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## Safe Drinking Water Program Lead Service Line Inventory Quick Reference Q&A Guidance

The United States Environmental Protection Agency (EPA) published the Lead and Copper Rule Revisions (LCRR) January 15, 2021, and the Lead and Copper Rule Improvement (LCRI) on October 30, 2024. The revised rule makes significant changes to the existing lead and copper rule (LCR). The intent of LCRR/LCRI is to further protect public health by identifying and removing sources of lead from drinking water.

For updated guidance and more information, please visit our website at [azdeq.gov/LCRR](https://azdeq.gov/LCRR).

*(Clarifications and additional guidance added in blue italics with dates)*

### **Section 1. Lead and Copper Rule Revision Key Questions**

#### **1. Who is subject to the Lead and Copper Rule Revisions (LCRR) and the lead service line (LSL) inventory requirements?**

- a. All community (C) and non-transient non-community (NTNC) public water systems. Transient non-community (TNC) public water system are NOT required to complete an inventory. *(Clarification added 11/24)*

#### **2. When must the Lead Service Line (LSL) inventory be submitted?**

- a. By **October 16, 2024** public water systems are required to prepare and submit an “initial” inventory to the Arizona Department of Environmental Quality (ADEQ). A subsequent “baseline” inventory is due by **November 1, 2027**. An annual inventory is due each year by **January 30th starting in 2029** for those systems that have any unknown, galvanized requiring replacement, or lead service lines listed in the inventory. *(Clarification added 11/24)*
- b. The LCRR/LCRI do not require the LSL inventory to identify the material of every service line by the compliance date. This means the ADEQ is not expecting a fully identified inventory to be submitted by the compliance date and public water systems should take their time in completing an evidence-based service line inventory. However, ADEQ recognizes the new requirements push water systems to expedite their inventory efforts due to the rule’s requirements for unknown service lines requiring annual public education and other requirements for all service connections listed as unknown as referenced in 40 CFR 141.85.



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### 3. What is included in the inventory?

- a. All service lines, regardless of ownership status.
  - i. Service lines must have a location identifier such as a street address, customer number, block, or some other marker or landmark
  - ii. Service lines must have a material identifier:
    1. Public/Utility/PWS side: Unknown, lead, galvanized requiring replacement, or non-lead. Materials should be identified as the actual material type (i.e. copper, galvanized, lead, PVC, etc.)
    2. Customer/private side: Unknown, lead, galvanized requiring replacement, or non-lead. Materials should be identified as the actual material type (i.e. copper, galvanized, lead, PVC, etc.)
    3. Justification/Evidence Basis of inventory material (*Clarification added 11/24*)
      - a. Public water systems must specify the information source or basis for the material classification for each portion of the service line (public vs. private):
        - i. Records: citing federal laws, local building codes, construction records
        - ii. Age: construction date
        - iii. Visual inspection: meter box, shut-off valve, excavation, etc.
        - iv. Pipe diameter: >2 inches
        - v. Interpolation (see below)
        - vi. Other – obtain approval from ADEQ prior to using a non-standard method.

### 4. What are “unknown” service lines?

- a. Public water systems may classify a service line material as “lead status unknown” or “unknown” where the service line material is not known to be lead, galvanized requiring replacement, or a non-lead service line. This means the public water system was unable to determine based on the lack of evidence of supporting materials to determine and document the material classification.



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### 5. What are non-lead service lines?

- a. EPA defines non-lead service lines as those with evidence-based record, method, or techniques that are not lead or galvanized service lines requiring replacement. The water system may classify the actual material of the service line (i.e., plastics or copper) as an alternative to classifying it as “non-lead”. ADEQ highly recommends public water systems identify the specific material of the service line to further aid in any future requirements.

### 6. What is galvanized requiring replacement service lines?

- a. A galvanized service line requiring replacement is any galvanized service main that has ever been downstream of a lead service line, or of an unknown material service line. These lines are included in the lead service line replacement program because they have demonstrated the ability to absorb lead from a lead service line, and release it in the future. Replacing these lines will reduce a source of lead to the customers.
- b. ADEQ does not require public water systems in Arizona to prove that lead was never upstream of a galvanized pipe. However, galvanized pipes must be marked as “Galvanized Requiring Replacement” if there is any evidence that a lead pipe was upstream of the galvanized pipe. *(Added 11/24)*

### 7. What if I have no lead service lines, galvanized service lines requiring replacement, or unknowns?

- a. Public water systems that can demonstrate through documented or evidence-based support that they have only non-lead service lines must submit a completed inventory including all service connections, material designations, and classifications basis by October 16, 2024, and then again on November 1, 2027. After that no additional inventories are required – per current legislation. *(Clarification added 11/24)*

