



2023 Lead and Copper Rule Community Forum

**Chelsea Muster Room
September 26, 2023**



Training Logistics for Remote Participants

- Everyone is muted – please use raise hand or chat function
- Put your name, affiliation and email address in the chat to ensure TCHs are received.
- There will be some content questions – answer using the chat function.
- There will be a survey link and QR code at end – please fill it in



Welcome and Introductions

Dave Coppes
Chief Operating Officer



Your Water Won the NEWWA People's Choice Taste Test!





Forum Agenda

- Overview, Current Changes, Audit Lessons – *Stephen Estes-Smargiassi*
- LCR Revisions – Inventory Requirements – *Claudia Baptista*
- LCRR – Lead Service Line Replacement Plan – *Dave Granados*
- Funding Sources for LSL Replacement and Inventories – *Jon Szarek*
- *Q and A– Valerie Moran*
- *Break*
- LCRR – Changes in Sampling Protocols – *Beverly Anderson*
- LCRR – Sampling in Schools and Childcare Facilities – *Beverly Anderson*
- LCRR – “Find and Fix” Actions After 2024 – *Josh Das*
- LCR Improvements – What Changes Are Expected? - *Estes-Smargiassi*
- Proactive Corrosion Control Evaluation – *Anna Hayden*
- *Q and A – Valerie Moran*

- Upcoming AWIA Deadlines – *Valerie Moran*
- Water Quality Conditions Update – *Kim LeBeau*



Overview, Current Changes, Audit Lessons

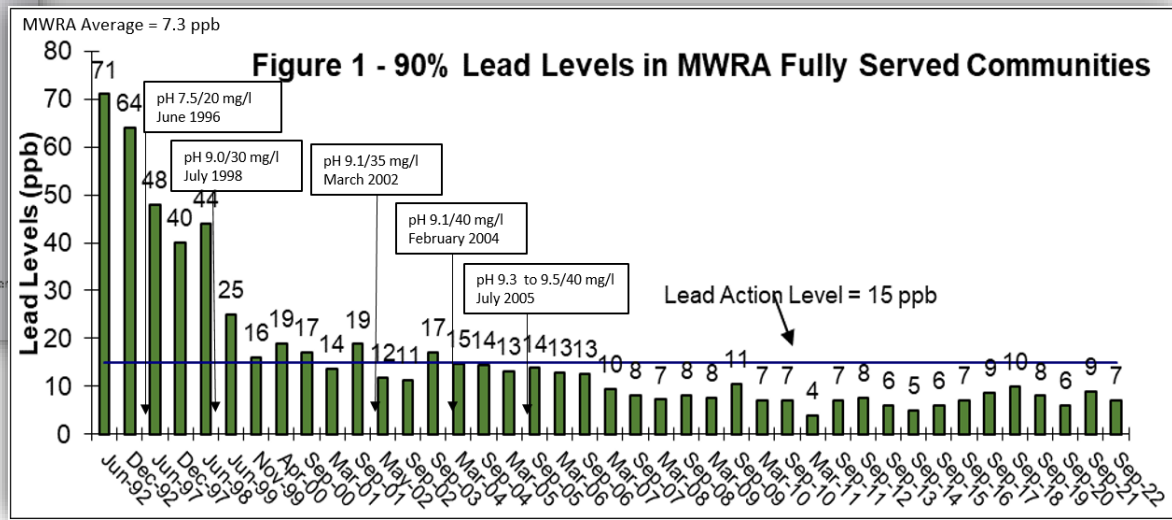
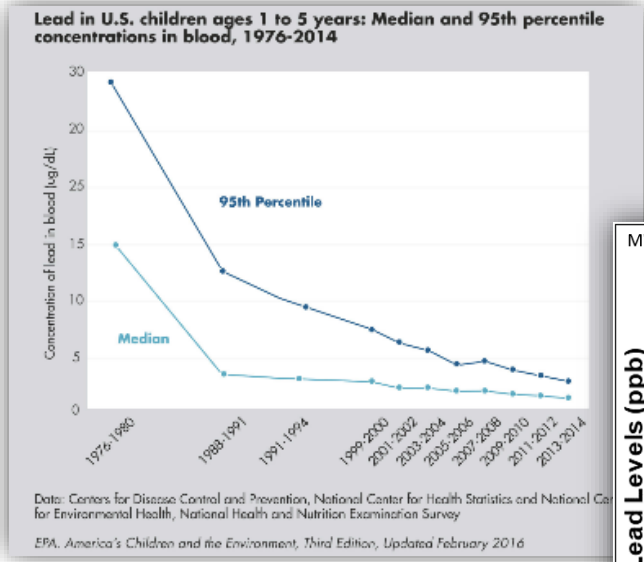
Stephen Estes-Smargiassi

