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Preparing for the LCRI Deadlines

Water utilities that continue their efforts to create a service line inventory will be in a good position to comply with the requirements of the Lead and Copper Rule Improvements and meet the November 2027 deadline. Effective data management is a significant part of the process.

BY JONATHAN CUPPETT AND DAMON DYE

THE US Environmental Protection Agency (EPA) estimates that up to 9 million homes receive their water through legacy lead service lines (LSLs)—34 years after establishing the Lead and Copper Rule (LCR) in 1991. Despite continued revisions to the LCR, lead exposure continues to threaten public health in some communities, prompting the Lead and Copper Rule Improvements (LCRI) to set a goal to eliminate 100% of LSLs and galvanized-requiring-replacement (GRR) service lines by December 2037 (Figure 1).

This new rule was issued a week before the Lead and Copper Rule Revisions (LCRR) compliance deadline of Oct. 16, 2024, which sought to create a nationwide inventory of service line materials. Although the initial service line inventory submission date has passed, other LCRR elements remain in effect. Moving forward, water systems are still required to annually notify customers served by an LSL, GRR, or unknown service line. Also beginning on Oct. 16, 2024, water providers were required to notify all customers within 24 hours following a systemwide lead action level exceedance (ALE) at 15 (µg/L). This public notice provision is being maintained in the LCRI, and, starting Nov. 1, 2027, the 24-hour notification will be activated by a lower 10 µg/L systemwide ALE.

The LCRI follows the LCRR's service line inventory requirement and asks utilities to act on the collected data. Although December 2037 is the goal for removing all LSLs and GRRs, several LCRI elements must be submitted to state regulators by the LCRI compliance deadline of Nov. 1, 2027, including the following:

- Updated baseline inventory that includes connector material
- List of all school and childcare facilities served by the system
- Service line replacement plan (if any LSL, GRR, or unknowns are in the baseline inventory)

Water systems need to be prepared to comply with several other LCRI changes that will go into effect starting on Nov. 1, 2027. However, system-specific characteristics will determine if and when an individual water system is affected by different requirements, including validating nonlead service lines and verifying all unknown service lines as well as offering to sample at properties served by an LSL, GRR, or unknown service line upon request.

Another key change is the lower lead action level of 10 µg/L, with a requirement to perform a follow-up assessment at compliance sample sites that exceed 10 µg/L. In addition, water systems need to assess corrosion control treatment and demonstrate enhanced customer transparency following a lead or copper action level exceedance. A new sampling protocol for LSL sites uses

first- and fifth-liter sampling, and systems will be required to develop a school and childcare sampling program. Also, compliance sample sites will need to align with a new tiering structure. Finally, risk mitigation measures will be required following service line replacements or disturbances.

To effectively approach their unique situations, water utilities should center their LCRI compliance around their LCRR inventory (this was due in October 2024). Water systems should continue verification efforts to reduce or eliminate their unknown service lines as quickly as possible and avoid the disincentives of having unknowns, which will start in November 2027. Digital platform company 120Water extracted data from its inventory database, containing information from about 15 million service lines and more than 7,000 systems. Of these, 38% of systems still have unknowns, with an average of >2,200 unknowns per system. The data also showed that utilities with at least one LSL had an average of >1,000 LSLs in their distribution system. Programs to replace LSLs and GRRs will begin in November 2027, and most systems will be required to replace 10% of LSLs and GRRs per year.

STEPS TO LCRI COMPLIANCE

Regardless of where a water provider is in its LCR journey, LCRI compliance is within reach. Utilities can take steps—outlined in the following paragraphs—to begin meeting the various deadlines.



The Lead and Copper Rule Improvements set a goal to eliminate 100% of lead service lines and galvanized-requiring-replacement service lines by December 2037. Water systems should continue verification efforts to reduce or eliminate their unknown service lines as quickly as possible.

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Identify Connector Materials. The LCRI baseline inventory is due on Nov. 1, 2027. Connectors, or *goosenecks*, must be added to the baseline inventory and categorized as lead, nonlead, unknown, or no connector present. Although the connector material doesn't affect the classification for the entire service line (some states have different interpretations), water systems should review their records to classify as many connectors as possible before the submission deadline.

Start a Verification Program. Identifying service line materials is the foundation of LCRI compliance. Unknown materials will be assumed to be lead and included in the service line replacement rate that determines how many LSLs or GRRs need to be replaced each year. Water systems should develop a verification plan that assesses state-approved verification methods, evaluates opportunities to verify materials during normal field operations, and considers a data management strategy to ensure all the data are organized and accessible to team members.

Identify Funding. The costs to complete and manage verification of unknowns and service line replacement programs

can be substantial; fortunately, funding is available. The Bipartisan Infrastructure Law has allocated \$15 billion in federal funding, disbursed through Drinking Water State Revolving Funds, specifically designed to support programs to identify unknowns and replace LSLs. In addition, 49% of the funding must be provided to disadvantaged communities as grant funding or principal forgiveness loans. Water systems should research funding options in their state and understand application submission requirements.

PROTECTING HEALTH AND BUDGETS

EPA estimates that the public health and economic benefits of the final LCRI are estimated to be up to 13 times greater than the costs. Each year after the LCRI is issued, it's projected that on average, it will

- protect up to 900,000 infants from having low birth weights,
- reduce up to 1,500 cases of premature death from heart disease, and
- prevent up to 200,000 IQ points lost in children.

Some communities are already receiving federal funding to replace their LSLs. For example, Milwaukee Water Works

has received approximately \$30 million in funding to replace all of its 3,400 LSLs within the LCRI's 10-year time frame. The Detroit Water and Sewerage Department received \$90 million to replace more than 8,000 LSLs in 2024, putting the city on track to replace all lead pipes within 10 years. In Pennsylvania, Erie Water Works received \$49 million that will allow the city to replace its lead pipes within five years.

