

**Peaks Mill Water District (PMWD)**  
**Service Line Inventory**  
**Project Goal and Objective**  
**Project WX# 21073034**

**Revised 3/21/23 per Ky DOW Request**

This project is for the Peaks Mill Water District (PMWD) to develop a Service Line Inventory (SLI) database for the approximate 1,250 public and private service lines in the water distribution system as required by the EPA Revised Lead and Copper Rule. EPA's Lead and Copper Rule requires water systems build a Service Line Inventory database by October 2024.

The project will identify which service lines (public and private) are made of lead piping. Work shall include professional engineering services to manage the project to review historic records, pipe installation years, housing/subdivision age and visual inspections on existing service lines. Identification will be performed by vacuum, backhoe or manual excavation (or use of other approved technology) to determine the type of service line material. The methods used to verify service line material type will follow the Kentucky Division of water Guidelines shown in Exhibit A.

The Service Line Inventory will be built using an Excel spreadsheet will include a service line ID, street address, city, state, zip code, location identifier, GPS Lat/Long coordinates, system-owned service line material and verification method, customer-owned service line material and verification method, water main type, approximate age (if known), and other asset attributes using the template developed by the KY Division of Water (Exhibit B). Field excavations will be photo documented and included in the database. The service line inventory information will be linked to PMWD's ARC GIS mapping and asset management system being developed with assistance of KY Rural Water Association. Customers will be notified of this program through a customer engagement process including information posted on the website, mailers sent to customers and customer surveys.

Goal/Objective: Complete a Service Line Inventory database for 1250 service lines by October 1, 2024 to achieve compliance with the Revised Lead and Copper Rule. Identify the location of all lead services lines (public and private). After completion of the Service Line Inventory, develop a plan and schedule to replace all lead service lines (public and private).

Exhibit C includes the tasks and activities for the Service Line Inventory Project and a revised project estimate of \$75,000. The average cost per service line is \$60.00.

Exhibit D includes the map of the project area in Franklin and Owen Counties.

Project Summary Prepared by:

Greg Heitzman, PE  
Bluewater, KY  
Revised 3/21/23

### **Input from Ky DOW after review of initial project scope:**

1. SL Inventory project. Good project description. Have not started inventory, but have a detailed, concrete plan of action.
2. Description of the method for data management & projected format to be used to submit inventory to DOW (e.g., Excel spreadsheet, ArcGIS, other).

PMWD Response: WRIS project description updated to include method of data management (Excel spreadsheet and ARC GIS mapping system). Submit final service line database to Ky DOW in Excel spreadsheet.

3. Breakdown of proposed methods to be used and estimates of costs associated per method. Detailed scope of work for completing inventory by Oct 2024 deadline (compliance). Scope of work should indicate how the system will be in compliance with the LCRR service line inventory requirements.

PMWD Response: A detailed list of the steps included in the scope of work are provided, including estimated hours and cost of services to complete the service line inventory database. The scope of work states that PMWD will be in compliance with the Revised Lead and Copper Rule by Oct 1, 2024.

4. Ensure that the estimated cost(s) to complete the inventory, based on the proposed method(s), are reasonable according to best available data.

PMWD Response: To be determined by Ky DOW

# Exhibit A



ENERGY AND ENVIRONMENT CABINET  
DEPARTMENT FOR ENVIRONMENTAL PROTECTION  
DIVISION OF WATER  
300 SOWER BOULEVARD  
FRANKFORT, KENTUCKY 40601

## Minimum Requirements to Verify Service Line Material

### Records Review

Water systems must review any and all records available that may indicate service line materials in the distribution system.

- Previous materials inventories, such as that required by the 1991 Lead and Copper Rule
- Records indicating installation date after lead ban (statewide ban was January 1, 1988)
  - Aerial photos
  - PVA records
  - Board of Realty records
  - Tax documents
  - Codes and ordinances
- Historic construction and plumbing codes that ban use of lead
- Construction and plumbing permits
- Distribution system plans and maps
- Tap cards
- Meter installation records that indicate material of service lines
- Inspection records
- Historic capital improvement plans or master plans
- Standard operating procedures
- Construction specification manuals and as-built construction drawings (plans, etc.)

