2019 Quarterly Lead Service Line Identification and Replacement Webinar Series

Hosted by EPA's Office of Water (OW)

September 5, 2019 2:00-3:30 pm ET

Webinar #3: Focus on Large Utilities

Webinar Support Phone Number: 1-800-263-6317

Audio Controls: Your audio is muted by the organizer.

Webinar Slides: The webinar presentations can be downloaded under “Handouts” located in the right navigation bar of your screen.

To Ask a Question: Type a question in the “Questions” box located in right navigation bar of your screen.

Schedule & Recordings: https://www.epa.gov/dwreginfo/lead-service-line-identification-and-replacement-webinars

DISCLAIMER

THE INFORMATION IN THIS PRESENTATION HAS BEEN REVIEWED AND APPROVED FOR PUBLIC DISSEMINATION IN ACCORDANCE WITH U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA). THE VIEWS EXPRESSED IN THIS PRESENTATION ARE THOSE OF THE AUTHOR(S) AND DO NOT NECESSARILY REPRESENT THE VIEWS OR POLICIES OF THE AGENCY. ANY MENTION OF TRADE NAMES OR COMMERCIAL PRODUCTS DOES NOT CONSTITUTE EPA ENDORSEMENT OR RECOMMENDATION FOR USE.

In 2019 quarterly webinars will be held to highlight challenges and successes associated with lead service line identification and replacement through case studies from water systems and state primacy agencies.

- Webinar #1: March 7, 2019 2-3:30 pm ET "Introduction to the Series"
  - DC Water and Washington State DOH
- Webinar #2: June 6, 2019 2-3:30 pm ET "Focus on State Programs"
  - Massachusetts DEP and New Jersey DEP
- **Webinar #3: September 5, 2019 2-3:30 pm ET "Focus on Large Water Systems"**
  - **EPA Office of Research and Development, Central Arkansas Water, Louisville Water**
- Webinar #4: December 5, 2019 2-3:30 pm ET "Focus on Small Water Systems"
  - Speakers TBD

Lead Service Line Identification Research

Presented by Simoni Triantafyllidou, US EPA Office of Research and Development

Dr. Triantafyllidou is an environmental engineer at the US EPA's Office of Research and Development in Cincinnati, OH. Her research interests include aquatic chemistry, corrosion science, drinking water quality/treatment, sustainable drinking water infrastructure and public health. At the US EPA, she is primarily conducting lead corrosion research based on harvested pipe scales and water sampling. She has authored more than 25 publications on various scientific aspects of this problem, earning best Paper Awards from the journals Environmental Science and Technology and Journal AWWA. Simoni earned her MS and PhD degrees in Environmental Engineering at Virginia Tech. She was awarded First Place MS Thesis by the Association of Environmental Engineering and Science Professors (AEESP) and by the American Water Works Association (AWWA), as well as Outstanding PhD Dissertation by AEESP.

Lead Service Line Identification Research

Regional Applied Research Efforts (RARE) Project involving:

- EPA Region 5
  Val Bosscher, Miguel Del Toral and Andrea Porter

- Office of Research and Development
  Darren Lytle and Simoni Triantafyllidou

We are looking for interested water systems across US (not just in Region 5)

What?

EPA is working to develop a reliable, non-invasive method to locate Lead Service Lines (LSL), including public-side LSLs and lead goosenecks that cannot be easily observed

Why participate?

- **Improve your knowledge of LSL sites in your system -** All CWS are required to collect LCR compliance samples at high-risk sites, so at least some knowledge of LSL sites is required. In addition, several states are requiring CWS to submit information regarding LSLs - including IL, MI, OH, and WI

- **Support your budgeting and planning** - Accurate information about numbers and locations of LSLs is critical to planning and budgeting for LSL replacement programs

- **Improve public health protection by reducing potential lead in drinking water exposure -** Customers can take steps to reduce risk, if they know they have an LSL

- **Gain good publicity** - Customers will appreciate proactive steps to reduce lead in drinking water

What are we offering as part of this research project?

- Technical assistance, including data analysis, with the goal of expanding the water system's knowledge of LSL locations

- Contractor support to coordinate with customer participants, collect samples, analyze samples, communicate results to customers, etc

What would be expected of the water system partner?

- Assistance with identifying sampling locations. Our goal is:
    - to have at least 10 sites with public-side LSLs or lead goosenecks, and
    - at least 10 control (non-LSL) sites
    - from each of 4 water systems or more (active LSLR programs preferred)
- Coordination regarding communication materials

Interested in learning more? Interested in participating?

Please contact:

Darren Lytle
lytle.darren@epa.gov

AND

Simoni Triantafyllidou
triantafyllidou.simoni@epa.gov

Lead Service Line Identification and Replacement: Case Study of Investigation, Communication, & Implementation

Presented by Blake Weindorf and Sharon Sweeney, Central Arkansas Water

Sharon Sweeney, Water Quality Specialist:
Sharon has worked in various capacities in the drinking water industry, including: operations, water quality, source water monitoring, regulatory compliance, and public outreach. Her knowledge and vast experience compliment her education and training in Public Health. Sharon strives to instill public confidence in drinking water and to share her love of water with others.

Blake Weindorf, P.E., BCEE, Director of Distribution:
Blake has over 20 years of experience in the water and wastewater industry. As director of distribution, Blake oversees approximately 145 employees and operations at three reporting locations at CAW. Prior to becoming director, Blake worked as Assistant Director as well as Senior Engineer and Planning Manager in both the Engineering and Water Quality & Operations Departments.
Blake is a Registered Professional Engineer and a Board Certified Environmental Engineer; and maintains a Class 4 Water Treatment and Class 4 Distribution Operator's License. He is an active member of AWWA, the Little Rock Engineers Club, and Arkansas Water Works & Water Environment Assc.

Lead Service Line Identification & Replacement

Case study of Investigation, Communication, & Implementation

Blake Weindorf & Sharon Sweeney,
Central Arkansas Water

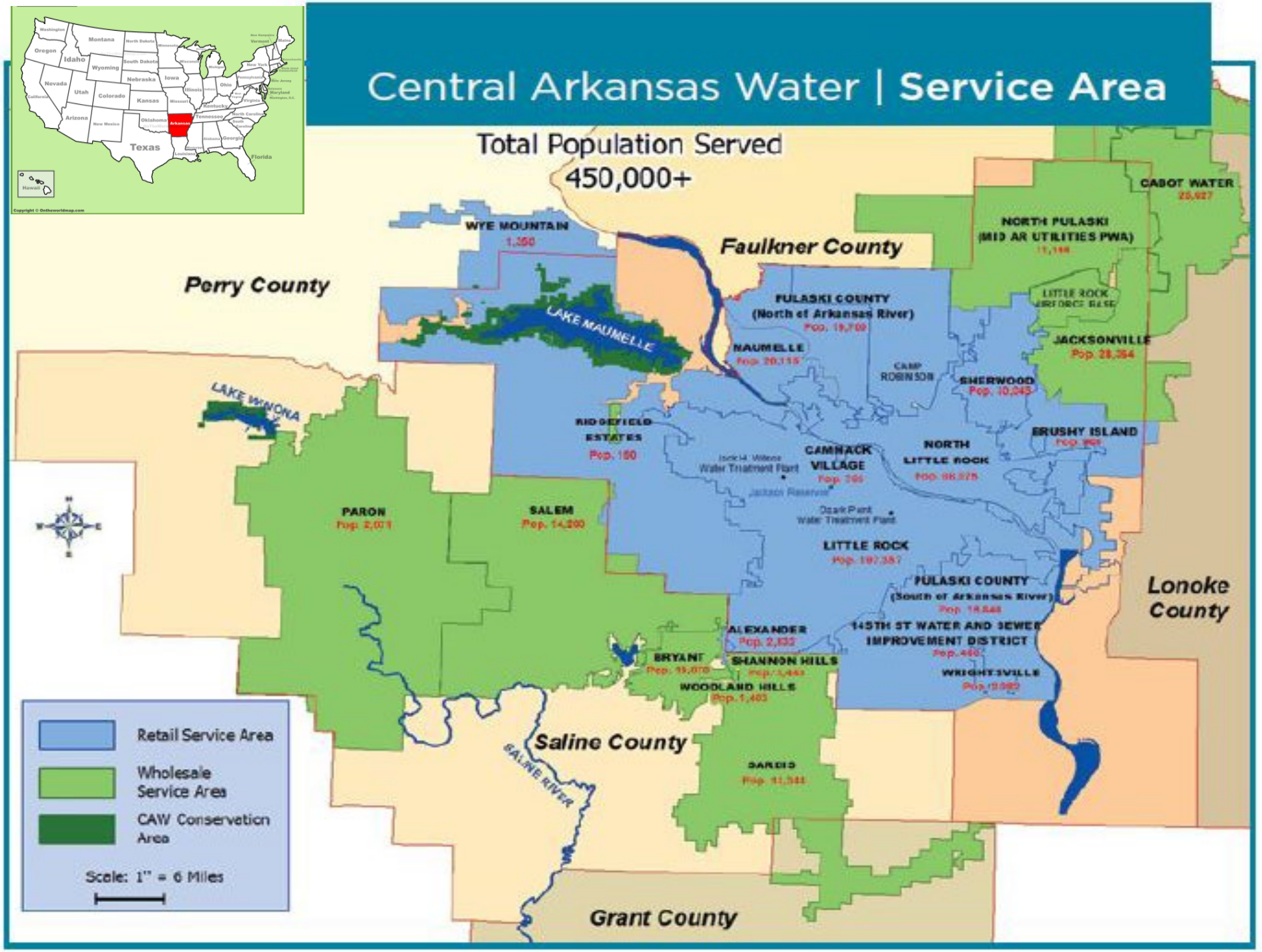
CAW Introduction

Central Arkansas Water (CAW)is a regional water utility serving 450,000 people through 125,000 residential, commercial, industrial, and wholesale customers located in 6 counties in central Arkansas.

Our Mission:

To enhance the quality of life for Central Arkansas by delivering high-quality water and dependable service that exceed customer expectations; protecting and ensuring a long-term water supply for future generations; and serving as responsible stewards of public health, utility resources, and the environment.

Central Arkansas Water | Service Area



CAW Addresses Lead in Drinking Water

- Consistent, high-quality source water
- Consistent treatment scheme and continuous attention to corrosion control
- Consistently low lead levels detected in monitoring
- Voluntary lead service line replacements on CAW's side of meter in 1980's & 1990's
- Arkansas Department of Health performs all Lead and Copper Rule (LCR) compliance analyses

CAW compliant since LCR's 1991 promulgation

Lead action level – 0.015 ppm

All analyses by ADH Public Health Laboratory

Monitoring Period	90th Percentile (ppm)	Range (ppm)
June 1992	0.001	<0.001 - 0.030
August 1992	0.002	<0.001 - 0.040
June 1993	<0.001	<0.001 - 0.001
June 1994	0.001	<0.001 - 0.005
June 1995	0.004	<0.001 - 0.012
August 1998	0.003	<0.001 - 0.013
June 2001	0.001	<0.001 - 0.007
July 2004	<0.002	<0.002 - 0.003
July 2007	<0.003	<0.003 - 0.006
June 2010	<0.003	<0.003 - 0.013
June 2013	0.004	<0.003 - 0.116*
June 2016	0.001	<0.001 – 0.007
July 2019	0.001	<0.001 – 0.002

* Per customer, sample taken from seldom used bathroom. Resample = 0.003 ppm.

Why is LSL replacement important?

Removing lead service lines provides an opportunity to significantly reduce the risk of exposure to lead in drinking water.

CAW's LSL Replacement Program

- Began in early 2016 in response to Flint crisis.
- Process:
  - Identify LSLs
  - Engage stakeholders
  - Communicate transparently
  - Gather baseline exposure data (pre-replacement sampling)
  - Report data
  - Replace LSLs
  - Follow up sampling/data reporting

Preparing a Lead Service Line Inventory

- CAW checked records to verify service line material for all mains installed prior to 1950 and all material types marked “unknown”.
- CAW also inspected 10% of services with “unknown” material on mains installed between 1950-1960. No LSLs found.
- 2016: CAW inspected 2,850 service lines listed as “lead”. Of these 105 LSLs were identified.
- 2017: CAW inspected 5,050 service lines listed as “lead” or “unknown”. Of these 70 were LSLs.