Director of Planning and Sustainability



Public Water Suppliers – Protecting Public Health

- Our goal is public health protection
- Children's blood lead levels are down 90 percent
- Lead levels at customer's taps have declined dramatically
- But still more to be done





Managing the risk of lead in water is a shared responsibility

- Long Term Goals
 - Reducing lead corrosion
 - Removing lead from contact with our water
- MWRA - Effective Corrosion Control Treatment
- Communities – Managing Distribution System, Removing LSL
- Residents – Cooperate in LSL Replacement, Premise Plumbing
- Health Professionals – Effective Communication about Risks





LCR Compliance - It has Been A Moving Target

- LCR Revisions:
 - Issued December 2021
 - Effective October 16, 2024
- EPA Region 1 Changes to Consecutive System Sampling Plan
 - March 2022
- EPA Region 1 Audits
 - June 2022 – 5 communities, plus MWRA
 - May 2023 – 2 Communities
- Anticipated Proposed LCR Improvements
 - Proposal Expected October 2023
 - Final Expected October 2024



4 Issues from current imposed changes

- Priority on Lead Service Lines for sampling
- 24-Hour Public Notice for Lead Action Level Exceedance
- Rapid notice for individual samples over the AL
- Find and Fix requirements

Issues from LCR audits

- Internal Communications
- Record Keeping



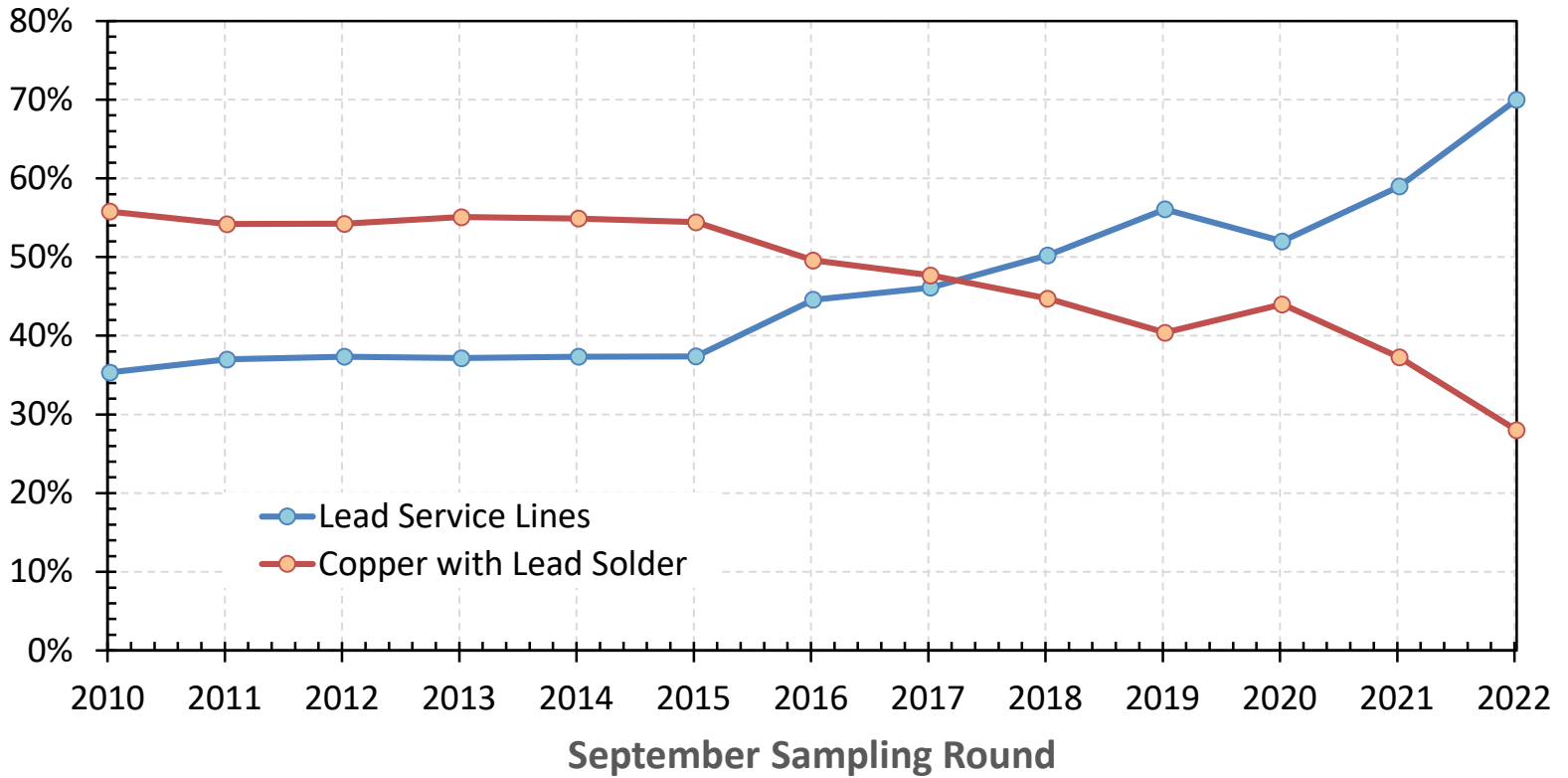
Priority on Sampling Sites with Lead Service Lines