### Visual Verification

Visual verification includes field inspections, customer inspection/visualization, and use of devices like cameras, lead detection kits, and lead pipe detection tools.

- Visual inspection, when used, must include *at least* one point on the straight pipe (i.e., the service line, not any connectors) on the system-owned section and one point on the customer-owned section of the service line.
- Visual inspections may be possible from the meter pit
- Visual inspection during routine operations:
  - main line replacement and repair
  - service line replacement and repair
  - meter replacement and repair
  - meter turn-on and turn-offs
  - new service installation
  - meter vault/box/lid maintenance
  - cross-connection/backflow inspection
- Customer inspection
  - Request and document as much evidence from the customer as feasible (photos, description of method(s) used to detect material, etc.)
- Excavation: Vacuum truck, potholing, manual
- Visual inspection using CCTV<sup>1</sup>
- Buried pipe detection tools
- Lead detection strips or kits – ensure the pipe is not coated in lead-based paint

<sup>1</sup> Be aware of the potential for pipe scale disturbance when disturbing lead or galvanized pipes. For more information, view [Harmon et al., 2022](#).

## Exhibit A continued



### Customer Engagement

Engage customers for assistance identifying service line materials, and to collaborate on service line replacements when needed.

- Mail a flyer: use this [flyer template](#) or this [letter template](#)
- Have customers take this EPA on-line quiz to determine service line material: [www.epa.gov/ProtectYourTap](http://www.epa.gov/ProtectYourTap)
- Include this [bill insert](#) provided by EPA
- American Water Works Association provides [Consumer Tools](#)
- Provide customers with this flyer by the LSLR-Collaborative: [Identifying Service Line Material](#)

### Alternative Methods

These methods may provide additional information that could be used to determine service line materials. Not all the methods listed provide definitive information about the service line material.

- Targeted or Sequential water sampling: Use the 5th liter and a wide-mouth bottle to get the most accurate results. Compare to 1<sup>st</sup> liter samples to better demonstrate that any lead detected is from the service line, not the premise plumbing. Follow a scientifically-developed, peer-reviewed method for best results.<sup>2</sup>
- Service line diameter – pipes > 2” diameter are generally not lead
- Predictive or statistical models<sup>3</sup>
- X-ray fluorescent analyzers; for example, [Thermo Fisher XRF analyzer](#), [Olympus handheld XRF](#), or [Geotech handheld XRF analyzer](#).

### Insufficient Verification Methods & Records

These methods and documents may be used as a resource to verify service line materials, but are not sufficient on their own. DOW suggests, if used, that they be paired with one or more of the records mentioned above.

- Senior employee/retiree affidavit – senior employees have a lot of knowledge of the history of the distribution system and make an excellent resource to narrow down the search process, but are not a definitive resource for identifying the material of each service line
- Records that are found to have low accuracy – water systems may start out using records that seem informative, only to later find they have low accuracy. There should be a process to verify the accuracy of records, or to update the materials classification should a series of records previously used prove to be inaccurate
- Incomplete records – records that indicate age of plumbing renovations or dates that meters were changed, but aren’t specific about whether service lines were changed at the same time, for example, are helpful for narrowing down the search field, but may be inconclusive as to the service line material or installation date.

<sup>2</sup> For an overview of methods, see: Hensley, K., Bosscher, V., Triantafyllidou, S., and Lytle, D. A. 2021. Lead service line identification: A review of strategies and approaches. AWWA Water Science, 3(3), e1226.

