



2019 Quarterly Lead Service Line Identification and Replacement Webinar Series

Hosted by EPA's Office of Water (OW)

March 7, 2019 2:00-3:30 pm ET

Introduction to the Series





Webinar Logistics

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.

Future Webinars & Recordings: check the Drinking Water Training page for updates (<https://www.epa.gov/dwreginfo/drinking-water-training>)



Disclaimer

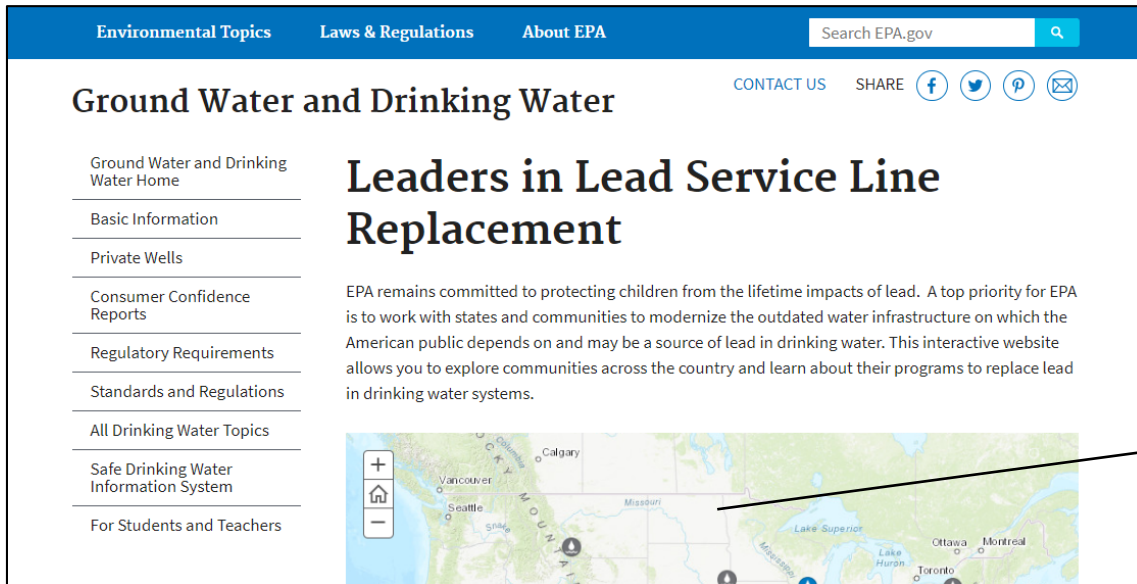
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In 2019 quarterly webinars will be held to highlight challenges and successes associated with lead service line identification and replacement through case studies from water systems and state primacy agencies.

- 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 Primacy Agencies”**
 - Speakers TBD
- Webinar #3: **September 5, 2019 2-3:30 pm ET “Focus on Large Water Systems”**
 - Speakers TBD
- Webinar #4: **December 5, 2019 2-3:30 pm ET “Focus on Small Water Systems”**
 - Speakers TBD

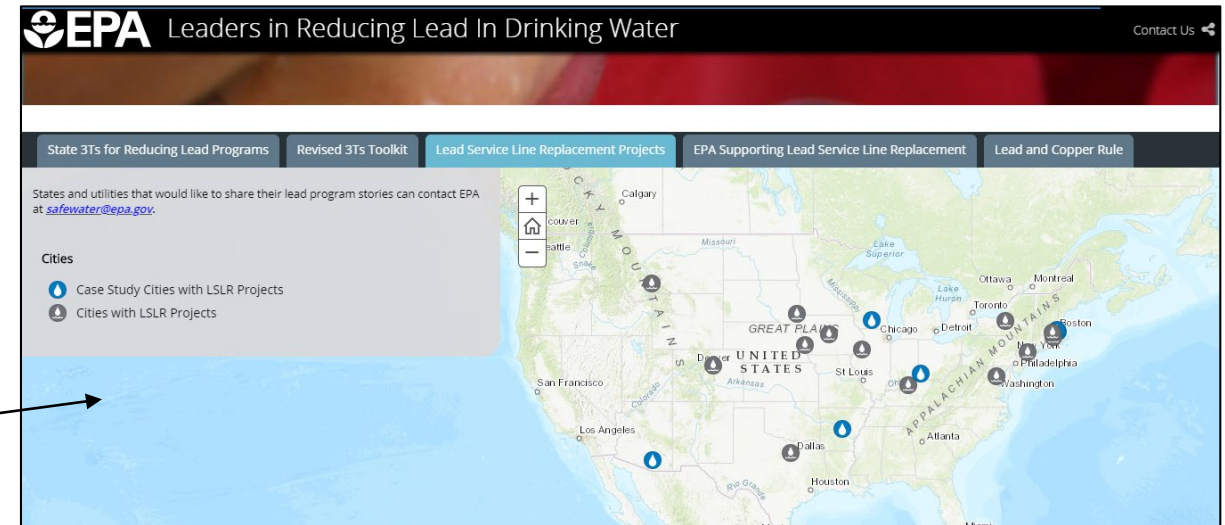
Guide to EPA's Leaders in Lead Service Line Replacement Story Map

Launch Page



<https://www.epa.gov/ground-water-and-drinking-water/leaders-lead-service-line-replacement>

Story Map Page



<https://epa.maps.arcgis.com/apps/Cascade/index.html?appid=989f006a15f14256ad8bdfd837016453>

The Quest for 100% Lead Free – Listening for Lead in Washington State

Presented by Sam Perry (sam.perry@doh.wa.gov)

Sam currently serves as the Supervisor of the Engineering and Technical Services Section in the Office of Drinking Water at the Washington State Department of Health. It has been almost 25 years since he earned his Masters in Civil Engineering from the University of Washington where his thesis worked focused on corrosion control. Prior to this time, Sam earned a BS in Civil and Environmental Engineering from the University of California, Davis where he graduated with high honors.