Identify Lead Service Lines (2016 – 2017)

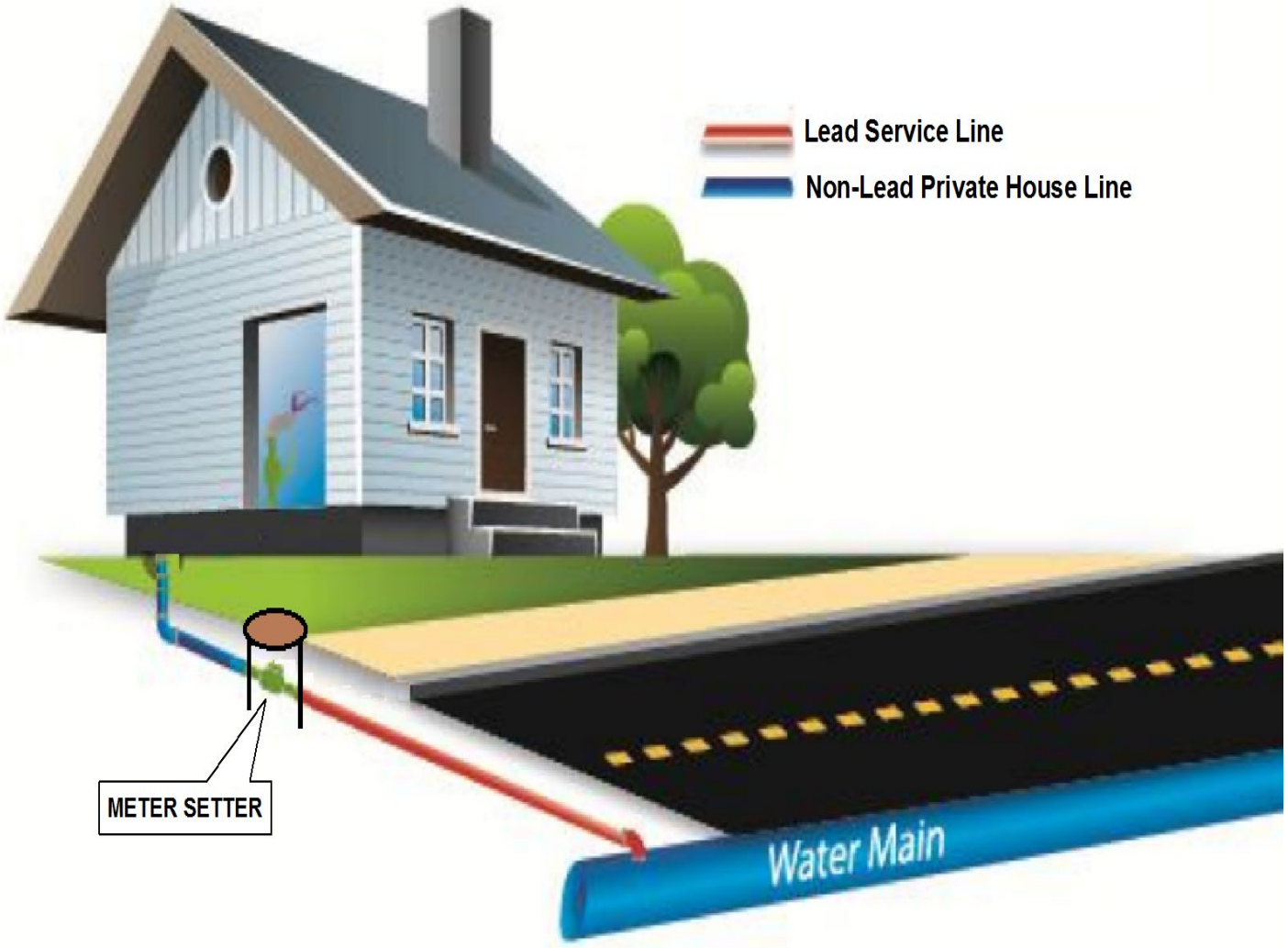
CAW reexamined its database information:

- 2,850 services labeled as lead
  - Field inspections verified only 105 were lead service
- 4 sites with LSL within compliance monitoring pool
  - Highest lead value = 0.006 ppm (40 samples 1992-2016)
- Approx. 5,050 services < 1950 with “unknown” material
  - Field inspections verified 70 were lead service
- 140 LSLs for replacement (35 structures demolished, LSL removed but not replaced)

Preparing a Lead Service Line Inventory

- CAW staff field verified 7,900 service lines.
- Of these 175 (~2 %) were LSLs

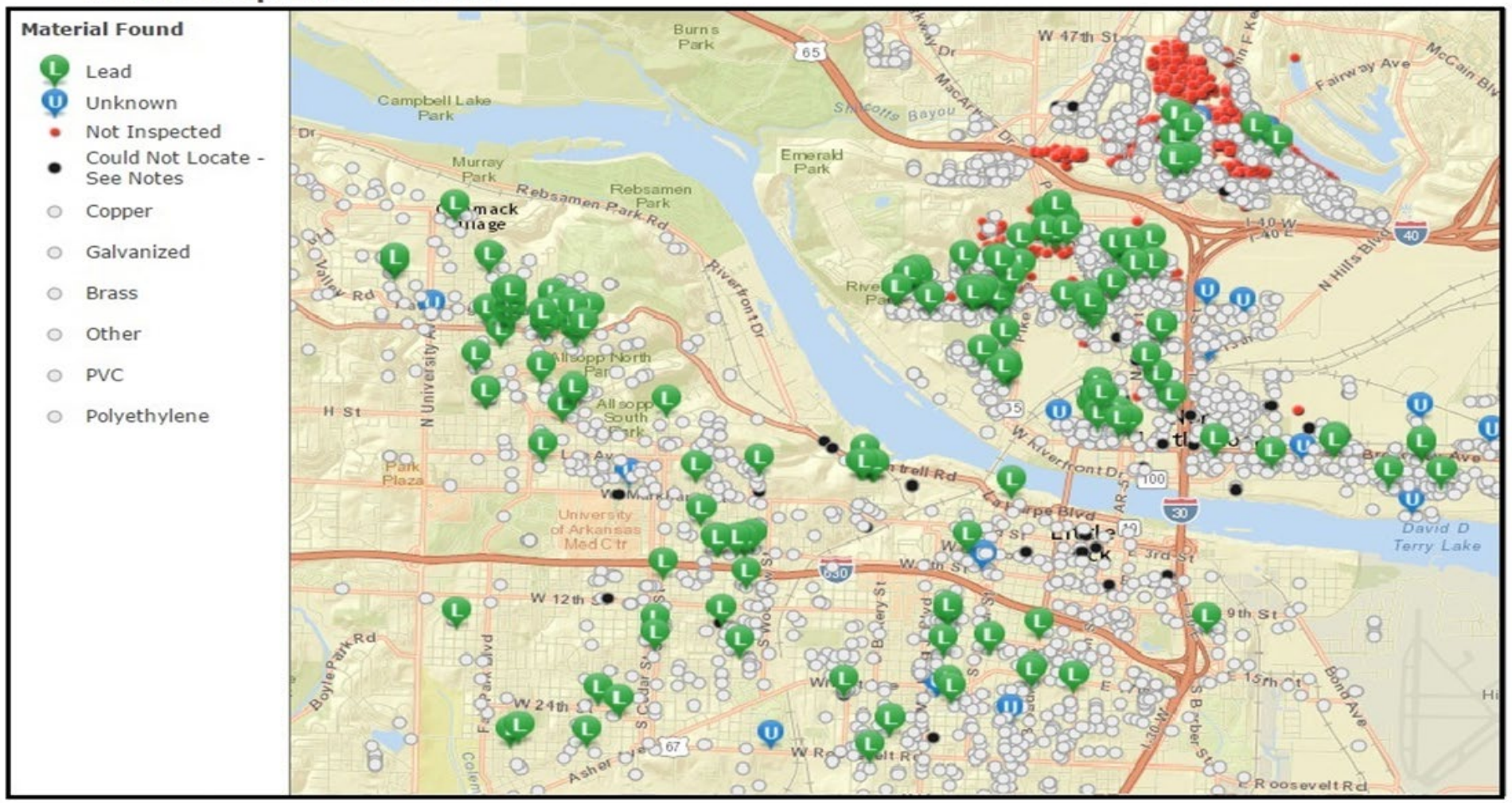
Typical CAW Lead Service Connection



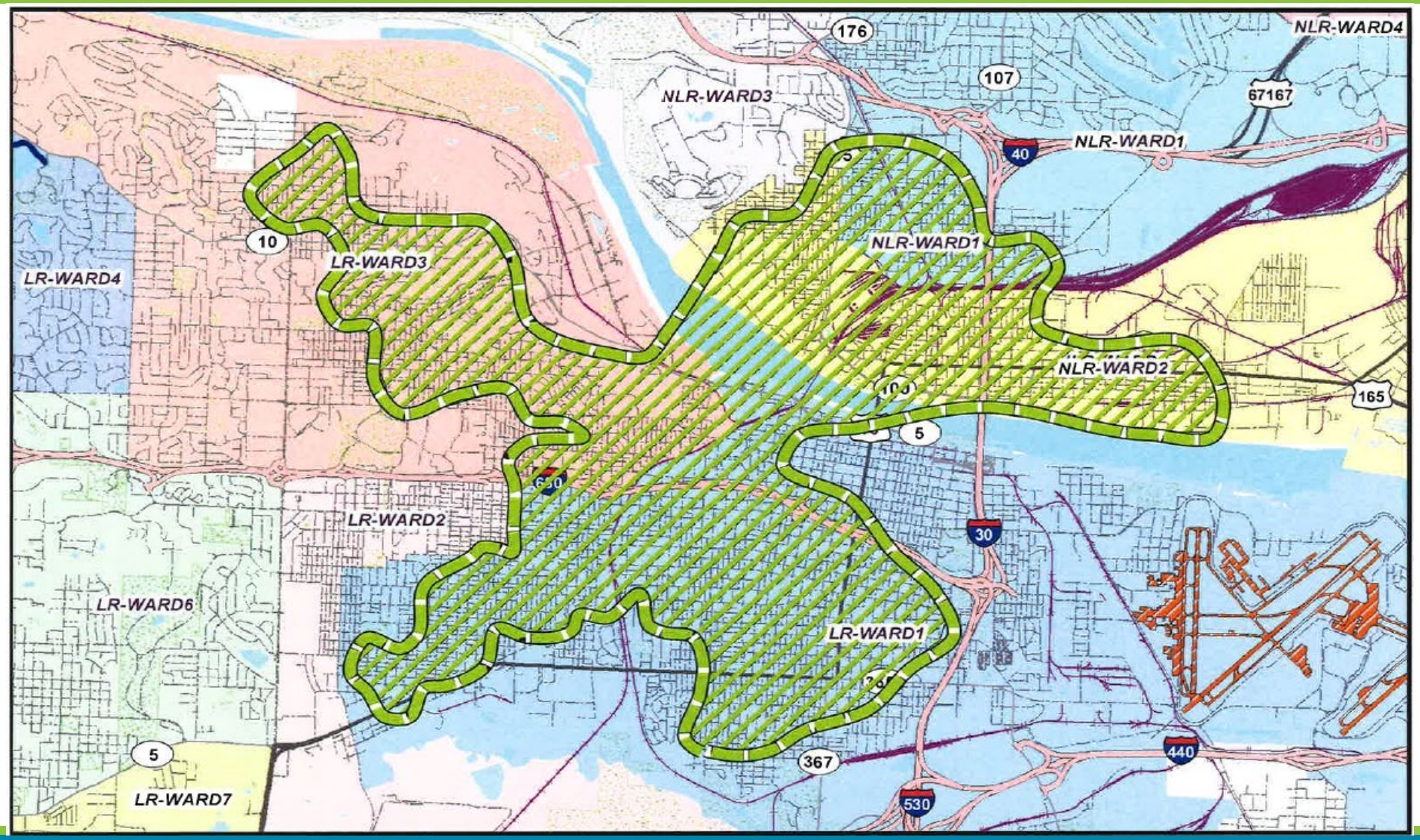
Lead Service Line Inventory – October 2017

Central Arkansas Water
Essential & Exceptional

Service Inspections Results



Vicinity of Lead Service Lines Identified in CAW System



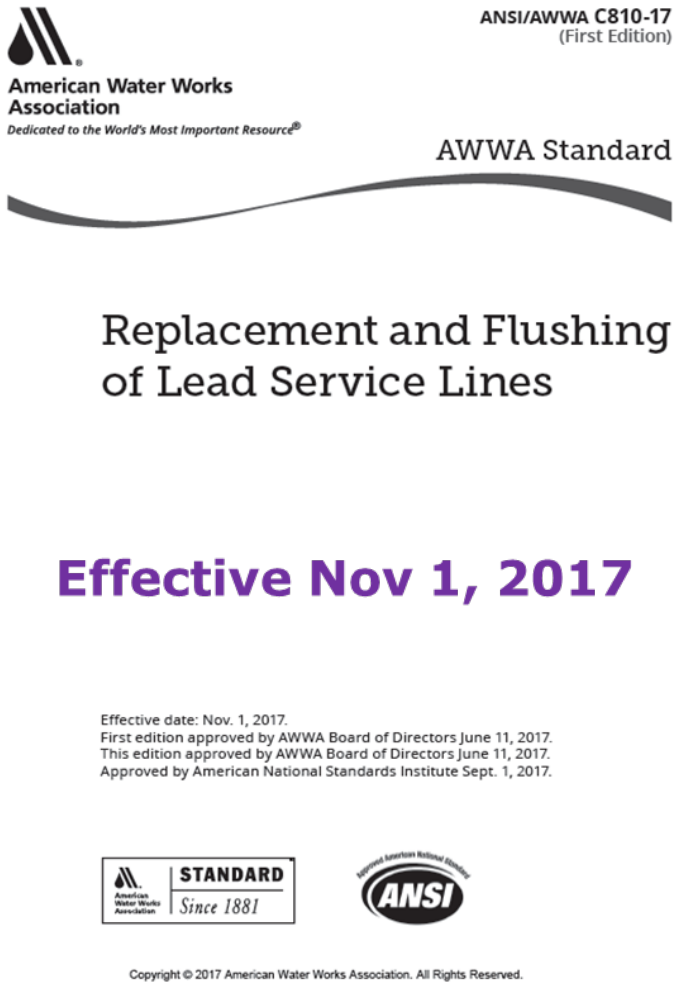
CAW's LSL Replacement Program

1. Provide updated information to public: CAW web site, CAW Board, City leaders, media.
2. Mail letter to affected customer.
3. Complete face-to-face meeting with customer. Provide brochure, water filter(s) & answer questions.
4. Sample the water prior to replacement.
5. Verify material on customer's side of meter is not lead.
6. If not, complete replacement of CAW service line.
7. Immediate flushing of service line & plumbing along with instructions to homeowner on subsequent flushing.
8. Analyze lead samples at 30, 60 & 90 days.