<sup>3</sup> View the [Predictive Modeling Resources](#) document provided by DOW at [www.tinyurl.com/drinkingwatercompliance](http://www.tinyurl.com/drinkingwatercompliance)

# SL Inventory Template

# Exhibit B

PWSID: 0		PWS Name: 0			Date completed:					
Required section										
Service line ID (SLID)	Street address	Location Identifier (if using; see instructions)	City	ZIP code	Spatial coordinates		System-owned Service Line		Customer-owned Service Line	
					Latitude (decimal format)	Longitude (decimal format)	Service line material (choose)	SL material verification method (Final)	Service line material (choose)	SL material verification method (Final)

- Location information
- Material of every service line
- Verification method

## Exhibit C

Exhibit C - Project Scope						
Revised Scope Prepared by BlueWater KY 3/20/23						
Item #	Description of Work Tasks	Schedule	Assignment	Est Hours	Unit Cost	Cost
1	Development of project scope and estimated, submittal to KIA/Ky DOW	October 2022 to March 2023	Bluewater	5	\$ 150.00	\$ 750.00
2	Review RLCR and best practices for implementation of Service Line Inventory	January to March 2023	BlueWater	5	\$ 150.00	\$ 750.00
3	Adaptation of the KY DOW Excel spreadsheet for use by PMWD	April to May 2023	BlueWater	2	\$ 150.00	\$ 300.00
4	Import the list of all meter/service line addresses from billing system.	July 2023	BlueWater	10	\$ 150.00	\$ 1,500.00
5	Interview former contractors that installed water mains and service lines, obtain affidavit where appropriate	July 2023	BlueWater	4	\$ 150.00	\$ 600.00
6	Update the database with GPS coordinates, water main size	July to October 2023	BlueWater	15	\$ 50.00	\$ 750.00
7	Review water main extension plans to assign water main install date	July to October 2023	BlueWater	15	\$ 150.00	\$ 2,250.00
8	Develop communications (including mail and website) to customers the requirements of the Revised Lead and Copper Rule. Mail to customers post on website.	July to October 2023	BlueWater	10	\$ 150.00	\$ 1,500.00
9	Review Franklin/Owen County property records, subdivision plat records, building permits to assign service line installation year	October 2023 to March 2024	BlueWater	30	\$ 150.00	\$ 4,500.00
10	Survey customers regarding age of house, type of plumbing, and compile survey results	October 2023 to March 2024	BlueWater	20	\$ 150.00	\$ 3,000.00
11	Conduct excavations on 5 to 10 percent of the service lines on homes built prior to 1988 to verify public and private service line materials. (Estimate 30 to 60 excavations at \$500 per excavation) by contractor predating 1988 - \$30,000 by contractor.	October 2023 to March 2024	Contractor	60	\$ 500.00	\$ 30,000.00
12	Populate excel spreadsheet with information obtained from records research, survey and filed excavations. Link the seervice line database to ARC GIS mapping system	October 2023 to July 2024	BlueWater	40	\$ 150.00	\$ 6,000.00
13	Review final set of data for accuracy. Submit a certified Service Line Inventory database to KY DOW by Oct 1, 2024.	August to September 2024	BlueWater	20	\$ 150.00	\$ 3,000.00
14	Administrative staff time (office staff)	July 2023 to September 2024		30	\$ 30.00	\$ 900.00
15	Field staff time (utility worker)	July 2023 to September 2024		80	\$ 40.00	\$ 3,200.00
16	Licensed Distribution Operator time	July 2023 to September 2024		20	\$ 50.00	\$ 1,000.00
17	Purchase field equipment for project (GPS locator, metal detector, tools, etc)	April 2023			\$ 9,000.00	\$ 9,000.00
18	Cost of mailing customer communications and survey (2x1250 mailings @\$1.00 each)	July to October 2023			\$ 2,500.00	\$ 2,500.00
19					<b>Subtotal</b>	<b>\$ 71,500.00</b>
20					<b>5% Contingency</b>	<b>\$ 3,500.00</b>
21					<b>Total project Cost</b>	<b>\$ 75,000.00</b>
22					<b>Services)</b>	<b>\$ 60.00</b>

# Exhibit D

