WVAW Lead Service Line Replacement Strategy – Appendix A

Lead service line replacement is anticipated to occur as one of 4 scenarios.

The 4 scenarios anticipated are:

1. Lead or GRR service line replacement for company and customer service lines, as part of a replacement project(s). The preferred method is to have the work performed by contractors.
2. Lead or GRR service lines found during the course of normal work or during an emergency call out to repair a service leak. The service line materials will be documented for future replacement.
3. Lead or GRR service line reported by the customer to the company. The service line materials will be documented for future replacement.
4. Lead or GRR service lines identified by the company during the inventory process through means of visual inspection, customer self-identification, potholing, and other techniques.

LSLR prioritization for LSLR scheduled projects

Project areas will be selected based on prioritization of targeting areas with known lead or GRR service line based on updated inventory data, areas with disadvantaged consumers and populations most sensitive to the effects of lead.

Consent Agreement for LSLR

WVAW must identify any State and local laws and water tariff agreements relevant to the water system's ability to gain access to conduct full lead and GRR service line replacement as well as a citation to the source of the requirement. WVAW's right of entry agreement will be provided to customers for review, signature and must be returned to WVAW, giving WVAW's contractors permission to enter private property to perform the service line replacement on the customer's portion of the service line.

Customer Notification for LSLR

Community outreach will begin 3-6 months prior to contractor beginning work on lead service line replacement project. Various communications methods below will be utilized to provide community education on the details of the WVWW LSLR program:

- Post card notification
- Mailers
- Bill inserts
- Email notification
- Website links
- Door hangers
- Press releases
- Community meetings/bulletin boards
- Social media posts

For lead or GRR service lines found during normal work, customers will be notified by door hanger that a lead or GRR service line has been observed and WVAW will add this location to a future replacement plan.

For lead or GRR service lines found during a call out for emergency, a door hanger will be posted at the home to provide information about the work that was completed as per the emergency call. The company will notify the customer on the door hanger if a lead or GRR line has been observed. If lead or GRR was observed on the customer side, a NSF-53 pitcher certified to remove lead will be left with instructions for use. Flushing instructions and precautionary measures to reduce lead in the tap water will be left with the pitcher. The company will schedule to replace the customer's side of the lead service line within regulatory requirements.

Right of Entry Agreement

LSLR informational documents and a right of entry agreement will be mailed to the owner/customer of each property included in a replacement contract at least 45 days in advance of work replacement beginning. The signed agreement will not need to be returned to begin test pit work for service line verification on the customer side of the line but will need to be signed and returned for verification before replacement of any lead or GRR found between the meter and point of entry.

WVAW will develop a *Refusal Form* to be used when the current owner of a property with a verified lead or GRR service line refuses to allow WVAW to complete a service line replacement on the customer portion of the service line. The refusal form will request the owner to identify the reason replacement is being refused.

Documentation and Record Keeping for Right of Entry

Management of right of entry agreement status and electronic filing of right of entry agreements will be completed for all LSLR.

Field Results

Results of service line material verification will be provided to the customer by the contractor using WVAW developed door hanger. This door hanger will include the following:

- Date of test pit
- Service line material observed from main to meter
- Service line material observed from meter to Point of Entry (POE)
- POE service line material (if customer was home and allowed contractor to enter for POE)
- Contact phone number/email address for questions

Documentation and Record Keeping for POE

Posting of field result door hanger or notice will be the responsibility of the WVAW contractor. Photos of the delivered door hanger are required to be taken with a date/time timestamp and the uploaded to the electronic LSLR field application that will be developed as part of the LSLR Program.

Potential Construction Techniques for Lead Service Line Replacement

Impact Moling Replacement Method

Impact moling is a highly efficient trenchless technology that allows for the installation of pipes and cables with minimal surface disruption. It's particularly effective in compressible soils where traditional trenching could be more invasive and costly. However, challenges can arise in dense soils or loose sands, where borehole stability is a concern. For a successful impact moling operation, thorough knowledge of

the soil conditions and existing underground infrastructure is crucial to avoid any potential conflicts or hazards.

While generally being non-steerable, moles are a vital tool for creating straight bores. These moles, which can be equipped with either fixed or moving heads, are designed to match the specific conditions of the soil they will encounter. The success of a bore relies heavily on the initial alignment within the insertion pit, as this sets the trajectory for the mole's underground journey. Operators can maintain this alignment by regulating the air supply to the tool. Additionally, some non-steerable moles come with tracking features to monitor the bore's progress and ensure it remains on course.

Impact moling requires careful consideration of depth to prevent surface damage. The rule of thumb is to operate at a depth at least ten times the diameter of the product pipe or a minimum of 3-4 feet, whichever is greater. The speed of moling is crucial for the accuracy of the bore, with non-steerable moling averaging an advance rate of 1-5 feet per minute, while steerable moling typically progresses at about 1 foot per minute. Adhering to these guidelines ensures the integrity of the installation and minimizes the impact on the surrounding area.

Pipe Pulling Replacement Method

Pipe pulling is a sophisticated method in the field of trenchless technology, offering a streamlined approach to replacing old pipelines. By utilizing the existing pathway, this technique minimizes the impact on the surrounding environment and reduces the need for extensive excavation work. The process not only accelerates the installation of new pipes but also significantly cuts down on labor requirements. This efficiency translates into cost savings and less inconvenience for the community. Moreover, the method's precision greatly diminishes the likelihood of damaging adjacent utility lines, which is a common concern in areas where underground networks are densely packed. Overall, pipe pulling represents a modern solution that addresses both economic and safety challenges in infrastructure maintenance.