He is a recipient of the AWWA Larson Aquatic Research Support (LARS) Scholarship, and has twice been recognized at AWWA national conferences for his poster presentations. Sam has prepared numerous papers and conference proceedings on a variety of water related subjects, and has contributed to the development of national and international references on water supply. He currently lives with his wife and two young daughters who all appreciate the value of safe and reliable drinking water.



We work with others to protect the health of the people of Washington State by ensuring safe and reliable drinking water.



THE QUEST FOR 100% LEAD FREE... LISTENING FOR LEAD IN WA STATE

Washington State Department of Health
Office of Drinking Water

The Core Team



Nathan Ikehara
Regional Engineer



Sam Perry
Engineering and
Technical Services



Scott Torpie
Engineering Advisor

Acknowledgments

- Water system staff—Owners, operators, and managers
 - Review and comment on the survey
 - Responding to the survey
 - Review of records and field work
- Colleagues in WSDOH Office of Drinking Water
 - Development and distribution of the survey
 - Follow-up with water systems
 - Sharing our findings (publications and presentations)
 - On-going communication with water systems

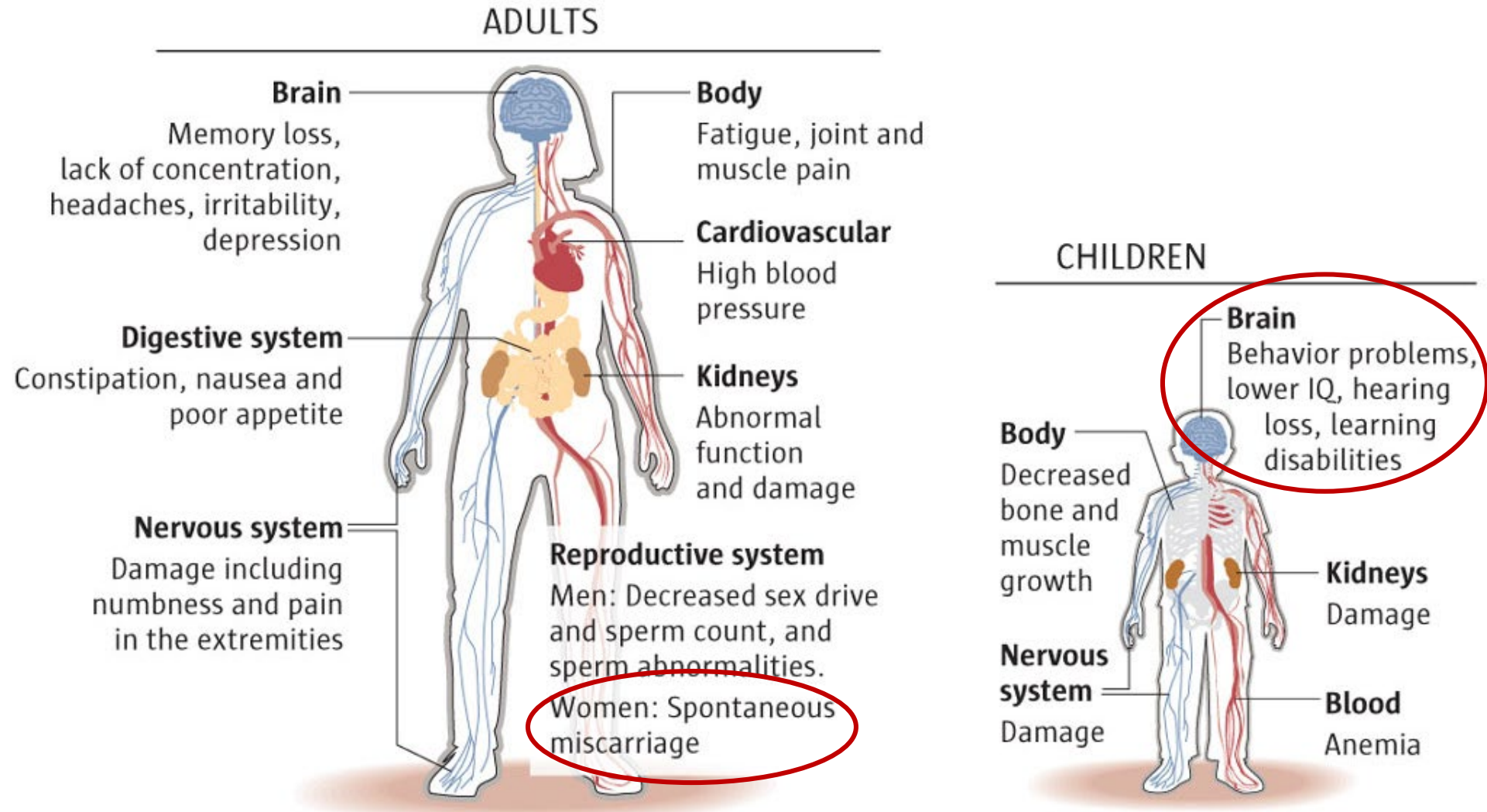
Overview of Lead Health Effects

- Lead is bad.
- Lead is really bad.
- Lead is really, really bad.