### 8. With LCRI proposed what all is required under LCRR to be submitted by October 16, 2024?

- a. A complete inventory of service lines in the water system with location, material designation, and basis of material evaluation. "Unknown" material service lines are acceptable for compliance and anticipated in many water systems, note that public notice requirements apply to "unknown" material service lines. *(Added 5/24)*



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### Section 2. Frequently Asked Questions from Stakeholders

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| <p>1. What service lines need to be included?<br/><br/>Do fire and irrigation lines need to be included?</p>   | <p>Per EPA Guidance, ADEQ is requiring that all service lines must be included in the inventory, irrespective of their actual or intended use.</p> <p>Fire flow and/or irrigation lines that are entirely separated from the potable portion of the distribution system by backflow prevention devices can be omitted from the inventory. Documentation of any lines excluded must be provided with inventory submission in narrative.</p>   |
| <p>2. Which service line definitions should we use?</p>  | <p>ADEQ is using EPA’s definition of service line. That is, a service line is the pipe connecting the water main to the interior plumbing in a <b>building</b>; or, if no building exists, the pipe connecting the water main to an <b>outlet</b> (e.g. drinking fountain or stand pipe). The service line may be owned by the water system or be split between the water system and the customer. Note: a service line may be different than a service connection.</p> <p>A legal definition of a service line was added to the Safe Drinking Water Act (<a href="#">Definitions 40 CFR 141.2</a>) as part of the Lead and Copper Rule Improvements (LCRI) published on 10/30/2024. Prior to that the definition was included the EPA Guidance document, <a href="#">Guidance for Developing and Maintaining a Service Line Inventory</a> (page x).</p> <p><i>(Clarification added 11/24)</i></p> |
| <p>3. What cut off diameter should be used to determine non-lead?</p>  | <p>ADEQ's stance is that service lines with a diameter exceeding 2 inches may be designated as non-lead.</p>   |
| <p>4. What is the official ADEQ lead ban cutoff date for utility service lines and customer service lines?</p> | <p>ADEQ's position is that from and after June 19, 1988 may be designated non-lead.</p> <p>Water systems may submit documentation demonstrating compliance with earlier regional lead ban standards, such as MAG or PAG.</p>   |



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| <p>5. Are public water systems required to inventory or track connector pieces (i.e. curb stops, meters, fittings, etc.) and lead solder in customer service lines or premise plumbing?</p>    | <p>Public water systems must capture lead connector pieces (i.e. curb stops, meters, fittings, etc.) and lead solder in the service lines and/or premise plumbing as part of their inventory. This information will determine the sample site tier category (i.e. tier 1, tier 2, tier 3, etc.) in accordance with 40 CFR 141.86(a)(3).</p>   |
| <p>6. Do we need to identify consecutive service line materials for all for commercial or wholesale customers (e.g., mobile home parks, other utilities, who are also a PWS?)</p>              | <p>Yes. A public water system is required to identify every service line that connects any building or outlet to the distribution network. That service line may exist either entirely on the system side of the network, or may be located entirely on the customer side.</p> <p>For mobile home properties, the inventory should examine both sides of the "stub", or the pipe coming out of the ground that provides the service connection to the mobile home and the pipe/line coming out of that connection.</p> <p>However, if the entity (i.e. mobile home park, other utilities, subdivisions, etc.) is a regulated community or non-transient non-community public water system then that entity is required to comply with the LCRR and submit their own inventory. In other words, the wholesaling system does not need to include separate public water systems in their inventory. <i>(Clarification added 11/24)</i></p> |
| <p>7. If we use a source of service line information that is not on the approved list, can alternative sources be used? If so, do they require approval and how is that approval acquired?</p> | <p>ADEQ must provide approval before alternative sources are used. Email alternative method questions to <a href="mailto:lslinventory@azdeg.gov">lslinventory@azdeg.gov</a></p>   |
| <p>8. Does ADEQ anticipate providing extensions to the compliance requirements due by October 16, 2024?</p>  | <p>At this time ADEQ will not be granting any extensions to water systems for LCRR requirements. All water systems are required to submit an initial LSL inventory, Lead Service Line Replacement (LSLR) plan, tap monitoring plan, and if they are a CWS, a list of all schools and licensed childcare facilities subject to the lead in school sampling requirements. Lead in schools sampling will begin after October 16, 2024 for community public water systems.</p>  |



