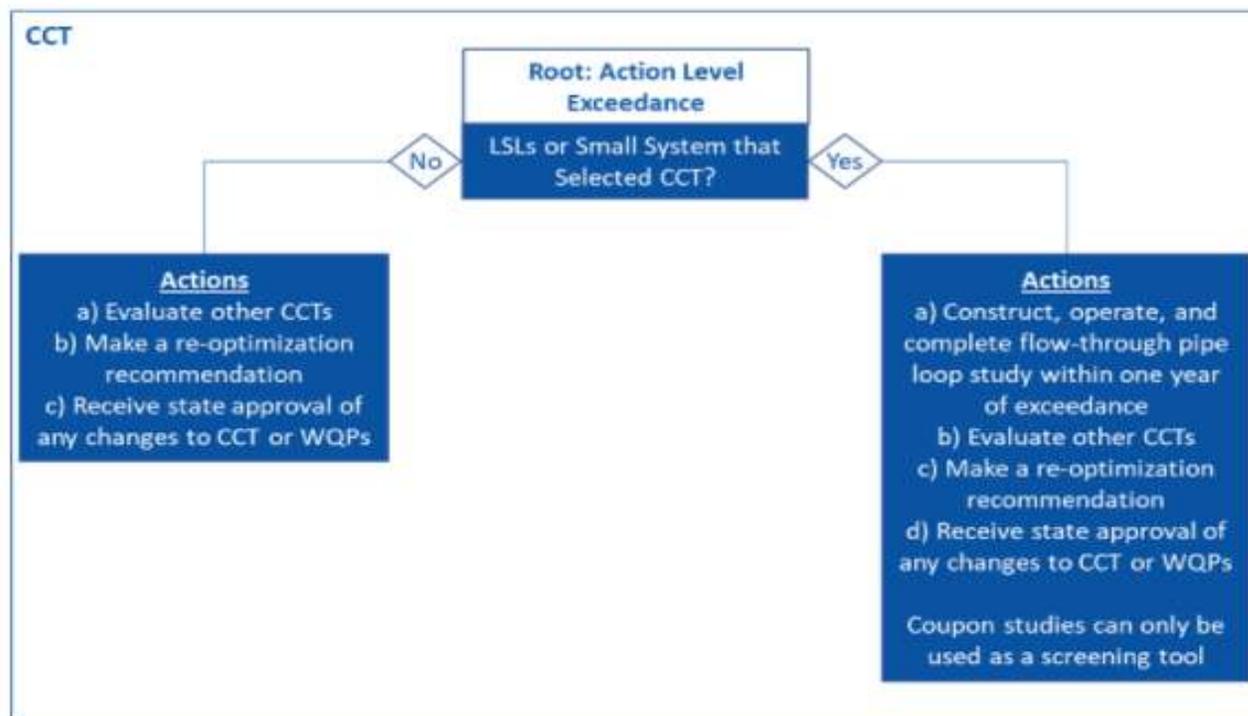
Conduct source water monitoring unless conditions of exemption are met.

Notification

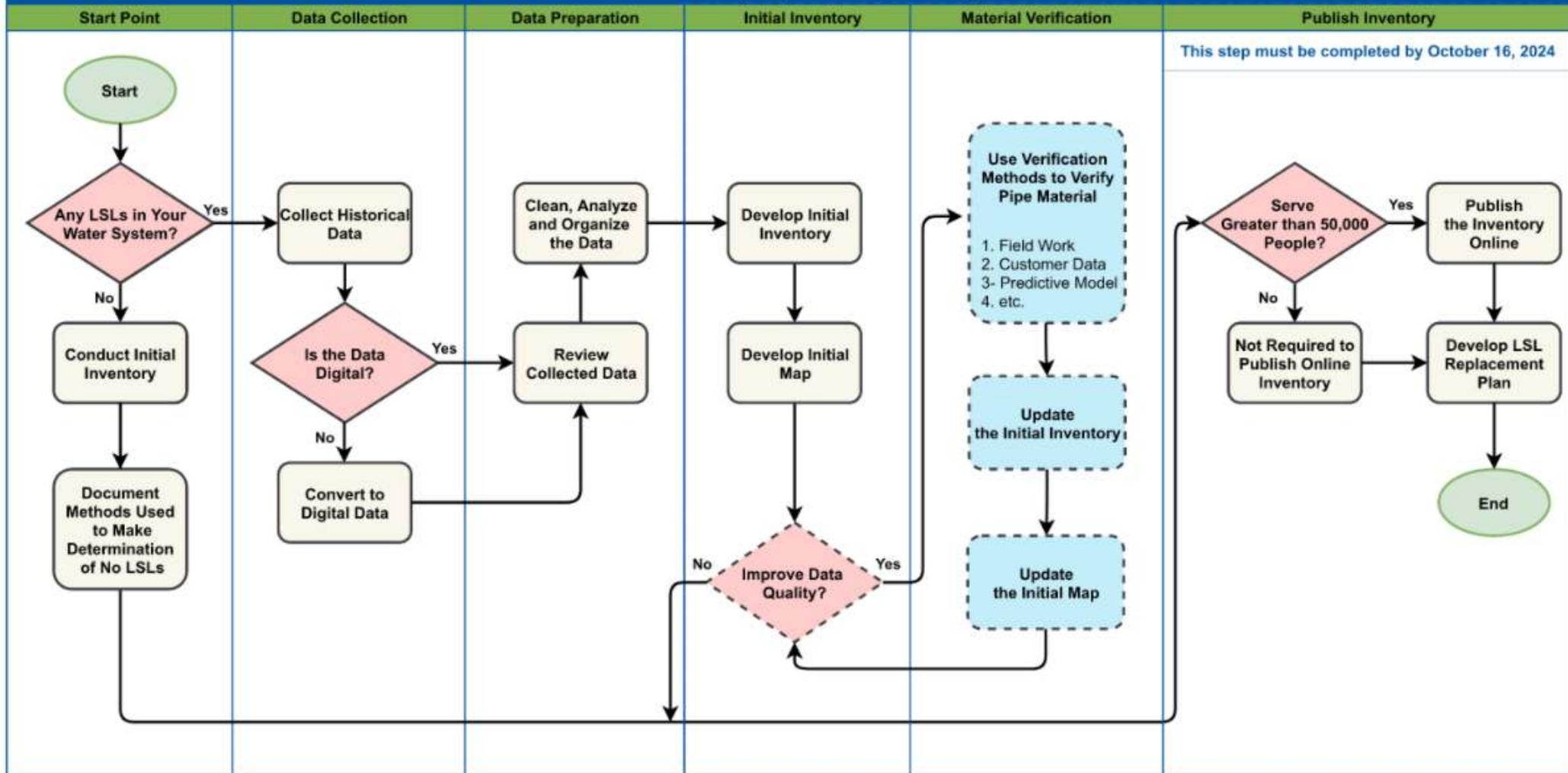
Provide public notices to persons served by the system within 24 hours of learning of the action level exceedance. A copy of the notice must also be sent to the primacy agency and the Administrator.

Tap Water Sampling

Conduct semi-annual sampling at the standard number of sites.



Lead Service Line (LSL) Inventory Development



This step must be completed by October 16, 2024

- Necessary to Meet Lead and Copper Rule Requirements
- Optional

CONTACT INFORMATION

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Web www.msdh.ms.gov/watersupply

Main (601) 576-7518
To Reach me via the
automated attendant

1. PRESS 3 for COMPLIANCE
2. Then, PRESS 5 for RULES.
3. Then, PRESS 2 for LCR



QUESTIONS