- EPA imposed this new requirement on communities in our consecutive system sampling plan in advance of the LCR Revisions
- If your community has any lead service lines (LSL), your sampling plan must include all LSL as primary and alternate sites
- If you cannot sample at LSL sites, you must demonstrate due diligence, and keep records
 - Multiple contacts, records of each contact, including certified mail
- This will become increasingly difficult as LSL are replaced and a smaller number are available
- Will likely result in higher reported lead levels, as sites with LSL typically have higher lead levels



Number of LSLs in Sample Pool has Increased Substantially

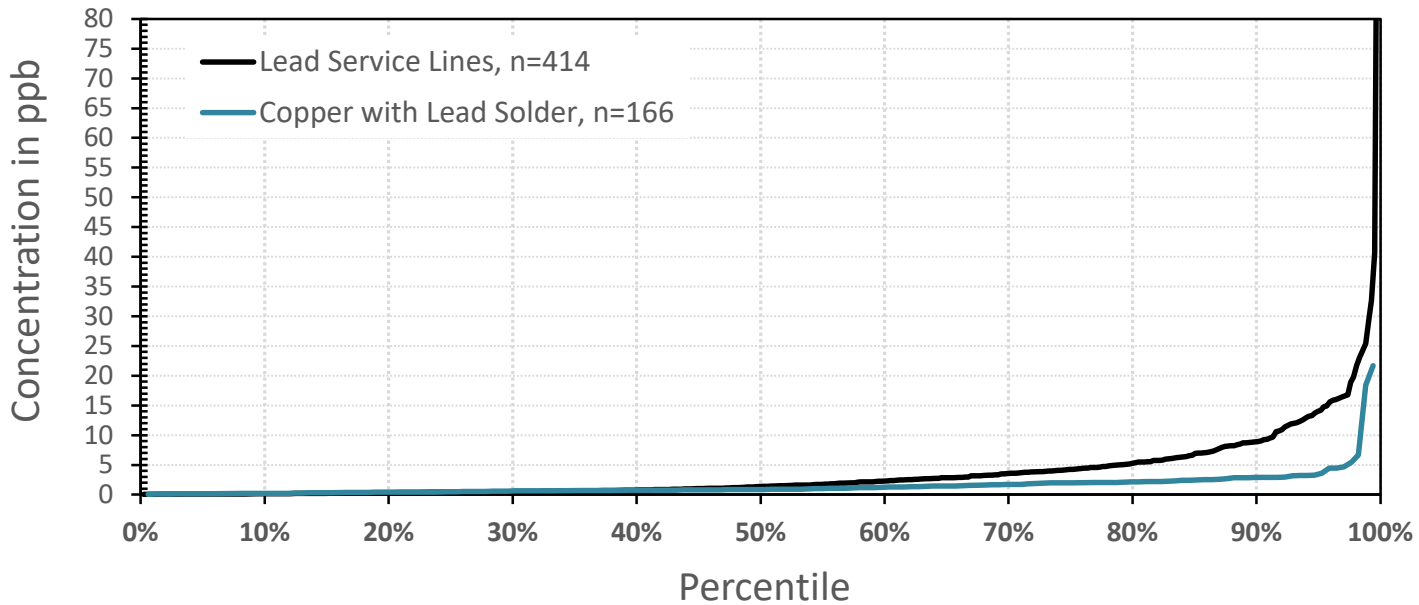
Percentage of Samples from Homes with Lead Service Lines