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| <p>9. EPA states - don't wait until the inventory is done to start the replacement plan, ADEQ thoughts?</p>  | <p>ADEQ supports EPA’s messaging and highly recommends for water systems to begin replacing lead, galvanized-requiring replacement, and unknown service lines upon discovery and as early as possible.</p>  |
| <p>10. If we can show our water utility infrastructure was installed after the lead ban, based on as-built dates for example, can we use these official documents to meet compliance requirements?</p> | <p>Yes. If the public water system has thorough records that can prove the installation of the service lines were after the Arizona (or other relevant) lead ban, then this is justification to determine the service line as non-lead on the utility side. The public water system should consider whether the service line for the system and customer service line were constructed at different dates.</p> <p>Classification based on age can only determine that the service line is “non-lead.” Water systems will have to use other records or methods to determine the actual material of the service line.</p> <p><i>(Clarification added 11/24)</i></p> |
| <p>11. What is the recommended annual replacement rate? 3%, 7% or other?</p>   | <p>Based on the finalized LCRI:</p> <p>A public water system must replace service lines at a rate of at least 10% per program year (i.e. calendar year beginning from the compliance date of the LCRI). Once LSL replacement requirements begin the system cannot stop LSL replacements until all known lead lines are replaced. (<a href="#">40 CFR 141.84(d)(5)(i)</a>)</p> <p><i>(Clarification added 11/24)</i></p>   |



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12. Which field verification methods are acceptable?

- Scratch, magnet, and swab testing
- CCTV (case by case basis, propose method to ADEQ for approval)
- Excavation (potholing) - preferred hydro because of cost-effectiveness

See chart for AWWA's rating of utility cost, disturbance, skill required and overall method evaluations. Note not all methods are approved by ADEQ. *(Clarification added 5/24)*

| LSL ID Method                               | 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 (includes pre-/post-time) | Technical interpretation | Labor  | Time    | Accuracy |
| Community Records Review                    | L or M (if digitized) | NA          | M to H (L if digitized) | None         | None         | None                     | None            | None  | L to M                   | None   | M       | L to H   |
| Basic/Visual Observations (on private-side) | L                     | L           | L to 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                        | L      | M       | L to M   |
| Water Quality Sampling-Sequential           | M                     | L           | M to H                  | None         | None         | M                        | None            | M to H  | M                        | L to M | 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   |

[Hensley, Bosscher, Triantafyllidou, Lytle, 2021, AWWA Water Science](#)  
"Lead Service Line Identification: A Review of Strategies and Approaches"

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13. What alternative methods are approved by ADEQ to determine a basis of material classification?

ADEQ is accepting interpolation and sequential sampling as described below as a basis of material classification (see questions 14 and 16). These are not "field verification" methods. *(Added 5/24)*





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| <p>14. What are acceptable methods for predicting lead service lines?</p>                                     | <p>Due to the different definitions of predictive modeling and statistical analysis ADEQ's guidance on these issues can be found separated out below as interpolation and random stratified sampling.</p> <p>ADEQ is accepting interpolation to determine service line material classification based on: a homogeneous community with less than 1,500 service connections AND two or more similar factors including: construction year, location, or contractor/developer. ADEQ requires a minimum of 20 percent of the total service lines (randomly selected) in the homogeneous area to be visually or physically investigated.</p> <p>For the results to be valid, 95% of the sample results in the area must indicate the same material. Additional randomly selected service lines may be sampled to reach 95% if needed. If any lead or GRR lines are found in a homogenous community the area cannot be interpolated and 100% of the unknowns would then need to be field verified.</p> <p>Documentation of method must be submitted to ADEQ with inventory.<br/><i>(Clarification added 2/24)</i></p> <p>ADEQ is currently not accepting random stratified sampling as a service line material classification method. Random stratified sampling may be used for "prioritizing areas for service line investigation and expediting LSLR [replacement]" according to EPA Guidance Chapter 5.5.</p> |
| <p>15. Are swordfish, electrical resistance testing, or x-ray tech acceptable field verification methods?</p> | <p>No. ADEQ is currently not accepting the swordfish method, electrical resistance testing, or x-ray tech as field verification methods for the development of a lead service line inventory. These methods require evidence of effectiveness in the field and further documentation from credible sources.</p>  |





