Lead Service Line Inventory Investigation Example Standard Operating Procedure

[NOTE: This is an SOP template meant to be altered and customized to suit the specific needs of a public water system. Properly written and effective SOPs contain elements that provide comprehensive information, other than what is provided here, such as personnel qualifications and record keeping procedures. To prepare SOPs, use the *EPA Guidance for Preparing Standard Operating Procedures*[1] QA/G-6 located on the EPA webpage. In adapting this SOP to your personal needs, highlighted sections are meant to be filled with appropriate information, and instructions colored in red should be removed.]

Scope and Applicability

The Lead and Copper Rule Revisions (LCRR) requires public water systems (PWS) to inventory all service lines within their distribution system, regardless of ownership. The information in this SOP provides the primary steps for determining service line material. It includes the minimum requirements to ensure all required records are reviewed and guidelines to assess the accuracy of historical records and gather additional information when a line is classified as "unknown." Texas Commission on Environmental Quality (TCEQ) requirements are also included.

Procedure

Record Review

The LCRR requires the PWS to review sources that could contain information on service line construction materials when completing the service line inventory (40 CFR §141.84(a)(3)). Paragraphs 40 CFR §141.84(a)(3)(i) through (iv) outline the required records that must be reviewed and are summarized below. Table 1 (below) lists which records the system has access to and where these records are located.

1. Previous Materials Evaluations

Example: Locations of Tier 1 lead tap sampling locations that are served by a lead service line.

2. Construction Records and Plumbing Codes

Examples: Local ordinance adopting an international plumbing code. Permits for replacing lead service lines.

3. Water System Records

Examples: Capital improvement plans. Standard operating procedures. Engineering

[1] https://www.epa.gov/sites/default/files/2015-06/documents/g6-final.pdf

standards.

4. Distribution System Inspections and Records

Examples: Distribution system maps. Tap cards. Service line repair/replacement records. Inspection records. Meter installation records.

5. Other Records

Examples: Interviews with past PWS employees, Interviews with local plumbers, etc.

Table 1: Records Reviewed and Location

Record Category	**Specific Records Used** [For each record category, what specific records are you using? Are these internal documents or are they sourced from elsewhere? What years/locations do these records cover? Include whatever information you can so that someone else could easily find the records you used and pull the same information from them if needed.]	**Location** [Where specifically are these records kept? If they are in your office, include a room name/number. If they are held offsite in town/city/county records, include an address of where. Again, include enough information so that someone else could locate the same records you did if they needed to.]
Previous Material Evaluations	[What previous material evaluations did you review?]	[Where are your previous material evaluations located?]
Construction Records and Plumbing Codes	[What construction records and plumbing codes did you review?]	[Where are your construction records and plumbing codes located?]
Water System Records	[What water system records did you review?]	[Where are you water system records located?]
Distribution System Inspections and Records	[What distribution system inspections and records did you review?]	[Where are your distribution system inspections and records located?]
Other Records	[What other records did you review?]	[Where are any other records located?]

Service Line Investigations

Investigations are not required by the LCRR but can be used to assess the accuracy of historical records and gather information when service line material is unknown.

[**Note:** Some methods for investigation (e.g., predictive modeling, water quality sampling, and emerging methods) can be used as a tool to prioritize investigations, however state approval is required if they are to be used as the sole means for material determination.]

Methods for investigating service lines include:

- Visual inspection of service line material
  - Visual inspections at the meter pit
  - Scratch/ magnet tests/ swab tests
  - Visual inspections by customers
  - CCTV inspections by the PWS
- Water quality sampling
  - Targeted service line sampling
  - Flushed sampling
  - Sequential sampling
- Excavation
  - Mechanical Excavation
  - Vacuum Excavation
- Predictive modeling
- Emerging methods

[If any investigative methods are to be used in completing the Lead Service Line Inventory, they need to be listed in the table below (Table 2) along with the criteria that needs to be met for the method to be used and a procedure for conducting the investigative method. Remember that these methods cannot serve as a substitute for records review and must be used alongside it. Appendix 1 includes a blank form for collecting information for the Lead Service Line Inventory and guidelines for its use.]

Table 2: Investigate Method Criteria and Procedure

Investigative Method	**Criteria for its use**	**Procedure**
[What method are you using?]	[When are you using this method? Be as specific as possible.]	[What is the procedure for conducting an investigation with this method? Write it in a way that others can easily follow and duplicate it.]

TCEQ Inventory Template Form

Service line material classifications shall be documented on the TCEQ Service Line Inventory Form for Public Water Systems (Form 20943).

- Copies of the form can be found on the LCRR website.
- Form 20943 should be completed on a computer and should not be printed for use.
- PWS is required to update the form through normal maintenance operations and submit an updated form annually or triennially based on the systems lead and copper tap sampling schedules.