**	LSL Replacement Procedure:
1	Double Check Lead Service Material
2	Verify if home has an outside hose bib
3	Mail Letter to Customer
4	Personal Contact with Customer
5	Deliver Filter and Brochure
6	Take Pre-Rplc Sample
7	Log Pre-Rplc Sample Results in Cityworks
8	Notify Billing to only charge minimum bill for next 4 Cycles
9	Call in Utility Locates
10	Dig up Service Line Tail Piece to Verify House Line Material
11	Replace Service if House Line is not Lead
12	Flush at Hose Bid for 30 min
13	Take Post-Rplc Sample
14	Log Post-Rplc Sample Results in Cityworks
15	Take 30-day Sample
16	Log 30-day Sample Results in Cityworks
17	Take 60-day Sample
18	Log 60-day Sample Results in Cityworks
19	Take 90-day Sample
20	Log 90-day Sample Results in Cityworks
21	Inform Customer of Results
22	Close-out

CAW's LSL Replacement Program

- CAW's plan was researched, designed, and implemented prior to the release of AWWA Standard C810-17
- CAW's plan surpasses recommendations set forth in AWWA standard.



American Water Works Association
Dedicated to the World's Most Important Resource®

ANSI/AWWA C810-17
(First Edition)

AWWA Standard

Replacement and Flushing of Lead Service Lines

Effective Nov 1, 2017

Effective date: Nov. 1, 2017.
First edition approved by AWWA Board of Directors June 11, 2017.
This edition approved by AWWA Board of Directors June 11, 2017.
Approved by American National Standards Institute Sept. 1, 2017.

STANDARD Since 1881

ANSI

Communications on Lead

Communications on Lead

HOME ABOUT US NEWS EMPLOYMENT CONTACT US FAQ Search SEARCH

CUSTOMER SERVICE CONSERVATION & EDUCATION ENGINEERING PROCUREMENT WATER SOURCE INFO

Central Arkansas Water
Essential & Exceptional

WATER QUALITY

WATERSHED MANAGEMENT

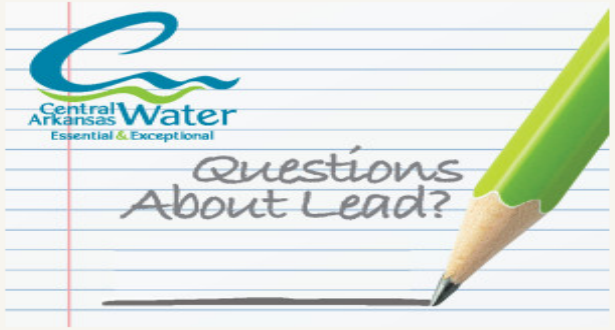
WISE WATER USE TIPS

BREAKING BARRIERS & BRIDGING DIFFERENCES · CENTRAL ARKANSAS WATER · GENDER · AGE · RACE · LIFESTYLE · DISABILITY · LANGUAGE · RELIGION

http://www.carkw.com/leadquestions/

CAW'S EFFORTS TO MONITOR FOR LEAD IN DRINKING WATER

Central Arkansas Water's Efforts to Monitor and Minimize the Presence of Lead in Drinking Water



Central Arkansas Water (CAW) is committed to providing safe, reliable, high quality water to the families, businesses, and industries we serve. As a result, CAW continually implements best practices monitor for and minimize the presence of potentially harmful contaminants in the water delivered to our customers.

National headlines have thrust lead to the forefront of the discussions relating to effective water treatment and delivery. Unfortunately, water has electrolytic characteristics that can, over time, cause corrosion resulting in elements from the distribution system and from household plumbing, including fixtures, to leach into the drinking water.

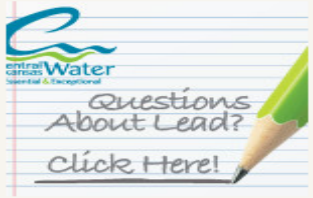
CAW (and its predecessor utilities) use comprehensive treatment measures to reduce the corrosion of both piping and plumbing systems. During the treatment process, CAW staff monitors for indicators of corrosiveness and adds calcium hydroxide and zinc orthophosphate to our source water from

REPORT A PROBLEM

EMERGENCY ?
CALL 501.377.1239

REQUEST METER
NEW
CONSTRUCTION

Central Arkansas Water · Maumelle Water Management
Consolidation Homepage



Engage Stakeholders

AR Dept. of Health: September 13, 2017

- **Provide input on CAW's LSLR methodology**
- **Be a resource for customers & media as CAW implements LSLR program**
- **Serve as a link to health care professionals**
  - If elevated blood lead levels, CAW to prioritize replacement
- **Epidemiology Staff to provide assistance as needed**

Engage Stakeholders

- Sept 2017:
  - LSL replacement program announced at CAW board meeting
  - CEO met with elected officials
  - Customers in first LSL work zone notified

Public Outreach
- Local Press Coverage

Arkansas Democrat-Gazette, 2017-09-17 Cropped page Page: 4B

OUR TOWN

Little Rock notebook

CHELSEA BOOZER
ARKANSAS DEMOCRAT-GAZETTE

Water utility plans lead-pipe removal

Central Arkansas Water will replace all of its lead service pipes this year.

After the water crisis in Flint, Mich., the Little Rock-based water utility checked to see if it still had any lead service lines. So far, it has found about 140.

There are still about 3,000 lines to inspect, and the utility is estimating that it will have to replace up to 250 lead lines.

"Other cities are looking at tens of thousands of these lines," utility Chief Executive Officer Tad Bohannon said.

"Detroit has 100,000 — [that's] a figure I heard earlier today."

Central Arkansas Water tests its water regularly and has never reported lead or copper levels that aren't in compliance with the Environmental Protection Agency's lead and copper rules. Some of the places where lead lines were found are also places where water samples are taken.

"The [Arkansas] Health Department doesn't require us to go in and replace these lines," Bohannon said. "We're just trying to be proactive because we want to maintain that customer confidence in the water we are providing to them."

Any customer whose services lines will be replaced will receive a letter and phone call or visit from a utility representative. After replacing the service line, the utility will flush out the pipes and then test the water monthly for three months.

Airmen musicians hold free concert

The U.S. Air Force Concert Band will play a free concert today in the city's downtown River Market District.

The band will perform from 3-5 p.m. at the First Security Amphitheater.

The event is a partnership between the city, the Convention and Visitors Bureau and the University of Arkansas Clinton School of Public Service.

The U.S. Air Force Concert Band began in 1941 with three musicians.

It is now internationally known and has 179 members. Col. Gerald Donohue of the Little Rock Air Force Base in Jacksonville will introduce the band.

UA school to hold two book-signings

The University of Arkansas Clinton School of Public Service is hosting two book-signings this week.

On Monday at 6 p.m., Dan Zak will discuss his work, *Almighty: Courage, Resistance, and Existential Peril in the Nuclear Age* in Sturgis Hall at 1200 President Clinton Ave.

Zak is a general assignment feature reporter for *The Washington Post*.

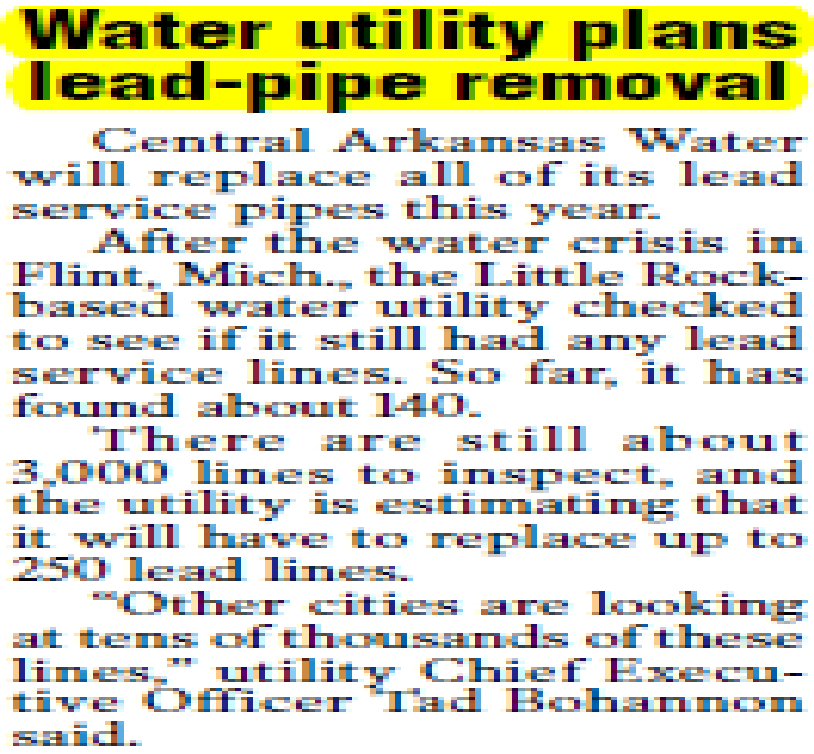
"Part historical adventure, part courtroom drama, part moral thriller, *Almighty* reshapes the accepted narratives surrounding nuclear weapons and shows that our greatest modern-day threat remains a power we discovered long ago," a news release from the school said.

On Tuesday, Baz Dreisinger will be at Sturgis Hall at noon to talk about his book, *Incarceration Nations: A Journey to Justice in Prisons Around the World*.

Dreisinger is a professor, journalist and founder of the Prison-to-College Pipeline.

His book tells the stories of incarcerated people and those who imprisoned them, "creating a jarring, poignant view of a world to which most are denied access, and a re-thinking of one of America's most far-reaching global exports: the modern prison complex," a news release said.

 2017-09-19 08:50:07



Water utility plans lead-pipe removal

Central Arkansas Water will replace all of its lead service pipes this year.

After the water crisis in Flint, Mich., the Little Rock-based water utility checked to see if it still had any lead service lines. So far, it has found about 140.

There are still about 3,000 lines to inspect, and the utility is estimating that it will have to replace up to 250 lead lines.

"Other cities are looking at tens of thousands of these lines," utility Chief Executive Officer Tad Bohannon said.

"The [Arkansas] Health Department doesn't require us to go in and replace these lines," Bohannon said. "We're just trying to be proactive because we want to maintain that customer confidence in the water we are providing to them."

Pre-replacement Customer Outreach

- Multi-disciplinary team of employees from the public affairs/communications, water distribution, and water quality departments created a lead service line replacement brochure detailing:
  - utility specific information regarding historical observed lead levels
  - information for reducing exposure to lead in drinking water
  - links to additional sources of information

Pre-replacement Customer Outreach

Facts and Myths about Lead

Fact:

Running your water helps flush out lead. Running cold water for 1-2 minutes helps to flush lead from interior plumbing. If it hasn't been used for several hours, flush until it becomes cold or reaches a steady temperature before using it for drinking or cooking.

Fact:

Cold water is best for cooking and preparing baby formula. Do not cook with or drink water from the hot water tap; lead dissolves more easily into hot water. Do not use water from the hot water tap to make baby formula.

Fact:

Boiling water does not eliminate lead. Bringing the water to a boil will not reduce or remove lead.

Fact:

Old fixtures can contain lead, and should be replaced. New fixtures that you purchase today will contain no lead. You can also clean the aerators on your faucets periodically, or use an attachable water filter as a long-term solution.

220 E. Capitol Ave.
Little Rock, AR 72203

Phone: 501-210-4914

waterquality@carkw.com

Lead Service Line Replacement

Central Arkansas Water
Essential & Exceptional

www.carkw.com

Water Quality Department
501-210-4914

Pre-replacement Customer Outreach

Central Arkansas Water
Essential & Exceptional

Replacing Lead Service Lines

Improving the System

Your service line has been identified as containing lead components. Service Lines are the pipes that connect the water main to the meter. These lines are on the street side of the meter, and are the responsibility of Central Arkansas Water.

CAW replaced thousands of service lines across its service area over the past 20 years. This is a common process done to improve the CAW Distribution System

Lead service lines are common based on the age of the infrastructure in this area, and having a lead service line does not mean that your water currently has increased levels of lead. However, it is important that older lead lines are removed and replaced to ensure the integrity of the system going forward.

Please note the information in this brochure about lead and how it can affect you and your family. It is the goal of CAW to remove all lead components from our distribution system

For more information, visit our website at www.carkw.com/leadquestions

What is being done?

CAW is working to eliminate lead from our distribution system. This is a continual process to ensure safe, high-quality water for our customers.

CAW is fully compliant with all monitoring, treatment and water quality parameters required by the Safe Drinking Water Act's Lead and Copper Rule. That rule was first implemented in 1991, and CAW has replaced thousands of service lines since then.

CAW has never had a violation in regard to increased lead in our water supply, and that is partly due to our diligence in replacing old lines and ensuring our water sources and treatment and distribution processes fully comply with all regulations.

If you have been notified about a lead service line, CAW will take several active steps to replace the line.

1. Our Water Quality Department will schedule pre-replacement testing. This testing will involve collecting water samples from the taps inside your home. Customers will receive the results of this testing.
2. Once samples are collected, CAW crews will begin the replacement process
3. After replacement is complete, flushing should occur to remove any sediment that has broken loose during the process. Bill adjustments will be made to cover the cost of water and sewer usage during this time.
4. CAW will again sample water from your home immediately after replacement, and continuing several times over a 90-day period.