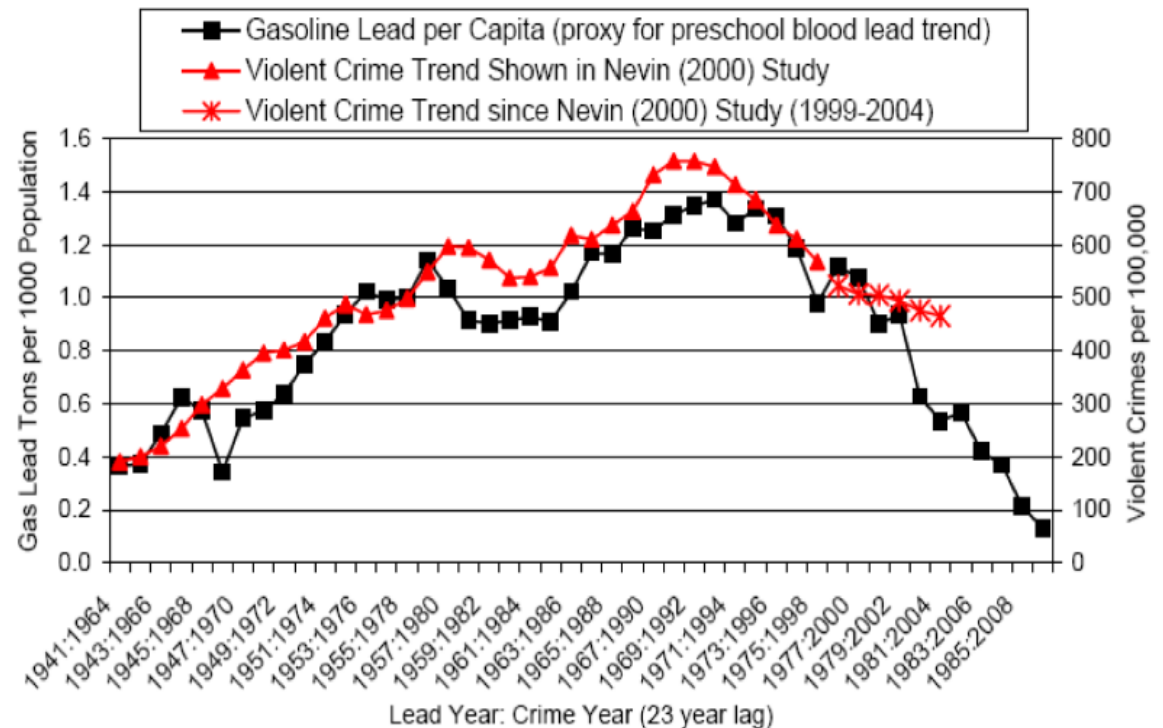
And lead exposure is much, much lower now than decades ago.

Health Effects of Lead



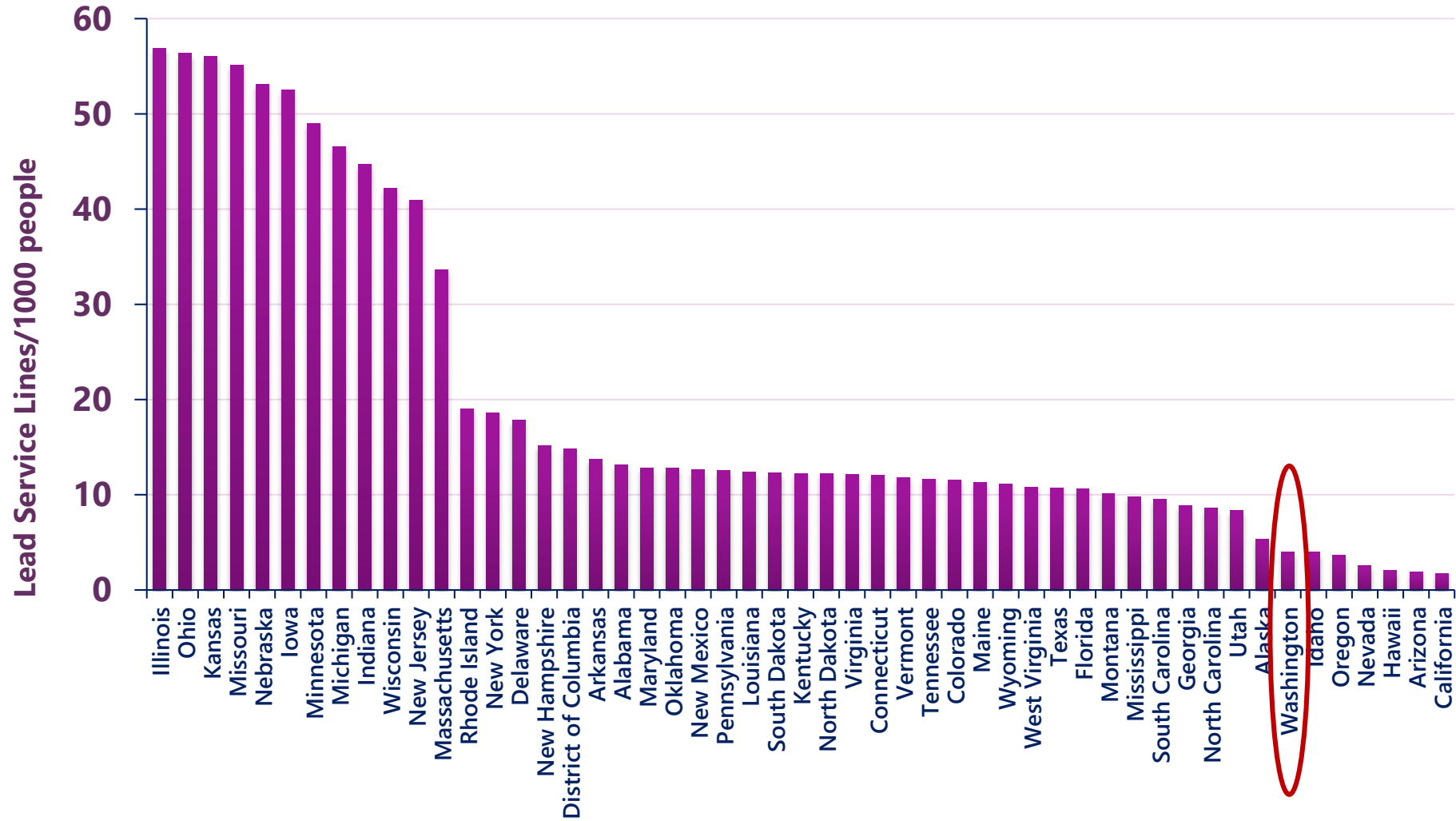
Benefits of Reduced Lead Exposure

- Reduction in crime rates in U.S. and other countries.
- Paint hazard reduction: \$1 invested, estimates \$17 to \$221 in benefits.
- Global benefit of phase out lead in auto gas—\$2.45 trillion/year (2011).