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| <p>16. How can water quality sampling be used for the inventory?</p>   | <p>ADEQ is not accepting targeted or flushed sampling as a basis of material classification. However, ADEQ will accept sequential sampling as a basis of material classification to determine the presence of lead (cannot be used to determine the absence of lead) as described below:</p> <ul style="list-style-type: none"> <li>• Minimum of ten 1 liter sequential samples from a single ground floor source (interior, usually kitchen, sink faucet with cold water) to determine if a single service line is lead, additional samples may be needed based on pipe volume to reach the service line</li> <li>• Before the first sample is drawn the lines must be stagnant for a minimum of 8 hours</li> <li>• Results from testing that demonstrate a combined lead mass in the total samples of 5 µg or greater indicate a lead line</li> <li>• Systems must provide an approximation of pipe volume to reach the service line, a map to show where the samples are coming from, and the lab results for every sample in an appendix to the water system narrative before collecting samples.</li> <li>• Every sample drawn and used as a basis of material classification must be included in the appendix.</li> <li>• This method is only applicable for service connections that can reliably perform the required stagnation period, for example single family residences or a vacant multi family residence.</li> </ul> <p><i>(Added 5/24)</i></p> |
| <p>17. How many points of field verification are required on the customer side?</p> <p>How many points of field verification are required for the water system side?</p> | <p>ADEQ's stance on field verification on the customer side is that a minimum of two points along the service line (not the connector) must be inspected to provide verification. One point of inspection must be inside of the meter box or within 18 inches of the meter box on the customer side. The other point of inspection must be within 18 inches of the building.</p> <p>The water system side needs one points of field verification along the service line (not the connector) inside of the meter box or within 18 inches of the meter box on the water system side.</p> <p>For a single ownership system where there are no customers, a single point of verification for each service line is acceptable, but we encourage systems to report two points where possible (i.e. both sides of the shut off valve). <i>(Clarification added 11/24)</i></p>  |



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| <p>18. Can customer attestation forms be used to classify materials on the customer side?</p> <p>Can customer surveys be used as one of the two points of verification on the customer side?</p> | <p>ADEQ is currently not accepting customer attestation <u>without any further evidence</u> as a basis of material classification. However, the public water system may use customer attestation as one point of verification on the customer side if it includes evidence such as a photo of the service line (visual inspection), an invoice for plumbing work showing materials used, and/or confirms they have performed a scratch test where applicable.</p> <p>The public water system should develop a method for documenting the response from the customer (e.g. email, phone log, etc) in its records.</p> <p>Customers may be directed to the EPA's website that provides instructions on how to check for lead service lines: <a href="https://www.epa.gov/ground-water-and-drinking-water/protect-your-tap-quick-check-lead-0">https://www.epa.gov/ground-water-and-drinking-water/protect-your-tap-quick-check-lead-0</a></p> <p>Water system must submit survey questions to ADEQ in advance of using the survey to receive approval to proceed. <i>(Clarification added 11/24)</i></p> |
| <p>19. Which inventory template should we use, EPA's or ADEQ's?</p>  | <p>ADEQ is requiring water systems to use the 120 Water Database to submit their inventory. The most current template can also be found on the 120 Water Database when submitting.</p> <p><i>(Clarification added 11/24)</i></p>   |
| <p>20. Can the utility use internal standard operating procedures, policy, etc. as verification for service line materials?</p>  | <p>Yes, using documented internal standard operating procedures, policy, etc. can be used by the utility to confirm the service line materials on the utility side of the meter. Customer service line materials will need to be verified or evaluated through other methods.</p>  |
| <p>21. What is the process to get ADEQ approval relating to lead service lines?</p>  | <p>Email questions/ documents for approval to <a href="mailto:lslinventory@azdeq.gov">lslinventory@azdeq.gov</a>, upload inventory for compliance to <a href="http://pws.120wateraudit.com">pws.120wateraudit.com</a></p>  |



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| <p>22. How do water systems get customer buy in for field verification on the customer side?</p>                                     | <p>ADEQ suggests a strong proactive community outreach program. See Arizona Water Works Association's Lead Communications Guide and Toolkit pages 5-10 for outreach strategies.<br/><a href="https://www.awwa.org/Portals/0/AWWA/Communications/2022LeadPageAssets/2022AWWA-LeadCommunicationsGuideAndToolkit.pdf">https://www.awwa.org/Portals/0/AWWA/Communications/2022LeadPageAssets/2022AWWA-LeadCommunicationsGuideAndToolkit.pdf</a><br/><i>(Added 3/24)</i></p> |
| <p>23. We missed the virtual trainings held in February for 120Water. How do we attend a training and get access to our account?</p> | <p>Access <a href="https://120water.com/arizona-virtual-training-information-form/">https://120water.com/arizona-virtual-training-information-form/</a> and fill out the forms to receive training materials including a recording of the training and access to 120Water.<br/><i>(Added 3/24)</i></p>  |