Other Places you may Encounter Lead

Lead is a common metal found in the environment. Drinking water is one possible source of lead exposure.

Other sources include lead paint, lead dust, and lead in soil. In addition, lead can be found in certain types of pottery, pewter, brass fixtures, food and cosmetics.

Our drinking water comes from two high-quality sources, Lake Maumelle and Lake Winona, and the lead content in CAW's water supply is below detection limits. However, water in contact with distribution pipes and household plumbing can contribute to lead in water. CAW adds anti-corrosive chemicals to the water during treatment to protect lead components still in use within the pipes in the system.

When water is in contact with pipes or plumbing containing lead for several hours, lead may enter drinking water.

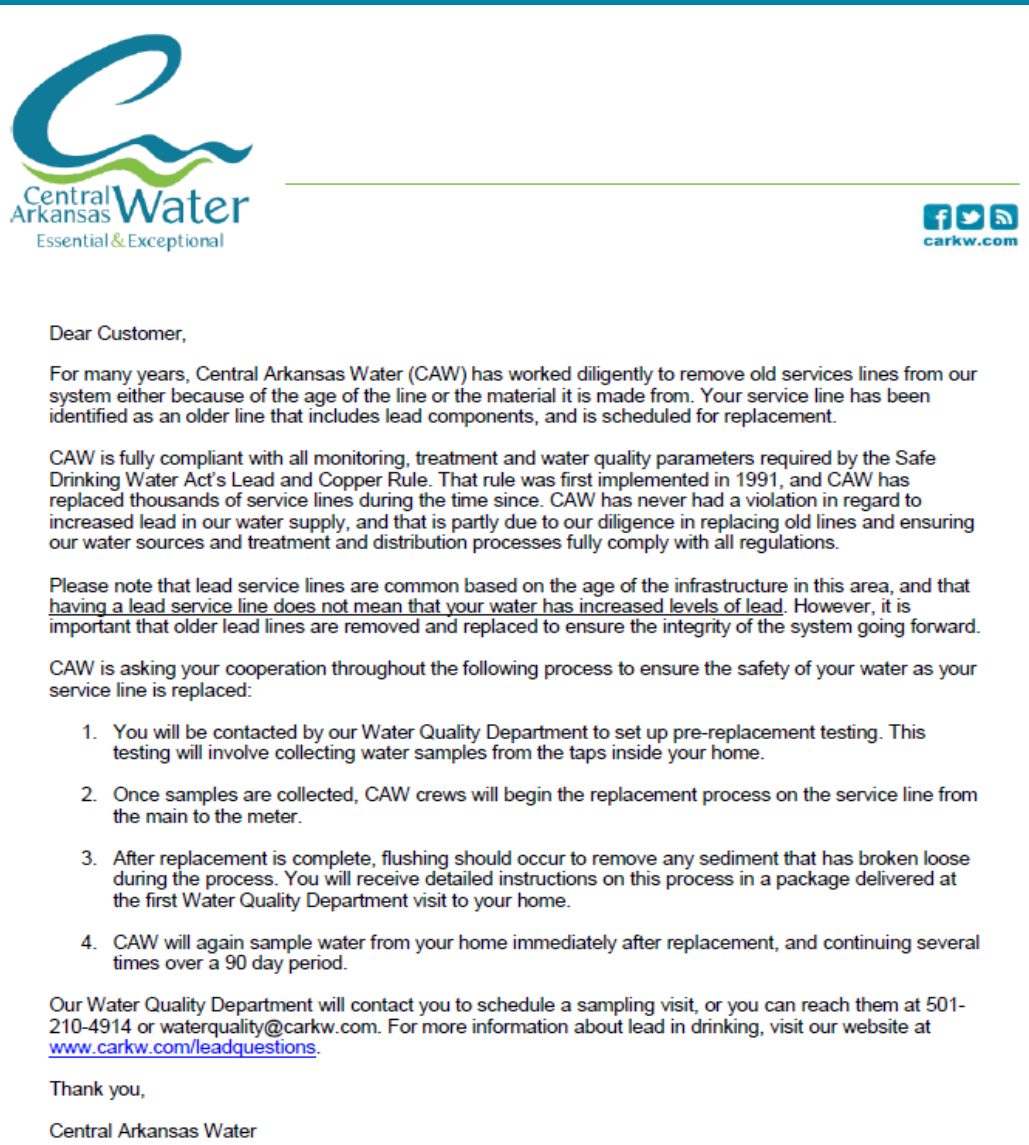
Health Effects

Lead can cause serious health problems if too much enters your body from drinking water or other sources.

It can cause damage to the brain and kidneys, and can interfere with the production of red blood cells that carry oxygen to all parts of your body.

The greatest risk of lead exposure is to infants, young children, and pregnant women.

Pre-replacement Customer Outreach



Central Arkansas Water
Essential & Exceptional

carkw.com

Dear Customer,

For many years, Central Arkansas Water (CAW) has worked diligently to remove old services lines from our system either because of the age of the line or the material it is made from. Your service line has been identified as an older line that includes lead components, and is scheduled for replacement.

CAW is fully compliant with all monitoring, treatment and water quality parameters required by the Safe Drinking Water Act's Lead and Copper Rule. That rule was first implemented in 1991, and CAW has replaced thousands of service lines during the time since. CAW has never had a violation in regard to increased lead in our water supply, and that is partly due to our diligence in replacing old lines and ensuring our water sources and treatment and distribution processes fully comply with all regulations.

Please note that lead service lines are common based on the age of the infrastructure in this area, and that having a lead service line does not mean that your water has increased levels of lead. However, it is important that older lead lines are removed and replaced to ensure the integrity of the system going forward.

CAW is asking your cooperation throughout the following process to ensure the safety of your water as your service line is replaced:

1. You will be contacted by our Water Quality Department to set up pre-replacement testing. This testing will involve collecting water samples from the taps inside your home.
2. Once samples are collected, CAW crews will begin the replacement process on the service line from the main to the meter.
3. After replacement is complete, flushing should occur to remove any sediment that has broken loose during the process. You will receive detailed instructions on this process in a package delivered at the first Water Quality Department visit to your home.
4. CAW will again sample water from your home immediately after replacement, and continuing several times over a 90 day period.

Our Water Quality Department will contact you to schedule a sampling visit, or you can reach them at 501-210-4914 or waterquality@carkw.com. For more information about lead in drinking, visit our website at www.carkw.com/leadquestions.

Thank you,

Central Arkansas Water

- Letter sent to each impacted customer
- Face-to-face meeting with each impacted customer

CMMS used for Tracking

Cityworks Inbox Storeroom Recent Work Orders Service Requests Asset Search Calendar Crews Reports Projects

Work Order | Email | Print

Tasks

Work Order ID: 1478535

SeqId	Name	Description	Status	Proceed	Rework	Assigned To	Shop	Start Date	Finish Date
1	9126	Verify Lead Service Material	COMPLETE	True	False	STEWART, MARK	205	10/24/2017	10/24/2017
1	9127	Verify if home has an outside hose bib	COMPLETE	True	False	STEWART, MARK	205	10/24/2017	10/24/2017
1	9128	Mail Letter to Customer	COMPLETE	True	False	SWEENEY, SHARON		10/26/2017	10/26/2017
1	9129	Personal Contact with Customer	COMPLETE	True	False	SWEENEY, SHARON		11/1/2017	11/1/2017
1	9130	Deliver Sample Bottle and Brochure	COMPLETE	True	False	SWEENEY, SHARON		11/1/2017	11/1/2017
1	9131	Take Pre-Rplc Sample	COMPLETE	True	False	SWEENEY, SHARON		11/3/2017	11/3/2017
1	9132	Email Billing to create Flusing Rate ON work order	COMPLETE	True	False	SWEENEY, SHARON			11/3/2017
1	9133	Call in Utility Locates	COMPLETE	True	False	STEWART, MARK	205	11/9/2017	11/9/2017
1	9134	Verify House Line Service Material past tail piece	COMPLETE	True	False	STEWART, MARK	205	11/27/2017	11/27/2017
1	9135	Replace Service	COMPLETE	True	False	STEWART, MARK	205	11/27/2017	11/27/2017
1	9136	Flush at Hose Bib for 30 min	COMPLETE	True	False	STEWART, MARK	205	11/27/2017	11/27/2017
1	9137	Take Post-Rplc Sample	COMPLETE	True	False	SWEENEY, SHARON		11/27/2017	11/27/2017
1	9138	Take 30-day Sample	COMPLETE	True	False	SWEENEY, SHARON		12/27/2017	12/27/2017
1	9139	Take 60-day Sample	COMPLETE	True	False	SWEENEY, SHARON		1/26/2018	1/26/2018
1	9140	Take 90-day Sample	COMPLETE	True	False	SWEENEY, SHARON		2/26/2018	2/26/2018
1	9141	Email Billing to create FlusingRate OFF work order	COMPLETE	True	False			2/28/2018	2/28/2018

LSL Replacement

Pre-LSL Replacement Sampling

INSTRUCTIONS FOR COLLECTING TAP WATER SAMPLES FOR LEAD AND COPPER ANALYSIS

Lead in tap water typically comes from either the pipe connecting older homes to the water system or from plumbing within the home itself. Therefore, to find out if you have lead in your water, Central Arkansas Water (CAW) must test the water inside the home.

We care about the quality of your drinking water and your family's health. To maximize the accuracy of your results, it is very important to follow the directions provided below. Please read carefully.

1. Collect samples from a tap that has **not been used for at least six (6) hours**, because lead dissolves into water slowly. CAW recommends either early morning or evening upon returning home and prior to any water usage as the best sampling time to ensure that the necessary water conditions exist.
2. Be sure to use a kitchen or bathroom **cold water faucet** that has been used for drinking or cooking water during the past few weeks.
3. **Do not** run the water before drawing the sample. The water collected for analysis should be the "first draw" from the tap.
4. **Do not** clean or remove the faucet aerator prior to sampling. You want tests to account for any particles of lead that may have accumulated in the aerator basket or screen.
5. Remove bottle cap, place the sample bottle below the faucet and open the cold water tap as you would do to fill a glass of water. Fill the sample bottle to ½ inch below the neck of the bottle and turn off the water.
6. Firmly screw the cap on the sample bottle but do not over tighten the cap, as this may damage the threads and cause the bottle to leak. **Attach the bottom portion of this form to the bottle** and place in the plastic bag.
7. Place the sample kit outside your residence in the same location it was delivered so that CAW staff may pick up the kit. Call 501-210-4914 and let our staff know the sample is ready for pick up.

If you have questions regarding the instructions please contact either Sharon Sweeney, Water Quality Specialist at sharon.sweeney@carkw.com or call 501-210-4914. Thank you for allowing us to serve you, we appreciate having you as our customer.

TO BE COMPLETED BY CUSTOMER AND RETURNED WITH SAMPLE:

Water was last used from tap: Time:_____ Date: _____

Sample was collected: Time: _____ Date: _____ Location:_____

I have read the above directions and have taken a tap sample in accordance with the directions.

Signature: _____ Date: _____

Pre-Replacement Sample Results

- Prompt notification
- Clarify results
- Provide next steps
- Provide contact info.

Central Arkansas Water
Essential & Exceptional

carkw.com

November 10, 2017

[redacted]

RE: Lead & Copper sample results, pre service line replacement

Dear Resident:

As you are aware, the water service line at your home was identified as an older line that included lead components and it was scheduled for replacement. You collected a water sample prior to replacement in order determine the baseline values of lead and copper measured in your drinking water. The following table summarizes the analytical results for the drinking water sample collected from your residence on 11/07/2017 before the water service line was replaced.

Parameter Tested	Your Residence Results:	EPA Action Level
Lead	<0.002 mg/L	0.015 mg/L
Copper	0.029 mg/L	1.3 mg/L

The water sampled at your residence is well within allowable limits of the EPA's "National Primary Drinking Water Regulations for Lead and Copper".

You home's service line will be replaced in the coming days. Water quality staff will collect post-replacement samples as soon as the new line is installed and we will notify you when we have collected these samples.

Please thoroughly flush your home plumbing when we have finished our sampling. Remove the faucet aerators from each sink and, starting at the sink closest to the street on the lowest level of your home, turn on the **cold** water faucet and flush the line for 30 minutes. Leave this faucet running slightly then open the **cold** water faucet on the next sink in your home. Also flush the **cold** water faucet on each bathtub and shower for 30 minutes. Repeat until the **cold** water lines to all sinks, bathtubs, and showers in your home have been flushed. Monitor the water flow to prevent any accidental overflows. Replace the faucet aerators using the new aerators provided by CAW. You will not be charged for the additional water used in flushing. Flush the cold water lines thoroughly.

CAW staff will return and provide you with sampling supplies so you can collect post-replacement samples in 30, 60, and 90 days. We care about your drinking water quality and your family's health.

Should you have questions or comments, please feel free to contact me at 501 210-4914 or via email at Sharon.sweeney@carkw.com and visit our website at www.carkw.com/leadqustions for more information about lead in drinking water. Thank you for allowing us to serve you, we appreciate you as our customer.

CENTRAL ARKANSAS WATER

Post-Replacement Flushing

- Customers provided with post-LSL replacement household flushing instructions.
- Customers were not charged for additional water usage.

Household Flushing Instructions

1. Find all the faucets that will drain, on all floors in your house. Include any basement faucets if you have a basement.

2. Include any utility sinks, outdoor faucets/hose-bibs, and all kitchen sinks, bathroom sinks, bathtubs, and showers as flushing points.