Refs.: Nevin 2007; Gould 2009; Tsai & Hatfield 2011.

Lead Service Lines—By State



Ref. Cornwell et al. 2016.

Governor's Directive 16-06

Signed May 2, 2016, directing **state agencies** to:

1. Address lead exposure in schools, child care settings, and rental properties.
2. Improve state's blood lead monitoring program.
3. Work with each water system to identify all lead service lines and lead components within two years.
4. Work with stakeholders to develop policy and budgetary proposals with goal of removing all lead service lines and lead service components in water systems within 15 years (May 1, 2031).

Washington's Experience

- Shining a non-regulatory spotlight instead of a regulatory searchlight can work.
- It helps to have an ice-breaker. The Governor's 2016 Lead Directive was ours.
- Elimination of lead service lines (LSLs) and lead service connections (LSCs) [aka "goosenecks"] in our state is within reach.
- Our water systems want to pursue elimination of LSLs and LSCs.

Step 1: Develop the Survey

(May to August 2016)

Assembled 12 water systems who advised us on:

- Optimizing survey release timing.
- Editing introduction, instructions, structure, and wording of questions.
- Making survey easy and short.
- Creating a quick “off ramp” with first two questions.
- Providing space for comment/explanation.

Provided definitions:

- Lead service line (LSL).
- Lead service connection (LSC) aka “lead gooseneck.”
- Clarified what we were **not** asking about (leaded CI joints, lead-alloyed brass).

Step 2: Conduct the Survey

(September 2016 to February 2017)

- Marketed survey.
- Sent to nearly all 4,100 water systems.
- Called each nonresponding water system serving 1,000+ connections.
- Informed utilities survey results would be made public.
- Wrote initial summary of findings (pub. 331-587).
- Wrote a full survey report (pub. 331-599).

Step 3: Review the Data

(February to June 2017)

- 686 water systems responded (17 percent).
- Who we heard from and didn't hear from.
- Five water systems reported known or est. LSLs.
 - 916 LSLs (0.04 percent of connections).
- Fifteen water systems reported known or est. LSCs.
 - 6,370 LSCs (0.28 percent of connections).
- Forty water systems serving more than 1,000 connections reported "unknown" for LSLs and/or LSCs.

Step 4: Post-Survey Follow-up

(June 2017 to March 2018)

Survey report sent to DOH Secretary, Governor's Office, and the public through web page and publications (October 2017).

Follow-up phone interviews (January to March 2018):

- All systems reporting known or estimated number of LSLs and/or LSCs.
- Systems with 1,000+ connections answering "unknown" for estimated LSLs and/or LSCs.

On-Going Efforts (April 2018 to Present)

Follow-up Findings.

- LSLs: One water system w/ 300 estimated LSLs.
 - Statewide: 99.99% free of LSLs.
- LSCs: 14 water systems w/ about 5000 estimated.
 - Statewide: 99.7% free of LSCs.
- Unknowns.
 - LSLs: 32 initially reported unknown; 5 remain.
 - LSCs: 30 initially reported unknown; 12 remain.

Support for Funding LSL and LSC Replacement (Fall 2018)

DWSRF Eligibility Criteria.

- All work performed within 500 feet of a replaced LSL or LSC is eligible for reimbursement. Eligible work includes service line (main to the meter) and water main replacement, regardless of pipe material; or...
- At least 50.1 percent of the total service line replacement costs (from main to the meter) are associated with LSL or LSC removal and replacement.

What We Learned

- Despite no state authority to require lead identification and removal, water systems in Washington State are committed to doing so.
- Our water systems have very few known LSLs or LSCs and uncertainty has decreased with time.
- Governor's Directive 16-06 and survey gave us entry to communicate with water systems.
- Surveys need follow up.
- There will continue to be some uncertainty.

Conclusions

- Governor's Initiative drove the survey.
- Utilities doing much more than we knew.
- Operators want to affect positive change in their community.
- Large utilities cooperated and were forthcoming.
- Survey supported and, in some cases, triggered action.
- The only help utilities need is money.
- The survey helped align our loan program with utility needs.

Questions?



Contact Information

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DC Water's Service Line Map and Methods to Improve Service Line Inventory

Presented by Maureen Schmelling (Maureen.Schmelling@dcwater.com)

Maureen Schmelling is the Director for Water Quality and Technology for DC Water and has been with DC Water for 14 years. Prior to DC Water, she was a consultant with the Cadmus Group supporting EPA's development of drinking water regulations. She has a Master's in Environmental Engineering from Clemson University.