Reference Section

1. EPA Guidance for Preparing Standard Operating Procedures: epa.gov/quality/guidance-preparing-standard-operating-procedures-epa-qag-6-march-2001
2. EPA Guidance for Developing and Maintaining a Service Line Inventory: https://www.epa.gov/ground-water-and-drinking-water/revised-lead-and-copper-rule
3. TCEQ Drinking Water Lead and Copper Program - https://www.tceq.texas.gov/drinkingwater/chemicals/lead_copper

Appendix A: LSLI Field Investigation Template-Multiple Sites

The following template is a tool for collecting service line information from multiple sites during field investigations. This information is used to complete your Lead Service Line Inventory (TCEQ Form 20943). Instructions for each column are found below.

Unique Service Line ID – A Unique ID is recommended for each service line.

- **Location Information** – Water systems must track addresses of all service lines in their internal inventory. For the publicly accessible version, location identifiers are required for lead and galvanized requiring replacement. If the system does not use addresses for their location identifier, other options could include a landmark, intersection, block, or other details to specify service line locations. If using GPS coordinates, utilize the GPS Coordinate- Latitude/Longitude fields and include 5 decimal places.
    - **Street Number** – The street number of each service lines address.
    - **Street Name** – The name of the street for each service line address.
    - **City** – The city where the service line address is located.
    - **Zip Code** – The zip code for the service line address.
    - **Other Location Identifier** – Any other way the service line location is designated.
    - **GPS Coordinates** – The latitude and longitude corresponding to the service line address. On the inventory the latitude and longitude will be entered as separate fields.

- **Service Line Material Classification** – TCEQ Form 20943 utilizes a dropdown list for this information. If "non-lead other" describe in Notes field. Depending on ownership status, the customer and system-owned portions may be made of separate materials and can be marked separately. The service line material can be classified as:
    - Lead
    - Lead-lined galvanized
    - Galvanized
    - Non-lead
    - Non-lead – copper
    - Non-lead – plastic
    - Non-lead – other
    - Unknown – likely lead
    - Unknown – unlikely lead
    - Unknown – material unknown
- **Comments** - Use this field for documenting additional relevant information, including when classification changes.

LSLI Field Investigation Notes									
Unique Service Line ID	Street Number	Street Name	City	Zip Code	Other Location Identifier	GPS Coordinates	System-owned Portion Service Line Material Classification	Customer-owned Portion Service Line Material Classification	Comments

Appendix B: LSLI Field Investigation Template-Single Site

The following template is a tool for collecting service line information from individual sites during field investigations. This information is used to complete your Lead Service Line Inventory (TCEQ Form 20943).

Lead/Copper Rule Revision Field Investigation Template

Date of Inspection: _____

Customer Name: _____

Address/Location of Service Line: _____

Meter #: _____

Description of Meter and/or Location: _____

Material for PWS Service Line:

( ) Lead
( ) Lead-line Galvanized
( ) Galvanized
( ) Non-Lead – Copper
( ) Non-Lead – Plastic
( ) Non-Lead – Other
( ) Unknown – Likely Lead
( ) Unknown – Unlikely Lead
( ) Unknown – Material Unknown

Material for Customer Service Line:

( ) Lead
( ) Lead-line Galvanized
( ) Galvanized
( ) Non-Lead – Copper
( ) Non-Lead – Plastic
( ) Non-Lead – Other
( ) Unknown – Likely Lead
( ) Unknown – Unlikely Lead
( ) Unknown – Material Unknown

PWS Side Pipe Diameter:

( ) 5/8 Inch
( ) 1 Inch
( ) 1 ½ Inch
( ) 2 Inch

Customer Side Pipe Diameter:

( ) 5/8 Inch
( ) 1 Inch
( ) 1 ½ Inch
( ) 2 Inch

PWS Side Installation Date: _____

Installation Date Customer Side: _____

Is there a lead connector? (Y) / (N)

Is there Lead Solder in the Service Line? (Y) / (N)

Describe any other fittings and equipment connected to the service line that contain lead (for example, backflow preventer or meter containing lead):

_____

_____

_____

Source of Information:

( ) Visual Inspection at the Meter Pit
( ) Customer Self-Identification
( ) CCTV Inspection at Curb Box - External
( ) CCTV Inspection at Curb Box - Internal
( ) Water Quality Sampling - Targeted
( ) Water Quality Sampling - Flushed
( ) Water Quality sampling - Sequential
( ) Water Quality Sampling - Other
( ) Mechanical Excavation
( ) Vacuum Excavation
( ) Predictive Modeling
( ) Other

If Other, Explain: _____

Building Type:

( ) Single Family Residence
( ) Multi Family Residence
( ) Building
( ) Other

If Other, Explain: _____

Point-of-Entry or Point-of-Use Treatment Present? (Y) / (N)

Current LCR Sampling Site? (Y) / (N)