3. Remove aerators and screens whenever possible, including the shower heads if you are able, from all faucets you plan to flush.

4. After all the aerators are off; open the **COLD WATER** faucets in the basement or lowest floor in the house. Leave all faucets running at highest rate possible without causing the sinks/tubs to overflow.

5. After the **COLD WATER** faucets are all open in lowest floor, open the faucets on next highest floor of the house. Continue until **COLD WATER** faucets are open on all floors.

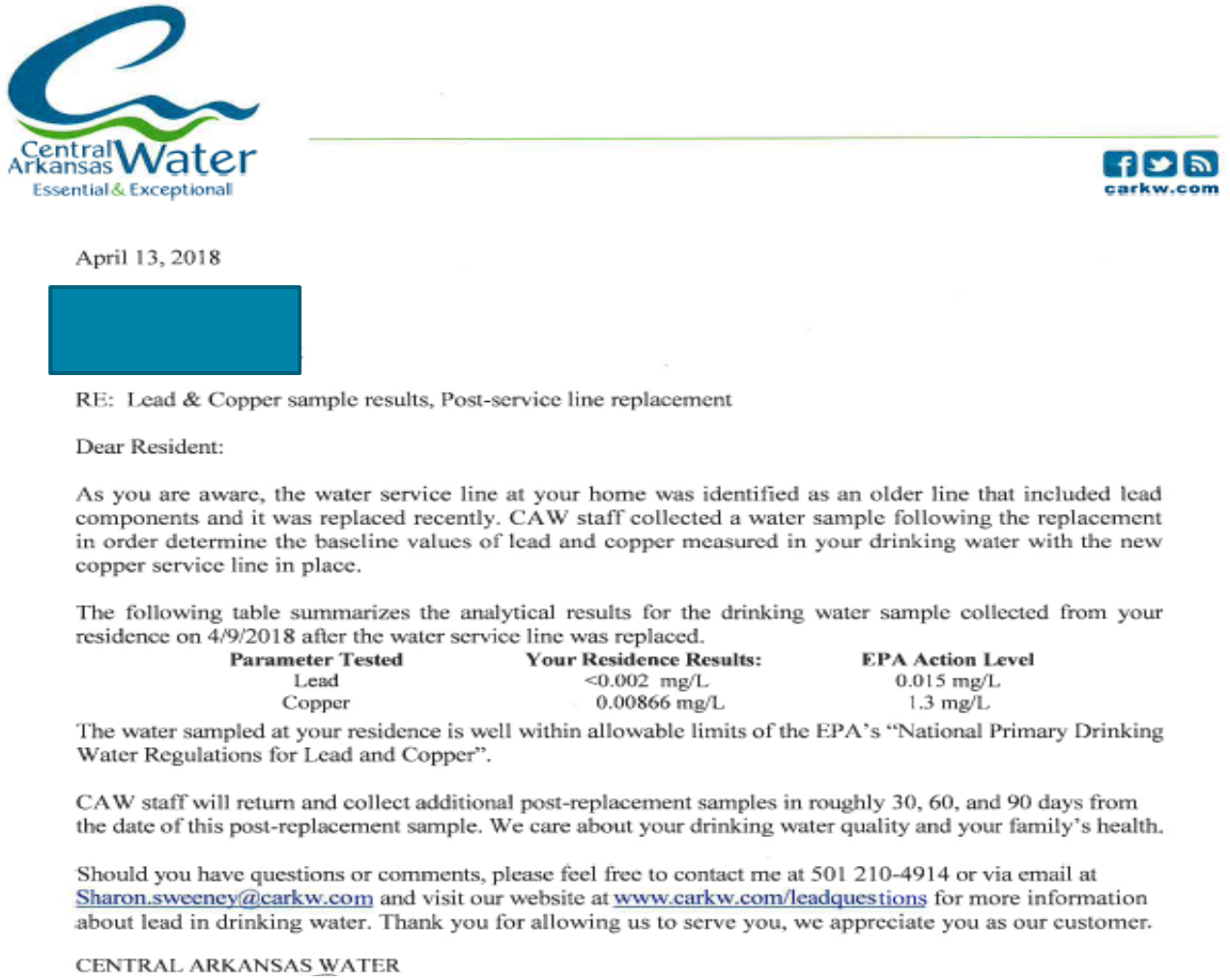
6. After all **COLD WATER** faucets are opened, leave the water running for at least 30 minutes. **You will not be charged for any increased water use, flush as much as possible.**

7. After 30 minutes, turn off the first faucet you opened and continue to turn off other faucets in the same order you turned them on.

8. Replace the faucet aerators with the new aerators provided by CAW. If you do not replace the aerators, thoroughly clean the debris/solid material from the current aerator before replacing it.

Post Replacement Sample Results

- Letters sent following each sampling event
  - post replacement (day of)
  - 30, 60 & 90-day post replacement



Central Arkansas Water
Essential & Exceptional

carkw.com

April 13, 2018

[redacted]

RE: Lead & Copper sample results, Post-service line replacement

Dear Resident:

As you are aware, the water service line at your home was identified as an older line that included lead components and it was replaced recently. CAW staff collected a water sample following the replacement in order determine the baseline values of lead and copper measured in your drinking water with the new copper service line in place.

The following table summarizes the analytical results for the drinking water sample collected from your residence on 4/9/2018 after the water service line was replaced.

Parameter Tested	Your Residence Results:	EPA Action Level
Lead	<0.002 mg/L	0.015 mg/L
Copper	0.00866 mg/L	1.3 mg/L

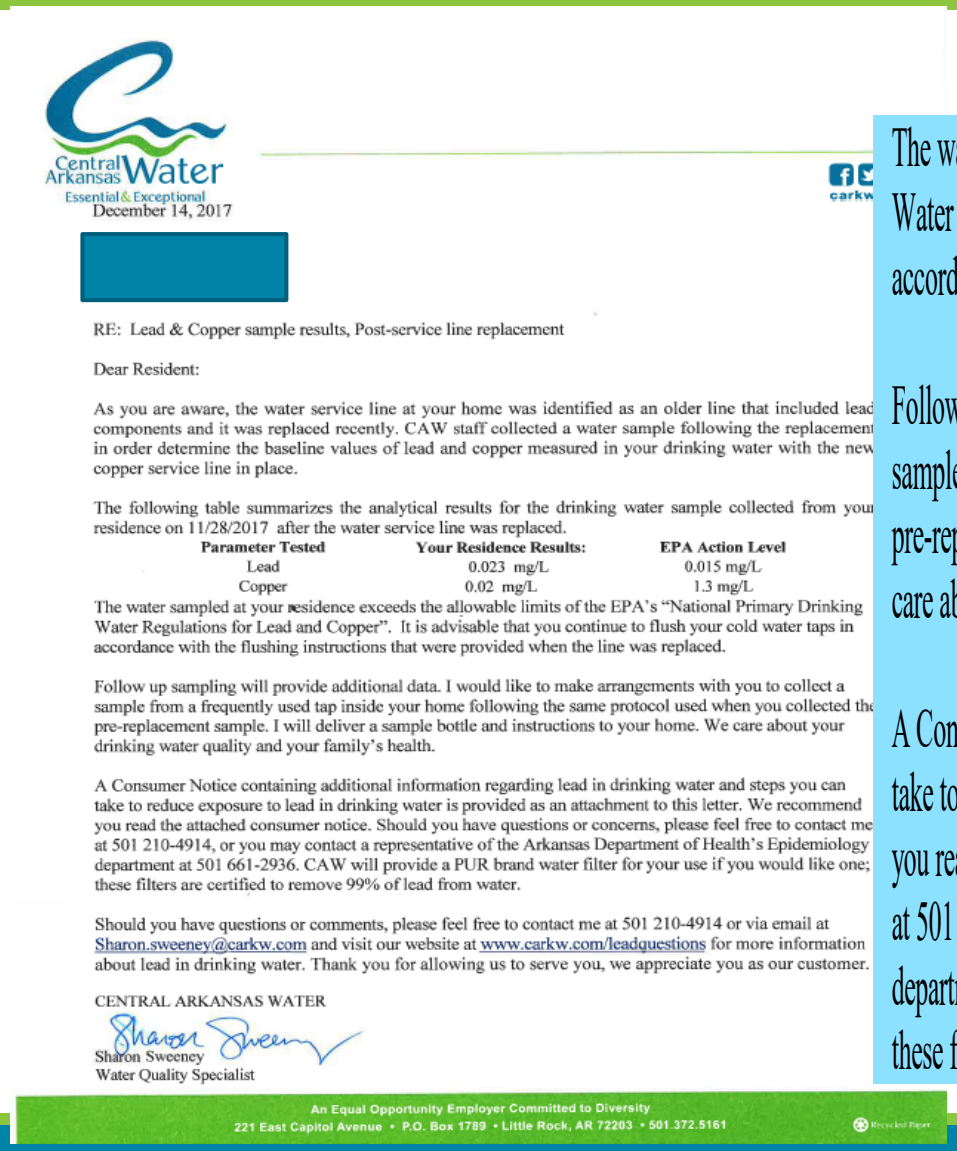
The water sampled at your residence is well within allowable limits of the EPA's "National Primary Drinking Water Regulations for Lead and Copper".

CAW staff will return and collect additional post-replacement samples in roughly 30, 60, and 90 days from the date of this post-replacement sample. We care about your drinking water quality and your family's health.

Should you have questions or comments, please feel free to contact me at 501 210-4914 or via email at Sharon.sweeney@carkw.com and visit our website at www.carkw.com/leadquestions for more information about lead in drinking water. Thank you for allowing us to serve you, we appreciate you as our customer.

CENTRAL ARKANSAS WATER

Post-Replacement Sample Results
Lead Exceedance



Central Arkansas Water
Essential & Exceptional

December 14, 2017

[redacted]

RE: Lead & Copper sample results, Post-service line replacement

Dear Resident:

As you are aware, the water service line at your home was identified as an older line that included lead components and it was replaced recently. CAW staff collected a water sample following the replacement in order determine the baseline values of lead and copper measured in your drinking water with the new copper service line in place.

The following table summarizes the analytical results for the drinking water sample collected from your residence on 11/28/2017 after the water service line was replaced.

Parameter Tested	Your Residence Results:	EPA Action Level
Lead	0.023 mg/L	0.015 mg/L
Copper	0.02 mg/L	1.3 mg/L

The water sampled at your residence exceeds the allowable limits of the EPA's "National Primary Drinking Water Regulations for Lead and Copper". It is advisable that you continue to flush your cold water taps in accordance with the flushing instructions that were provided when the line was replaced.

Follow up sampling will provide additional data. I would like to make arrangements with you to collect a sample from a frequently used tap inside your home following the same protocol used when you collected the pre-replacement sample. I will deliver a sample bottle and instructions to your home. We care about your drinking water quality and your family's health.

A Consumer Notice containing additional information regarding lead in drinking water and steps you can take to reduce exposure to lead in drinking water is provided as an attachment to this letter. We recommend you read the attached consumer notice. Should you have questions or concerns, please feel free to contact me at 501 210-4914, or you may contact a representative of the Arkansas Department of Health's Epidemiology department at 501 661-2936. CAW will provide a PUR brand water filter for your use if you would like one; these filters are certified to remove 99% of lead from water.

Should you have questions or comments, please feel free to contact me at 501 210-4914 or via email at Sharon.sweeney@carkw.com and visit our website at www.carkw.com/leadquestions for more information about lead in drinking water. Thank you for allowing us to serve you, we appreciate you as our customer.

CENTRAL ARKANSAS WATER

Sharon Sweeney
Water Quality Specialist

An Equal Opportunity Employer Committed to Diversity
221 East Capitol Avenue • P.O. Box 1789 • Little Rock, AR 72203 • 501.372.5161

The water sampled at your residence exceeds the allowable limits of the EPA's "National Primary Drinking Water Regulations for Lead and Copper". It is advisable that you continue to flush your cold water taps in accordance with the flushing instructions that were provided when the line was replaced.

Follow up sampling will provide additional data. I would like to make arrangements with you to collect a sample from a frequently used tap inside your home following the same protocol used when you collected the pre-replacement sample. Please call me and I will deliver a sample bottle and instructions to your home. We care about your drinking water quality and your family's health.

A Consumer Notice containing additional information regarding lead in drinking water and steps you can take to reduce exposure to lead in drinking water is provided as an attachment to this letter. We recommend you read the attached consumer notice. Should you have questions or concerns, please feel free to contact me at 501 210-4914, or you may contact a representative of the Arkansas Department of Health's Epidemiology department at 501 661-2936. CAW will provide a PUR brand water filter for your use if you would like one; these filters are certified to remove 99% of lead from water.

Post-Replacement Sample Results
Lead Exceedance

Consumer notice used in LCR sampling provided when lead action level exceeded

CONSUMER NOTICE

HEALTH EFFECTS OF LEAD

Lead is a common metal found throughout the environment in lead-based paint, air, soil, household dust, and food, certain types of pottery porcelain, pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body. Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. **The greatest risk is to young children and pregnant women.** Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination-like dirt and dust-that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food into their mouths.

LEAD IN DRINKING WATER

Lead in drinking water, although rarely the sole cause of lead poisoning can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. The Environmental Protection Agency (EPA) estimates that drinking water can make up 20 percent or more of a person's total exposure to lead. Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join copper pipe, brass and chrome plated brass faucets, and in some cases, pipes made of lead that connect your house to the water main (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%. When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn from the tap in the morning, or later in the afternoon after returning from work or school, can contain fairly high levels of lead.