DC Water's Service Line Map and Methods to Improve Service Line Inventory

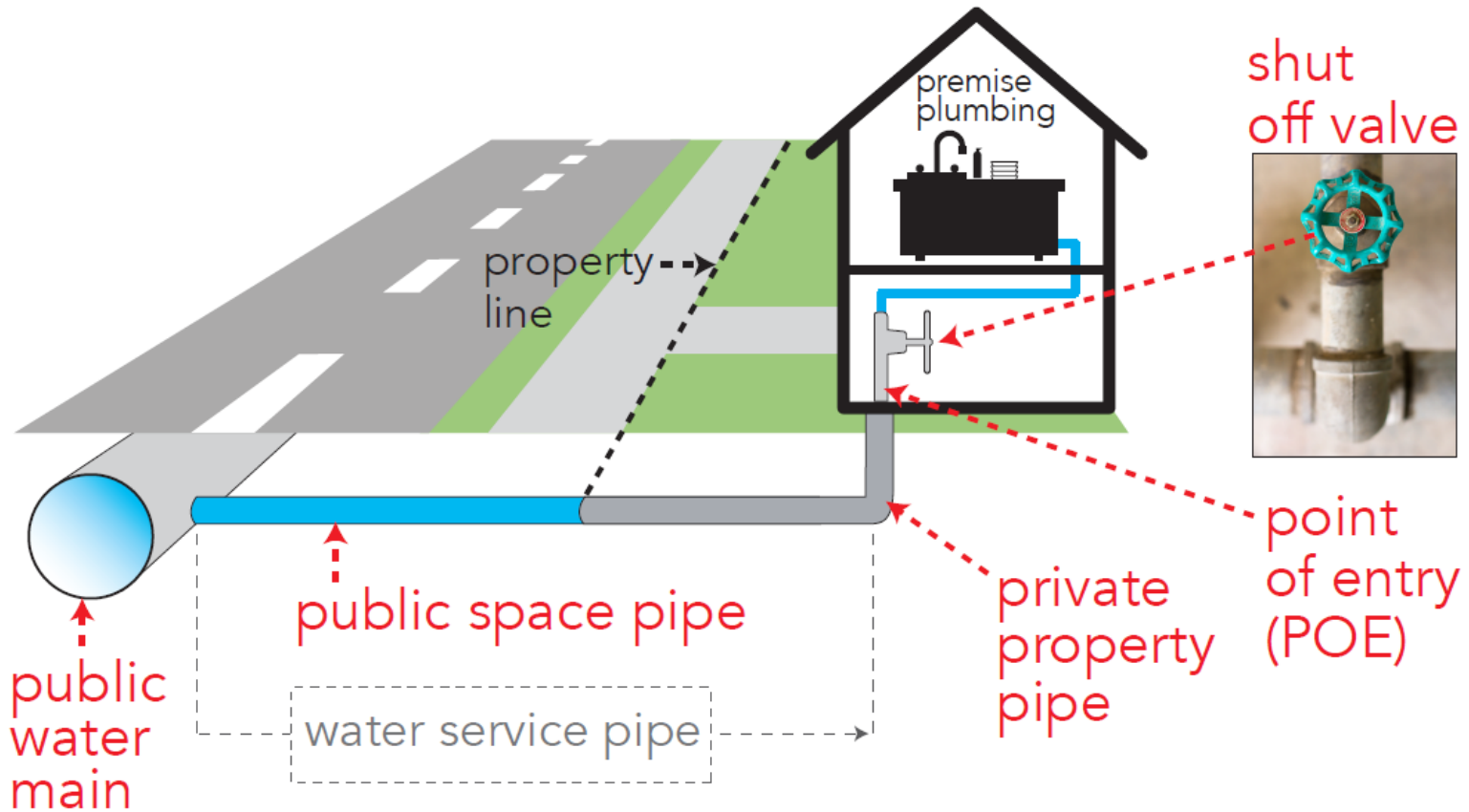
Maureen Schmelling
Director of Water Quality and Technology
DC Water

Presentation Outline

- Sources of data
- Creating DC Water's map of service line materials
- Improving the service line material inventory

Service Line Sections

UNDERSTANDING YOUR WATER SERVICE PIPE



Sources of Data

➤ Construction

- Service line replacements—water main replacements and leak repairs

➤ Meter pits

- Service lines might be visible (DC's are not)