In addition to individual utilities taking initiative, some state agencies have empowered their water utilities with LCRI compliance software as part of the larger industry shift toward digital transformation. Taking LCRI as an opportunity to modernize compliance submissions, accept utility data, and share that data with state revolving funds in real time, state agencies are providing access and requiring utilities to use these tools to simplify compliance.

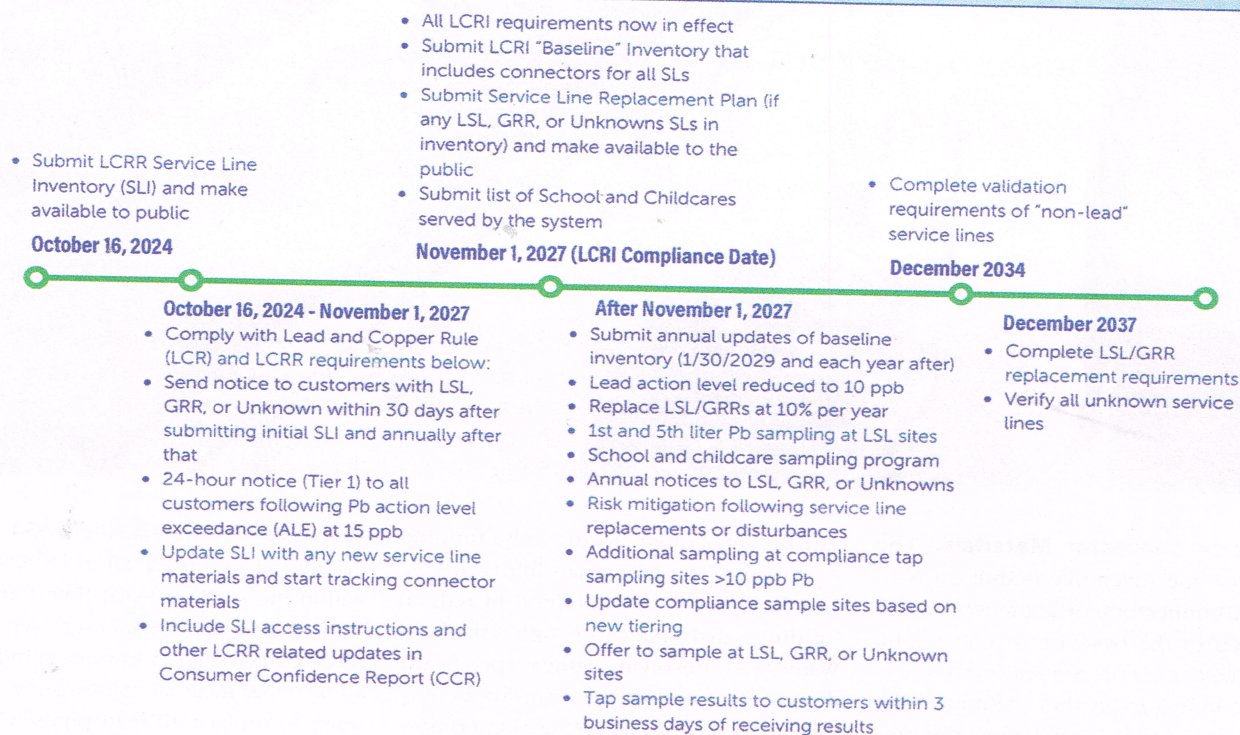
OPTIMIZING DATA MANAGEMENT

When the LCRI mandated a complete inventory of both public- and private-side service lines, Del-Co Water Company in Delaware, Ohio, recognized the challenge ahead. The company's detailed recordkeeping left it with virtually no

Lead Removal

Figure 1. Lead and Copper Rule Revisions (LCRR) and Lead and Copper Rule Improvements (LCRI) Timeline

Initial lead service line inventories were due in October 2024, but most of the LCRI requirements will go into effect in 2027.



Source: 120Water

unknown lines on the utility-owned portion of the service lines; however, the private side was completely unknown. Del-Co had about 53,000 private-side lines in its service area and, while it had thousands of as-built records filed digitally, the data hadn't been extracted or organized to inform the company's inventory for the LCRR.

Internal estimates predicted it would take five to six months to review the as-builts and compile the necessary data. Del-Co decided instead to partner with 120Water and was able to complete the following in under one month:

- Process, standardize, and organize data from 52,629 as-built records
- Create an overview of customer-owned service lines

- Identify 75% of unknown service line materials on the private side
- Prioritize verification efforts for the remaining 25% unknowns
- Identify and compile data on other non-service-line assets

Del-Co was also able to use the compiled data to support its mini-grant application through the Ohio EPA's H2Ohio Fund with descriptions of how procured funds would be used.

THE ROAD AHEAD

The LCRI and all its required elements may overwhelm water providers, especially smaller systems with limited staff. Regardless of how utilities plan to comply with the LCRI, continuing the inventory process can only benefit them.

Compliance obligations can be minimized for those who can confirm there are no LSLs or GRRs in their systems. Systems with unknown service lines in their baseline inventory submission on Nov. 1, 2027, will be forced into more requirements, including offering to sample at customer homes upon request, submitting a service line replacement plan, and including unknowns in their service line replacement rate calculation.

The LCRI represents a new generation of regulations, with data management playing a critical role in overall compliance success. As systems work to meet the LCRI's many requirements and multiple deadlines, digital solutions can help organize and manage the variety of data throughout their compliance journeys. 