There are several companies offering specialized pipe pulling equipment. This equipment is designed to extract old service pipes made of materials like lead and steel quickly and safely while simultaneously towing in a new service pipe. The process is conducted in a single operation, utilizing a powerful pulling winch mounted on a compact excavator. This method not only minimizes the risk of damaging nearby utilities but also mitigates environmental hazards associated with decommissioned pipes. It's a safe and efficient solution for operators and the public, reducing the size of excavations, the cost of reinstatement, and most importantly, ensuring safety during the operation.

Open Trench Replacement Method

Open trench excavation is the traditional and previously most common method for water lateral repair or replacement. Open trench excavation involves excavating a trench for the manual installation of the waterline. This type of work is applicable when the condition of the waterline or soil conditions make other methods impossible.

The open trench method is, on average, more costly than trenchless replacement as it requires more time, excavation, and restoration to complete. In addition, open trench excavation may require the removal of street and sidewalk pavement which also increases the cost of the repair. Despite the expense of open trench excavation, there are instances where it is the only option over trenchless replacement. There are two routine reasons to use open trench at a particular location.

1. A new water line cannot be pulled through – Sometimes the waterline may include fittings or bends that prevent the line from being pulled without significant surface disruption. Conditions like buried concrete, buried building debris, and fine sand sometimes prevent the water line from being pulled. If the contractor is unable to pull a new pipe through, then an open trench approach may be appropriate.

2. To Ensure Safety in Areas Surrounded by Dangerous Utilities –When the work is done in areas where there are too many utilities adjacent to the water line. These utilities could include sewer, electric, gas or fiber lines. Due to the congested nature of these areas, open trench excavation is recommended over trenchless methods.

Post LSLR Guidance for the Resident

- Full house flushing instructions

Upon completion of lead or GRR service line replacement the contractor will leave the customer with written post replacement instruction developed by WVAW that will provide instructions for recommended full house 30-minute flushing and aerator cleaning.

- Pitcher Filter

Upon completion of lead or GRR service line replacement the contractor will leave the customer with an ANSI NSF-53 certified water filter pitcher with a 6-month supply of replacement cartridges. Written guidance on filtering water for drinking and cooking and precautionary measures to take following a lead or GRR service line replacement developed by WVAW will be included with the pitcher filter.

Documentation and Recordkeeping

Delivery of the pitcher filter and full house flushing instruction will be the responsibility of the WVAW contractor or company crew replacing the lead or GRR line. Recording the method of a delivered pitcher filter and confirmation that flushing instructions were provided, are required to be taken with date/time timestamp recorded within the LSLR workorder field app.

Sampling opportunity 3-6 months post replacement

The Company will send a postcard to the resident (and owner) to offer the resident the opportunity to sample the water between 3 to 6 months after the replacement date. Residents may then request a kit using an online request form or by simply completing and returning the postcard.

The sampling kit and lead analysis of the sample will be completed at no cost to the customer. The sampling kit will consist of sampling instructions including a video link, one 1-liter wide mouth bottle and sampling chain of custody.

Documentation and Recordkeeping

Tracking of the delivery method and delivery date of the post replacement sampling opportunity will be managed by the WVAW Water Quality Department.

- Lab results will be provided to the resident (and owner) within 3 days of analysis completion if the lead result exceeds the EPA Action Level of 15 ppb. Lab results will be provided to the resident (owner)within 30 days of analysis completion if the lead result does not exceed the EPA Action Level of 15 ppb.

Follow up Plan for LSLR locations that exceed EPA Action Level of 15 ppb

For any locations where the post replacement lead result exceeds 15 ppb, the WVAW water quality department will reach out to the person responsible for collecting the sampling as per the sample chain of custody using the phone number provided on that document. During the phone call the following questions will be asked:

- What water tap was the sample collected from?
- Was the full house flush performed following the replacement?
- Have the aerators on the tap been cleaned periodically following replacement?
- Did stagnation of the water line occur prior to sampling for at least 6 hours but no more than 48 hours?
- Is someone living at the property? Is there normal water consumption occurring?

If there appears to be an issue with collection that could have impacted the lead result the customer will be asked to repeat sampling. If there appears to be no issue with the collection of the sample, WVAW will recommend to the customer that they perform full house flushing and encourage them to resample within 30 days.

Documentation and Recordkeeping

The Water Quality Department will manage and track all interaction with the customer and follow up sampling results and investigation.

Partial Replacement Strategy

In cases where a full replacement is not immediately feasible, the EPA recommends the installation of a dielectric coupling. This device is designed to separate the remaining lead or GRR service line from the newly replaced section, which could be made of a different metal or plastic. The purpose of the dielectric coupling is to prevent galvanic corrosion, a process that can occur when dissimilar metals are in contact with each other in the presence of an electrolyte, such as water. Galvanic corrosion can lead to the release of lead scale particulates into the water supply, posing a significant health risk. By installing a dielectric coupling, the integrity of the water system is maintained, and the risk of lead contamination is significantly reduced.