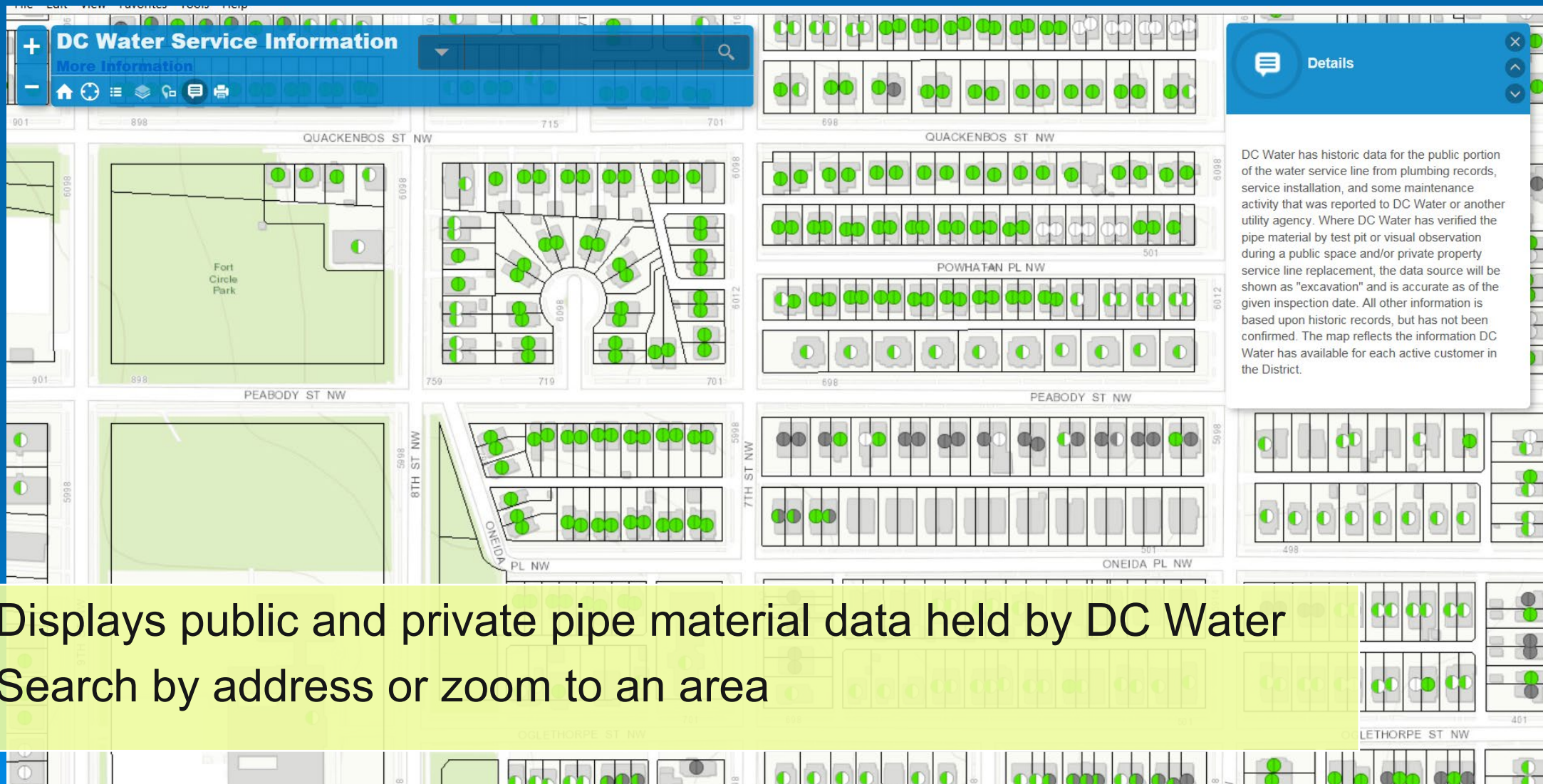
➤ Historical

- Tap cards

➤ EPA 1991 LCR Study

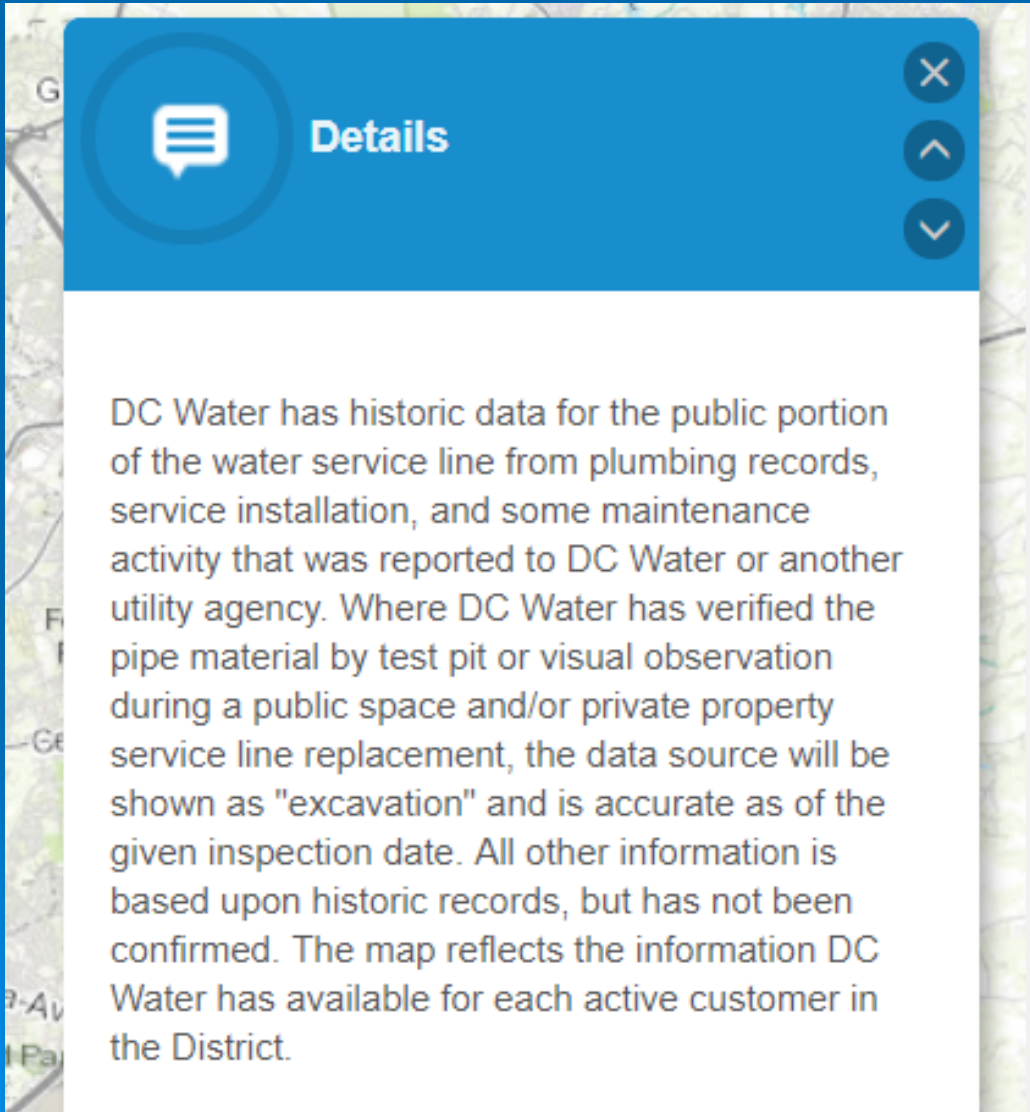
- Researched beyond tap cards

DC Water's Interactive Map of Service Lines



- Displays public and private pipe material data held by DC Water
- Search by address or zoom to an area

Detailed description of DC Water's data



Details

DC Water has historic data for the public portion of the water service line from plumbing records, service installation, and some maintenance activity that was reported to DC Water or another utility agency. Where DC Water has verified the pipe material by test pit or visual observation during a public space and/or private property service line replacement, the data source will be shown as "excavation" and is accurate as of the given inspection date. All other information is based upon historic records, but has not been confirmed. The map reflects the information DC Water has available for each active customer in the District.