STEPS YOU CAN TAKE TO REDUCE EXPOSURE TO LEAD IN DRINKING WATER

(A) Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in your home's plumbing the more lead it may contain. Flushing the tap means running the cold water faucet until the water gets noticeably colder, usually about 15-30 seconds. If your house has a lead service line to the water main, you may have to flush the water for a longer time, perhaps one minute, before drinking. Although toilet flushing or showering flushes water through a portion of your home's plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your family's health. It usually uses less than one or two gallons of water. To conserve water, fill a couple of bottles for drinking water after flushing the tap, and whenever possible use the first flush water to wash the dishes or water the plants or other than consumptive purposes.
(B) Do not use to cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and heat it on the stove.
(C) The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned you may wish to purchase bottled water for drinking and cooking.
(D) You can consult a variety of sources for additional information. Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead.

MAXIMUM CONTAMINANT LEVEL GOAL AND LEAD ACTION LEVEL DEFINITIONS

Maximum Contaminant Level Goal or MCLG: The level of a contaminant in drinking water below which there is no known or expected risk to health. The Environmental Protection Agency has set the Maximum Contaminant Level Goal at zero. The MCLG allows for a margin of safety.

Action level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. The Environmental Protection Agency has set the lead action level at 0.015 milligrams per liter (mg/L), or 15 parts of lead per one billion parts of water. The action level is a 90th percentile value calculated from 10 percent of the water system samples with the highest concentration of lead. In order for the action level to be triggered, it requires that 10 percent or more of the water samples exceed 0.015 mg/L of lead.

Sample Results

- All 130 customer-supplied pre-replacement sample results were under action levels for both lead and copper. (0.015 mg/L Pb, 1.3 mg/L Cu)
  - 5 customers did not provide a pre-replacement sample
- All 90-day post-replacement sample results were under the action levels.

Sample Group	90% Pb, mg/L	90 % Cu, mg/L
Pre LSL	0.0027 mg/L	0.09 mg/L
Post LSL	0.0034 mg/L	0.0538 mg/L
Post 30 day	0.0035 mg/L	0.2532 mg/L *
Post 60 day	0.0032 mg/L	0.1524 mg/L
Post 90 day	<0.002 mg/L	0.1378 mg/L

- Sample results indicate LSL replacement protocol and flushing measures were effective.

Lessons Learned-reflections from LSL replacement crews:

- Average time to verify a LSL- 30 minutes (~4000 hours to verify all LSLs!)
- Average time for LSL replacement work (uncovering main, removing old service, installing new service and meter):
  - 4 hours with a full crew and a dump truck on site to load spoil straight into
  - 5-6 hours if working on a busy road and have to shut down traffic lanes
- Other obstacles:
  - Couldn't get the cable through the old lead pipe or get cable through and the cable brakes because the service wont pull out of the ground, then "hog" needed.

Lessons Learned-reflections from LSL replacement crews:

- Obstacles, continued…….
- Using the “hog”
  - Can take a while to get across street or it can come out where it doesn’t need to. Takes extra time and material.
- Jackhammering
  - Usually there is a concrete under the asphalt and it can range anywhere from 2 - 6inches thick, and it usually has metal in the middle of it for extra support.
- Old abandoned services near the LSL being replaced
  - If you didn’t know they were there you could easily pull old corps stops out of the main and then you project just got more complicated!

Lessons Learned-reflections from LSL replacement crews:

- Greatest Challenge:
  - Coordinating crew's work with so many people!
    - Contacting sampling staff to set up samples in a timely manner so there's no wasted time.
    - Finishing LSL replacement by 2:30 daily to allow for sample collection time.
    - Contacting the supervisors and keeping track of the progress to keep everyone informed.
- Much more involved than a "routine" main repair or new service installation!

Summary:

- LSL replacement project must be well-planned and orchestrated
- Communicate with customers, regulatory agency, elected officials
- Communicate early and often!
- Build and maintain customer confidence
- Lengthy, labor intensive process
- Results are worth it!
- Customers supportive of process
- CAW began LSL replacements in late Oct 2017, replaced 115 services in 14 months.

CAW's LSL Replacement Team

- Thanks to: CAW senior management team, communications, billing, and laboratory staff.
- Special thanks to:
  - Chris Shahan, Eric Smith, Mark Stewart, Joshua Goodson, Jimmy Garrison, Carlin Fuller (CAW distribution crews)
  - John Ford, Brit Goodson, Allen Parker (CAW field laboratory technicians)
  - CAW's GIS department
  - Jackie Callahan- CAW billing supervisor
  - Phyllis Smith- CAW dispatch

Thank You!

Blake Weindorf
Blake.weindorf@carkw.com
501-223-1579

Sharon Sweeney
Sharon.sweeney@carkw.com
501-210-4914

Louisville Water's Lead Service Renewal Program

Presented by Denise Aaron, P.E., Project Engineer

Denise has worked in the water industry for over 25 years. She has worked in the extending the distribution system, water main replacement, and lead service line replacement programs. She has served at the local and state levels of ASCE. She also serves in the women's organization at church. She was married last year and she and her husband enjoy just hanging out at home and watching movies.

louisvillewater.com

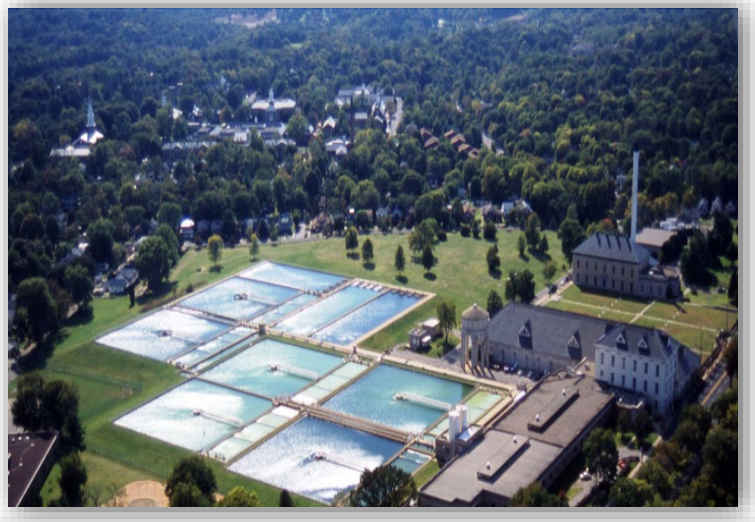
Louisville Water's Lead Service Renewal Program

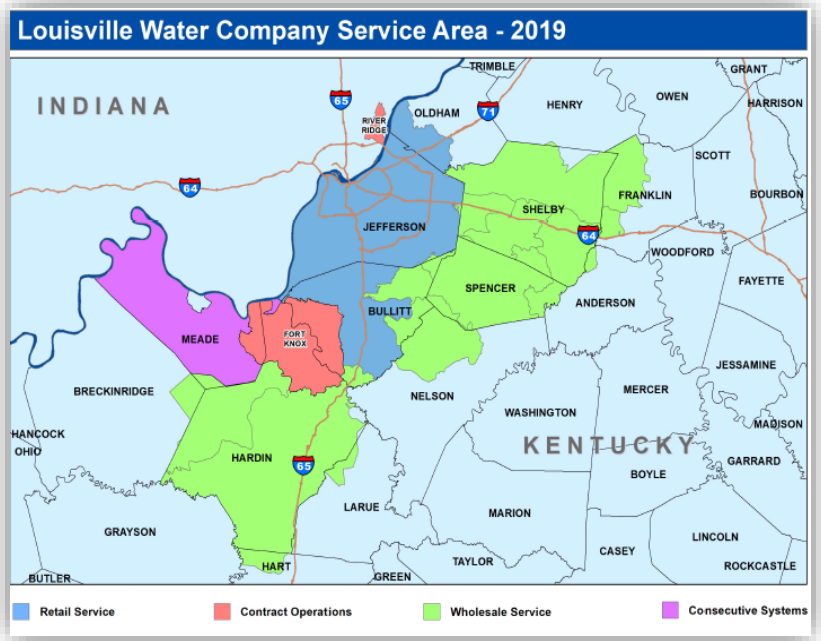
Denise Aaron, P.E.
Project Engineer

Louisville Water

Louisville Water Company

- **Two water treatment plants with a combined capacity of > 200 MGD**
- **Approximately 1 million customers, including wholesale customers**
- **Our direct service area encompasses 3 counties, while an additional 6 surrounding counties receive our water.**
- **> 4,200 miles of pipeline in service area**





History of Lead Service Lines in Louisville

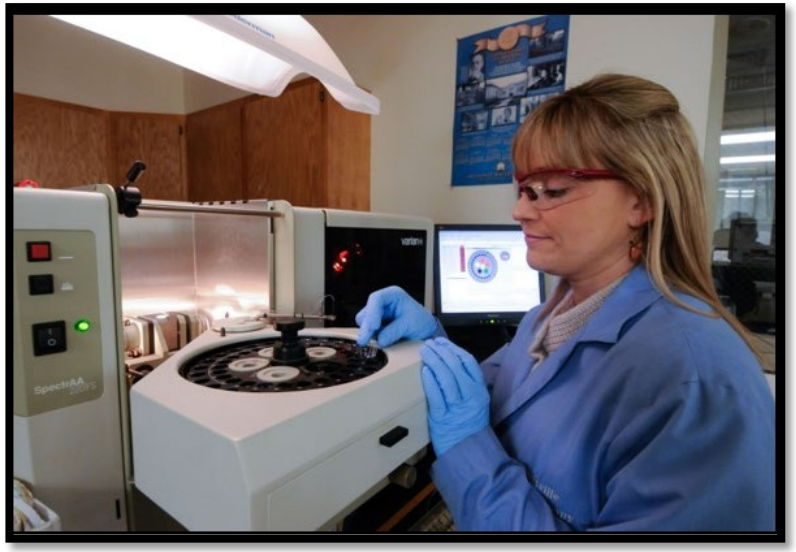
- Until 1950, it was common for our utility to install lead service lines from the distribution main to the customer's service line
- There were approximately 74,000 known lead lines in the system
- Louisville Water began replacing its lead service lines in the mid 1980s, and then began an aggressive strategy in the 1990s.
- Service lines to school facilities were inspected beginning in 1989. If lead was found, it was replaced with copper.

INSTALLING WATER MAIN, CIRCA 1935

Water Quality and Public Health

Three-pronged approach for managing potential risk with lead:

- ✓ Maintain stable/non-corrosive water quality and continual research
- ✓ Focus on infrastructure
- ✓ Customer education – COMMUNICATION



Today's Comprehensive Lead Program

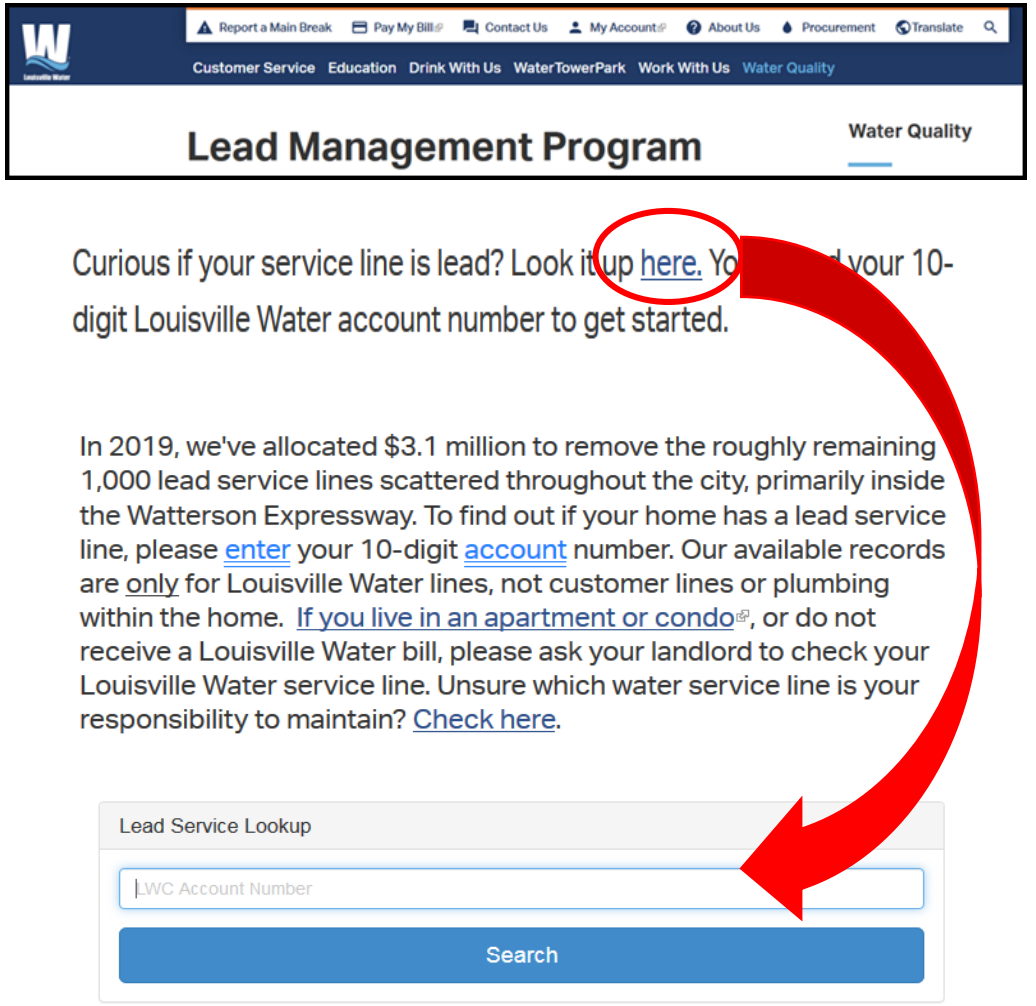
Compliance for Lead & Copper Rule (LCR)
Louisville Water has always maintained compliance with all aspects of the LCR. In 2017, our 90th percentile for lead was reported at 4.7ppb.