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QUACKENBOS ST NW

POWHATAN PL NW

PEABODY ST NW

ONEIDA PL NW

OGLETHORPE ST NW

Disclaimer for Data

DC Water Service Information

More information

DC Water - Water Service Information

To see service line information, enter an address in the search box or zoom in on the map. Click the circle located within the property boundaries to view the property's service line information. The information provided through this map is limited to the best available data in DC Water's possession at this time. It may not be accurate.

Visit [Service Lines - Fact Sheet](#) for more information.

DISCLAIMER: The maps provided by the District of Columbia Water and Sewer Authority ("D.C. Water") are based on historical data, information directly provided by customers, and in some cases, information acquired during physical inspections. DC Water does not guarantee the accuracy of these records and maps, which shall be used for the sole purpose of providing property owners and residents with DC Water's best available data regarding their private water services, and not for any commercial, legal or other use. These records will be updated constantly as D.C. Water gathers additional information. D.C. Water requests that customers provide to it records of any service line replacements performed by property owners. D.C. Water reserves the right to alter, amend or terminate at any time the display of these maps and records.

I understand

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I understand

Translating Data to Public Information

Data Source	Public Service Type	Tap Date / Type of Work	Website Service Type Viewed by Public	Website description
Customer Service	Copper	<1985 or Null	Copper	Assess further for confirmation
Customer Service		>=1985	Copper	Copper likely based on water service connection yr
Customer Service	Lead		Lead likely	Lead likely based on historic documentation
Customer Service	Non-lead by size		Non-lead	Service line has 2" or greater diameter, therefore not lead
Meter Changeout	Copper		Copper	Assess further for confirmation
Service Replacement	Copper	Replacement	Copper	Service pipe replaced [insert date field]
Inspection	Copper	Test pit	Copper	[insert date field] excavation revealed copper pipe
Inspection	Lead	Test pit	Lead	[insert date field] excavation revealed lead pipe
Historical data	Copper		Copper	Copper likely based on historic documentation
Historical data	Lead		Lead	Lead likely based on historic documentation
Service Tap	Copper		Copper	New service installed [insert date field]

Translating Data – Private Side

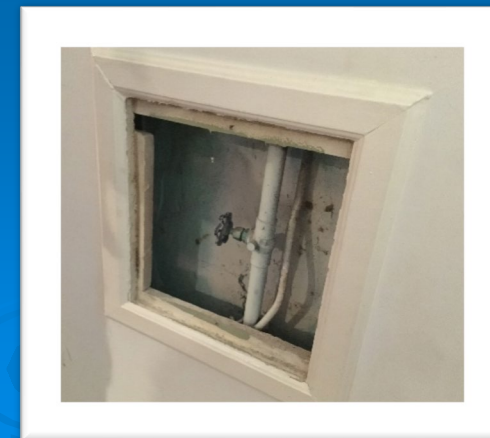
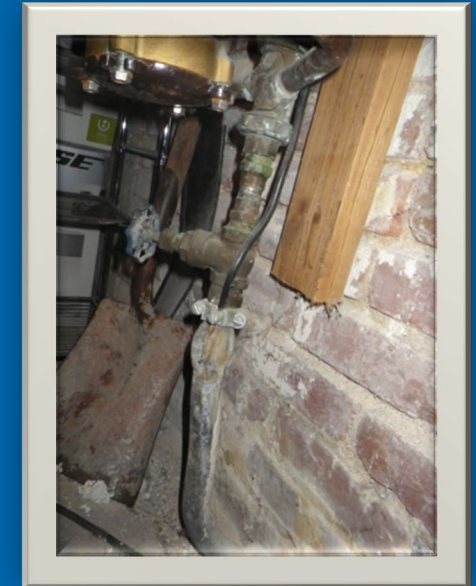
Data Source	Private Service Type	Website Service Type Viewed by Public	Website description
Customer	Copper	Copper	Customer reported copper on private side or entering home
Service Replacement	Lead	Lead	Connected pipe in public space to lead pipe at the property line

*Customer reported data is only reported when pictures or plumber documentation is provided

Improving the Service Line Inventory

Pipe at Point-of-Entry – Data Sources

- Resident supplies information
 - Picture of pipe breaking through wall
 - POE – update private side only
 - Documentation from plumber
 - Verbal – do not update records
- DC Water observes POE pipe
 - Document field data
 - Picture if possible



Resident Provides Pipe at Point-of-Entry

Questionnaire sent with lead test kits

What does your pipe look like entering your home? See attached fact sheet describing the different types of pipe material.

- Find the shut-off valve in the basement or lowest floor
- Trace backwards to see pipe punching through the wall or floor

Please mark which type of pipe you have or if it is not visible:

- Copper
- Lead
- Galvanized Iron
- Other _____
- Not visible

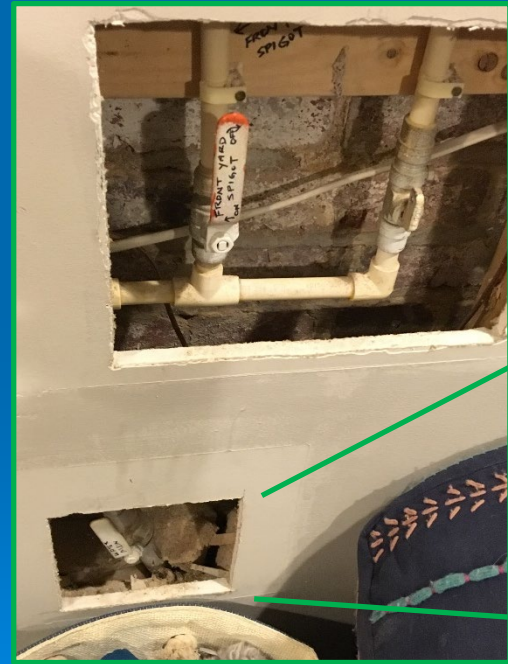
Pictures:

- Yes, I took a picture and emailed to leadtest@dcwater.com
- I printed the picture and included with this form.

Returned POE Form		Valid photo	
Pipe material	N	N	%
Copper	702	285	41%
Lead	269	159	59%
Galvanized	154	75	49%
Brass & Nonlead	29	12	41%
Not-Visible	304		
Total	1,458	531	36%

Pictures at Point-of-Entry

- Must see pipe breaking through the wall or floor



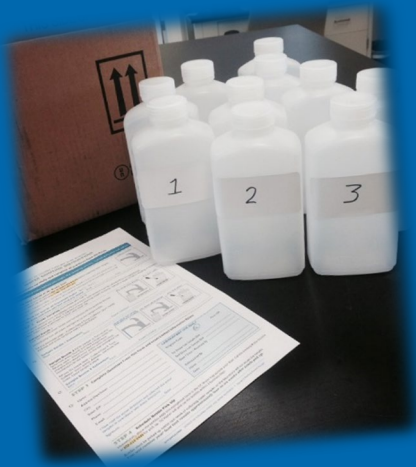
Copper pipe behind panel
-POE not visible
-Lead still possible



Drywall cut for LSR
-Lead bulb visible

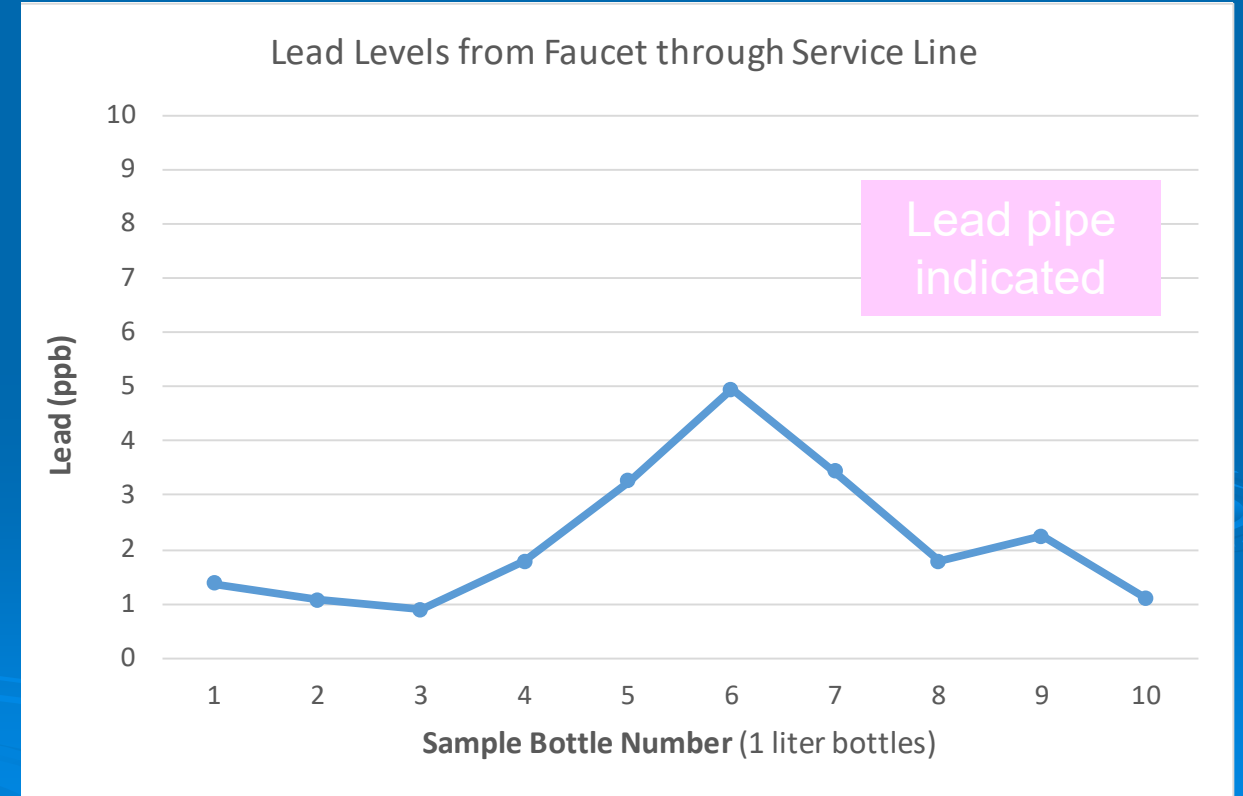


Water Testing



Customer collects 10 one-liter bottles consecutively

Graph of lead levels can indicate if service line has lead
-cannot confirm the absence of lead



10 Bottle Test Results

- Collected from 177 homes in 3.5 years
- 66% test kit return rate

Pipe Material Estimate	N	%
Lead	77	45%
Likely-Lead	13	8%
Inconclusive (no guess)	21	12%
Non-lead or Stagnation Error	60	35%
Total	171	100%

Closing Remarks

- Service line inventory
 - database design should include multiple sections for the service line (main to meter, meter to curb-stop, etc.)
- Plan for receiving information from residents
- Create business rules for updating information

- Water testing can be used to indicate presence but not absence of lead

Thank You!

Maureen Schmelling
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Questions and Answers Session