Water Quality & Research
Our team of scientists perform bench, pilot and full scale treatment optimization studies specifically related to corrosion reduction & lead release minimization.

Louisville Water Customers
All customers are provided lead monitoring services free of charge upon request. A web based tool has allowed customers the ability to identify if they have a LSL.

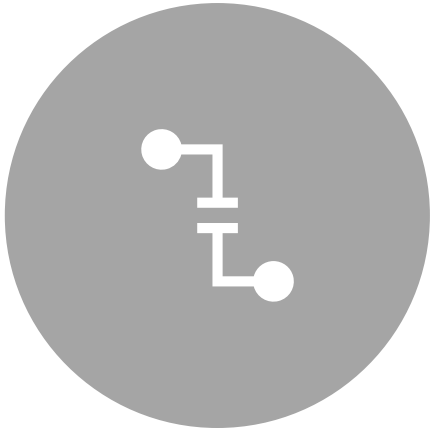
LSL Replacement Program
Louisville Water's goal is to remove all known public LSL by 2020.

- An average capital budget of about $6,000,000 per year was allocated for the lead service removal effort in the last 3 years
- We have been very aggressive with this program; on target to complete our Lead Service Renewal Program by end of 2019 - about a year ahead of schedule.
- Louisville Water provides financial assistance to those customers who have private lead service lines – continue past 2019.



Where Do We Begin?

START BY FIELD CHECKING ANY SERVICES LISTED AS LEAD IN DATABASE



LEAD WAS INSTALLED PRIOR TO 1937; CHECK ANY SERVICES LISTED AS UNKNOWN MATERIAL IN DATABASE

Profiling

- Visual check in the vault for lead
- Full of water or mud
- Discontinues
- Lost
- Check others on the street
- Relocates – Sidewalk, Driveway, Tree

Project Plans

Use info to develop projects that are between 100 – 400 services.

Service work also included on Main Replacement projects.

Increase the number of services / projects done per year.

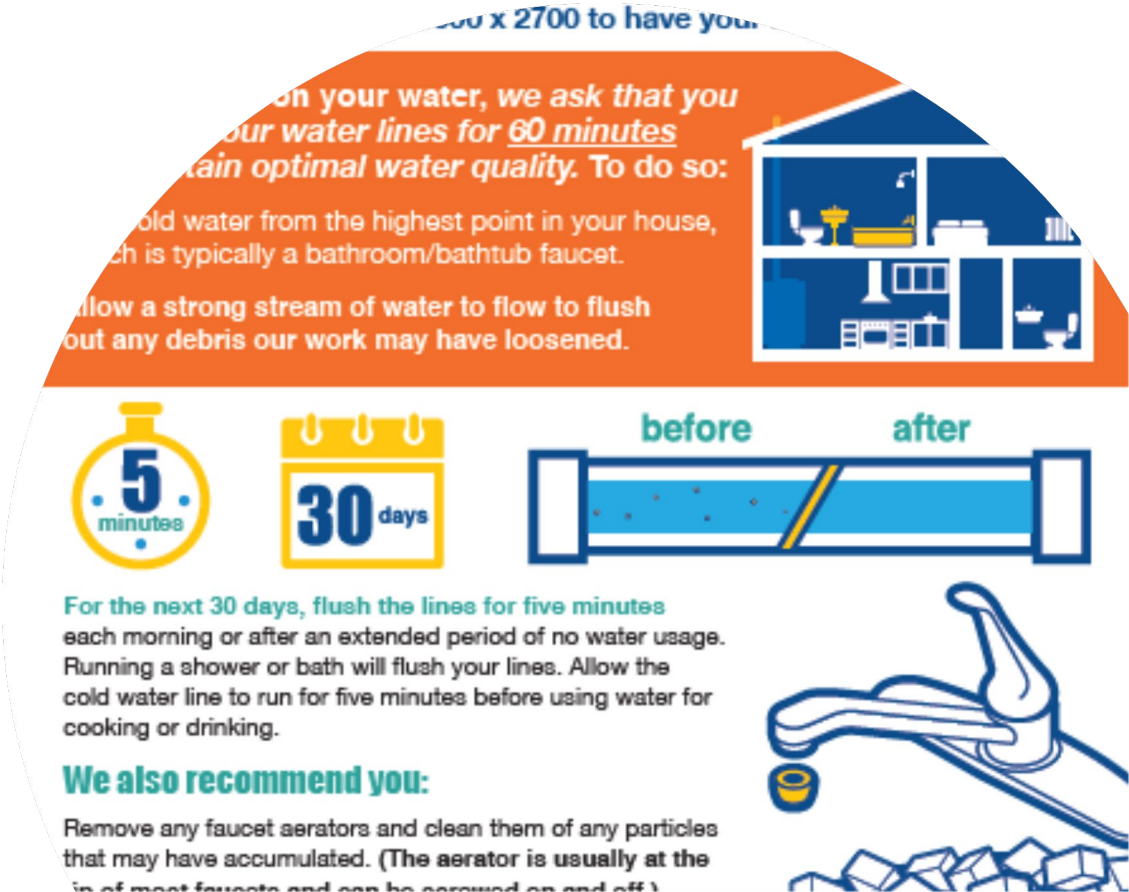
Customer Notifications

Send letters to mailing and street address that include:

- Louisville Water Contact info
- Contractor info
- What customer can expect during construction
- What to do after construction is completed on your service

Strategic Communications Department

- Aware of project
- Help keep Board of Water Works and Local Government Officials updated
- Help with website
- Help with putting notifications together



First letter to customer – includes visuals and small copy boxes, easier to read and more inviting

RE: _____ Lead Service Renewal
Project # _____

Louisville Water

Dear Louisville Water Customer:

Over the next few weeks, Louisville Water Company will work on the water service lines in your neighborhood (see attached map). Specifically, we are replacing Louisville Water's lead service lines that were installed many years ago with newer materials, primarily copper.

The project should be complete within eight weeks, except for paving. Louisville Water crews will do the work and one of our inspectors will oversee the project.

Here's how the project works and what you can expect:

- Work will generally be between 8:00 a.m. and 6:00 p.m.
- Some of the work will cause a temporary water outage. We schedule planned outages 24 hours in advance and we'll either knock, or leave a notice, on your front door before the water is turned off. Please let me know of any critical water needs that may need to be addressed during these scheduled water outages.
- Each water service replacement may require holes to be cut in the street, in your yard, and/or in the sidewalk. These construction activities will likely result in some general inconvenience.
- In order to determine if your private service line is lead, we could dig into your yard as much as 10 ft. We will restore the yard to condition in which we found it once complete.
- Following construction, all disturbed grassy areas will be re-seeded, and all disturbed paved areas will be repaired with like material. It is our intent to restore disturbed areas to a condition as good as existed prior to construction.
- Street parking may not be available during working hours.

How do we replace the water line?

- First, our staff will inspect the service line in the water vault to determine if the Louisville Water service line is made of lead.
- If we determine the service line is lead, we will replace Louisville Water's portion of the service line with a new copper service line (see attached drawing).

After the work, it's time to flush the lines.

TURN OVER the letter to see what you need to do.

Immediately after we replace the line, we'll flush the new service line for 60 minutes using an outside faucet. Then, if someone is home, we'll ask you to flush the line by allowing a strong stream of cold water to run for at least five minutes from the bathtub in the highest area of the house.

- If we're not able to flush the line and no one is home to conduct the inside flush, the service will be temporarily turned "off".
- Please call the 24-hour number (569-3600 ext. 2700) and request a service "turn on". Then, we'll ask you to flush the line for 60 minutes.

30 days

Then, for the next 30 days, please continue to flush your cold water line.

5 minutes

It's easy to flush the water line:

- Each morning or after an extended period of no water usage, run cold water from the highest point in your home, which is typically a bathroom/bathtub faucet. Allow a strong stream of cold water to run for a minimum of five minutes.
- Running a shower or bath will flush your lines.
- Allow the cold water line to run for a minimum of five minutes before using the water for cooking or drinking.

To cover the costs of flushing your lines, you'll receive a $10 credit on your next bill.

If you have any questions or concerns, please contact me at 569-3600 ext. 2299 during normal work hours or by email at dhettinger@lwcky.com. After-hours, and on weekends, this number is monitored by a voice-mail system. Concerns of an emergency nature should be directed to the 24-hour customer service line at 583-6610. For more information on lead and our work, visit **LouisvilleWater.com**.

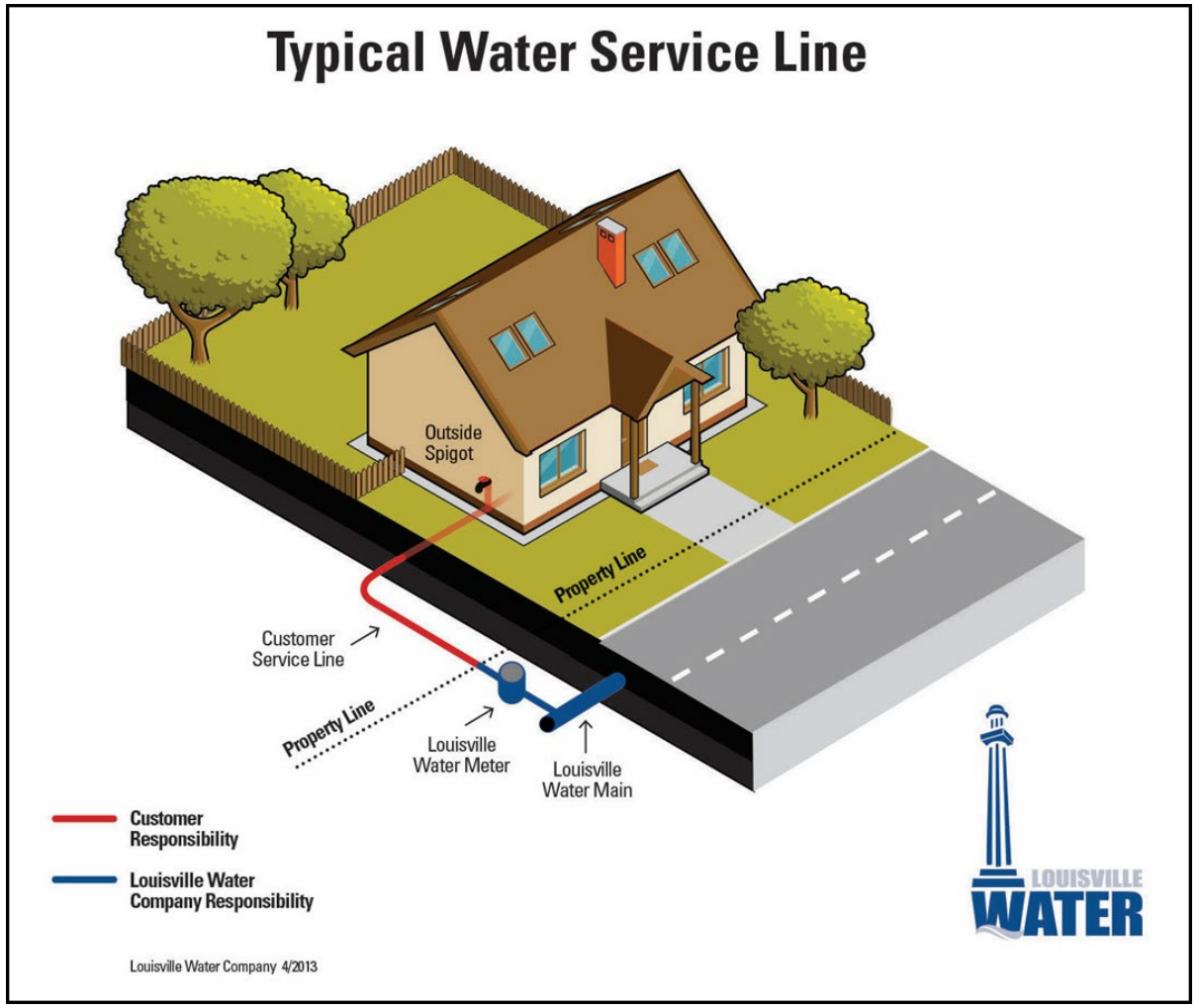
Sincerely,

Denise Hettinger, PE (Project Engineer)

Service Line Visual: Utility vs Customer

- Customer's service line – Water service line between the property line and the house. (Customer responsibility)

- Visual to the right is included with first letter and helps customer understand where we will be working



24 hour Notification

- Notice is placed on door 24 hours prior to construction, allowing customer to make any necessary adjustments
- Work with businesses and residents with water needs
- Easy to understand copy and visually appealing

Louisville Water

Private Service Line

- Contractor digs up connection between Louisville Water service line and private service line:
  - ❑ Private side is not lead
  - ☑ Private side is lead
- Backfill line and Louisville Water contacts property owner
- The service material on the private side is recorded for our records

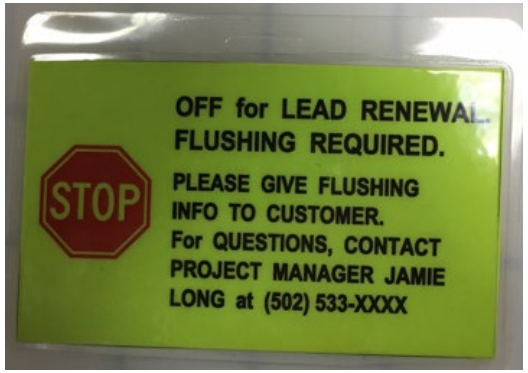
After Replacing Our Lead Line:

- Flush a line, if possible, for 60 minutes
  - ❑ inside house, highest level
  - ❑ outside house, spigot
- Apply $10 credit to customer's next bill to cover cost of flushing
- Leave instructional card for customer asking that they flush 5 minutes a day for 30 days
- We also recommend cleaning aerators and discarding two cycles of ice

Louisville Water

If customer is not home and we were unable to flush lines:

- Water is left off
- Notice left for customer about why water was left off and how to restore service
- Tag put in meter vault
- Customer calls in and asks for service to be turned on. Customer has to be onsite.



After Replacing a Lead Line:

- Inspector sends update to the Project Manager every week of all properties worked
- Send reminder postcard to remind customer to flush lines
- Set up dedicated phone line and email address for Project Managers working on lead
- Website links

A reminder from Louisville Water Company

Louisville Water recently replaced the service line at this address. Our service line was made of lead and we replaced it with a copper pipe that connects to your private water line.

Following the work, we flushed your water line to remove air in the line and any particles loosened during the work.

Now, we need you to continue to flush the cold water line over the next 30 days. It's easy to flush the water line. Turn over the card to see how.

Louisville Water

5 minutes

30 days

For the next 30 days, flush the lines for five minutes each morning or after an extended period of no water usage. Running a shower or or bath will flush your lines. Allow the cold water line to run for five minutes before using water for cooking or drinking.

If you have questions about the work we did, contact us at **502.569.0830** or send an email to: **leadservicepm@lwcky.com**

Louisville Water

Public health is our number one priority and your drinking water meets all Environmental Protection Agency standards for lead. Louisville's drinking water does not contain lead when it leaves the treatment plants and we treat the drinking water to minimize potential corrosion of plumbing lines. To learn more about lead, go to **LouisvilleWater.com** and click on "water quality." Or visit the Environmental Protection Agency's consumer web site at: http://water.epa.gov/drink/info/lead.index.cfm

@louisvillewater

Louisville Water

If we find lead on customer's private side:

- Louisville Water inspector contacts or leaves information for the property owner explaining Louisville Water's 'Private Outdoor Lead Line Replacement Program'
  - Louisville Water will pay half of the cost of replacement up to $1,000 - two quotes are required
  - Louisville Water Foundation provides funding for the other half of the cost of replacement if guidelines are met (Residential service, Be the homeowner, Income <= 200% Federal Poverty Guidelines)
- Customer lets us know if they are interested in participating
- Note is added on the account that the private service line is lead

LEAD SERVICE LINE REPLACEMENT PROGRAM

Louisville Water will soon replace our service lines, which may contain lead materials, in your neighborhood. Crews inspected your private outdoor water service line that connects to our system and found it is a lead line. We recommend you replace the lead service line but understand this can be costly. In order to help maintain optimum water quality, we offer the following two options:

Option #1: Financial assistance to help replace your outdoor lead line
Option #2: Free water pitcher and filter, if you choose not to replace your lead line.

Information regarding both of these options is outlined on the next two pages.

MY PRIVATE OUTDOOR SERVICE LINE IS LEAD. NOW WHAT?

OPTION #1

We highly recommend replacing your lead line at the same time that we replace our line, but realize this can be expensive, so we're offering to help. Louisville Water will pay 50% of the replacement cost, up to $1,000. Most private outdoor lines can be replaced for $1,500. If you need assistance covering your portion of the costs and meet certain eligibility criteria, Louisville Water Foundation may be able to offer additional support.

If you would like to take advantage of the private service line replacement program, either visit LouisvilleWater.com/privateleadline and complete the online form or complete and return the enclosed form. You may also call 502.569.0830. Once the application is received, someone from Louisville Water will contact you.

Replacing a private outdoor lead service line requires a plumbing permit. A licensed plumber must perform the work in order for Louisville Water to pay the costs.

Information about Louisville Water Foundation is also enclosed.

Louisville Water

OPTION #2

FREE WATER PITCHER AND FILTERS

We will provide at no charge an Aquasana powered water filtration pitcher and two filters if you decide not to replace your private outdoor lead service line after Louisville Water replaces its lead line with a copper line. The two filters allow for an estimated six months of cooking and drinking water. We strongly recommend continued use of a filter that is NSF approved for lead removal, like the Aquasana, for all cooking and drinking water until you replace your private outdoor service line.

Extra filters may be purchased directly from the manufacturer. Louisville Water does not supply additional filters.

If you would like a pitcher and filter, either visit LouisvilleWater.com/PrivateLeadLine and fill out the online application or call 502.569.0830.

Louisville Water Foundation

- The Foundation operates as a separate, independent entity from Louisville Water and was granted status as a tax exempt public charity under section 501 (c) (3)
- The Foundation's primary mission is to improve the health and well-being of the communities we serve and around the world by providing water assistance and water education
- The Foundation also contributes a portion of all donations to help struggling families in the community maintain access to the local water supply

Louisville Water Foundation

Additional Financial Assistance Option

Louisville Water will pay 50% of the cost to replace your outdoor private service line, up to $1,000. If you cannot afford to pay the remaining cost to replace your outdoor private lead service line and meet eligibility requirements, Louisville Water Foundation's grant program may pay the remaining replacement cost, not to exceed $1,000. The program is offered to eligible single-family residential homeowners with household incomes that fall at or below 200% of the federal poverty level, adjusted for household size.

Persons in household	2016 Federal Poverty Levels 200%
1	$23,760
2	$32,040
3	$40,320
4	$48,600
5	$56,880
6	$65,160
7	$73,460
8	$81,780

Eligibility criteria

1. Must be a residential customer of Louisville Water Company.
2. Must be the homeowner and have an outdoor private lead service line at the residence.
3. Must have an income less than or equal to 200% of the federal poverty guidelines published by the US Department of Health and Human Services. Income will be verified by the Association of Community Ministries through a paycheck, social security award letter, bank statement or other source deemed sufficient.
4. Must submit an application to the Association of Community Ministries for evaluation.

How to apply

1. Call 502.267.1055 to schedule and attend a face-to-face meeting with an Association of Community Ministries representative.
2. Complete and return Louisville Water's Private Outdoor Lead Water Service Line Replacement Program Application.
3. Complete income verification application at local Association of Community Ministries office.
4. Supply two estimates from licensed plumbing contractors to Louisville Water Company.

If customer chooses not to replace lead line:

- **Provide a water pitcher**
  - Performance verified in laboratory (followed NSF certification standards)
  - 6 MONTH supply of filters
  - We do not provide additional filters
- **Install dielectric coupling**
  - 24” section of like diameter Schedule 80 PVC pipe and a plastic universal transition coupling
  - Prevents galvanic corrosion
  - Do not install an electrical jumper
  - 10 foot away from house

Innovative Solutions – Schools, Daycares, etc.

pure spout

- Proprietary point-of-use filtration device
- Effective at removing lead and other contaminants
- Easy to install and maintain
- Sturdy, tamper-proof design
- Currently, we are working towards NSF certification and looking at production later this year

Additional Communications & Website Information

Flushing Your Lines

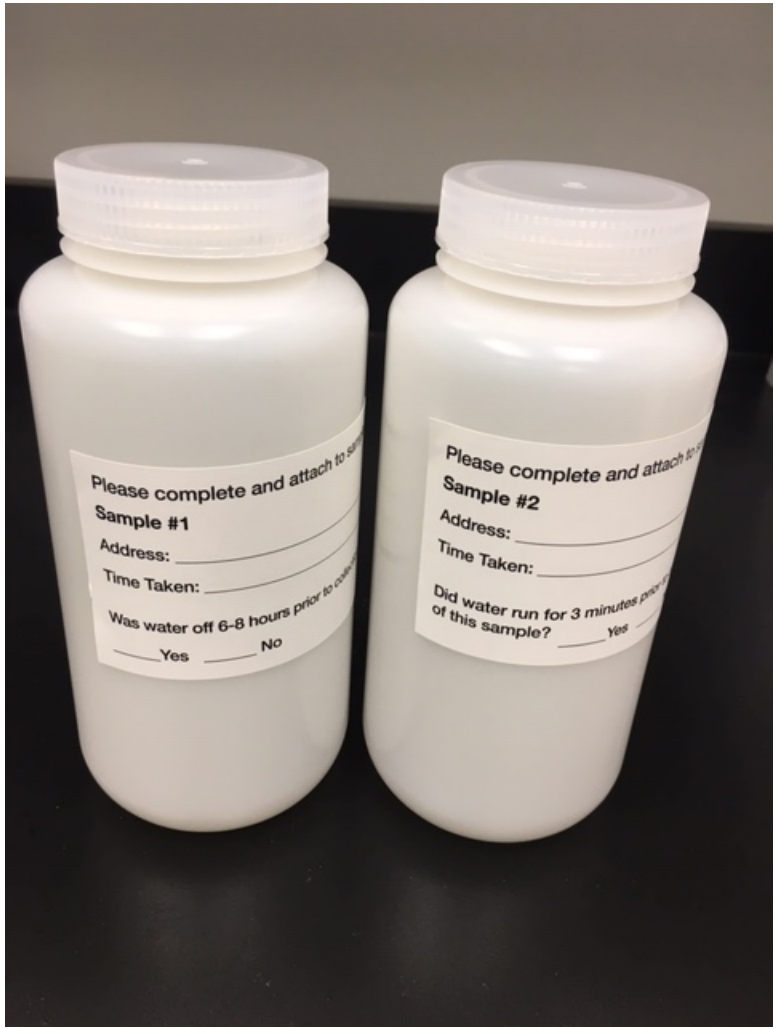
Flushing the water lines inside your home can help maintain water quality. Flushing is easy - either follow the steps below or watch our short video for an animated tutorial.

Lead Management Program

There is not a water quality concern with lead as it relates to Louisville's drinking water. Louisville's drinking water does not contain lead when it leaves the treatment plant. Lead can become a potential risk for drinking water in the distribution system with lead pipes and

Lead Monitoring

- We provide free lead monitoring services to our customers upon their request
  - Sample kit includes 2-1L sample bottles for a First Out & 3 minute Flush
- Our Water Quality Compliance team will use lab results to determine next steps
- If results are ≥ 5.0 ppb, further actions are recommended:
  - Identify source of lead (i.e., pothole at property line, meter vault inspection)
  - Recommend enhanced flushing practices
  - Clean aerators
  - Re-sample until lead levels are < 5ppb



Training

Review procedures with:

- Field personnel
- Radio room
- Inspectors
- Customer service

Lead Service Renewals – Cheat Sheet – Current as of 11/9/18 (DRAFT)

1) Pre-Construction Letters / Notices:

a) PM will mail out pre-construction letters in advance of construction to all customers on the block.

b) Inspector, Contractor, or LWC Crew to distribute pre-construction sticky notices (Notice #1) at least 24 hours in advance to LSR Customers.

PM pre-con Letters

Pre-con notice (Notice #1)

2) Renewal Procedures:

a) **FIRST** - Expose Property Service Connection. Can dig up to 10' beyond PL.

b) If Lead found on Customer line (beyond Property Service Connection):

1. **If Customer is present**, give them the **private line replacement folder**.
   a) If **Customer DOES** want to replace their line: Backfill the excavation and move along. PM will schedule work w/ Plumber & Contractor to renew entire service.
   At scheduled time: renew entire service. No dielectric. Flush for 60 min. Leave **notice #2.**
   If Plumber fails to show, Contractor to renew entire service. Install **dielectric coupling**.
   Flush for 60 min. Leave **notice #2**. Give Customer a **filtration pitcher**.)
   b) If **Customer DOES NOT** want to replace their line: Renew entire service. Install **dielectric coupling.** Flush for 60 min. Leave **notice #2**. Give Customer a **filtration pitcher**.
2. **If Customer's NOT present**, backfill, leave **Private Line Replacement Folder** in door hanger, notify PM, move along. PM will also mail the **Private Line Replacement Folder.** Work to be rescheduled.

c) If **Lead found on LWC line only**: Renew entire service. Flush for 60 minutes. Leave **notice #2**.

d) If Lead is NOT found anywhere: Renew entire service. Flush for 5 minutes. No notice to leave.

e) If **UNABLE to flush**: Turn off service. Zip-tie **laminated green card** to meter lock. Leave **notice #3**. Report to Radio Room. When Customer is present, a CSR or TURNER will remove tag, turn service on, have customer flush, and leave **notice #4**.

Private line replacement folder

Dielectric (24" SCH 80 PVC)

Filtration Pitcher

Notice #2

Laminated green card

Notice #3

Notice #4

Field Challenges

- Historic districts
- Retaining Walls / Fences
- Trees
- Other utilities close to water main (i.e. Fiber Optic)
- Louisville Water transmission mains
- Emergency repairs - we have a set of instructions to follow when lead is found on a leaking service

Interesting projects

- Floodwall
- Trolley Tracks
- Brick sidewalks or roads

GOAL: Get the Lead Out!

Louisville Water

No known lead lines left in system by 2020

Questions ?

Questions and Answers Session

To Ask a Question: Type a question in the “Questions” box located in right navigation bar of your screen.