Homes with LSL Typically Have Higher Lead sampling Results

2022 Sampling Round Results



First-Draw
Samples

Type	Median	75 th Percentile	90 th Percentile	95 th Percentile	% of Total
LSL	1	4	9	14	70%
CULS	1	1	2	4	28%



24-Hour Public Notice

- EPA imposed this new requirement in advance of the LCR Revisions
- If a community 90th percentile is over the Action Level:
 - 24-hour public notice using newspaper and other media
 - New template for notice – *focus is on LSL*
- Recommend discussing with town officials and preparing in advance
- Timing trigger is completion of all lab results, but could still be a surprise
- MWRA available to assist with notice and follow up activities
 - Still need to do mailed public education brochure (also new)

WATER DEPARTMENT DRINKING WATER NOTICE:

Some homes have high levels of lead

This notice contains important information about your drinking water. Have someone translate it for you or speak with someone who understands it.



3-Day notice for any sample over the Action Level

- EPA imposed this new requirement on communities in our consecutive system sampling plan in advance of the LCR Revisions
- MWRA will immediately email and call for any result over the AL
 - Will provide letter template and reminder
- Town must let sampler know with three days – call and mail
 - Let them know you will do an investigation
- Keep records of all actions with dates and copies
 - Another area of problems in EPA audits





“Find and Fix” requirements for any sample over Action Level

- EPA imposed this new requirement on communities in our consecutive system sampling plan in advance of the LCR Revisions
- Follow-up within 30 days
 - (You will already have provided data within three days)
 - Offer to investigate causes
 - Offer investigatory sampling (can be anything useful)
 - Consider removing LSL
- Keep good records of all actions and results
 - Including all phone calls
- MWRA will also do some system sampling





Lessons Learned From EPA Audits

- Sampling Plans Must be Verified
 - EPA audits have found sampling plans with inaccurate site designations
 - Sites identified as LSL, but
 - Never were lead, or have been since been replaced
 - If your plan says a site is a LSL, verify that it is!
 - Do not sample at a site that is incorrectly identified – use an alternate
- Mis-identification has resulted in monitoring violations





Record Keeping is an Achilles Heel

- Failure to meet reporting deadlines OR to be able to prove that you did meet them
- Need to keep track of when data is received, and what actions are required and when
 - This will be even more important with LCRR
- Need to develop contemporaneous records of actions, and keep them (for up to 12 years)
- Need to date letters, and document phone calls
- This resulted in several violations for communities – in some cases, even though they had done the work on time



Lead and Copper Rule Revisions (LCRR)

- EPA Published the final Lead and Copper Rule Revisions in December 2021
- Compliance Deadline is October 16, 2024
- While there may still be changes, need to be ready to comply with the all of the LCRR changes on or before October
- More on LCR Improvements later...





LCR Revisions: Inventory Requirements

Claudia Baptista

Project Manager, Community Support

Vonnie Reis, P.E.

Melrose City Engineer



LCRR Service Line Inventory Timeline

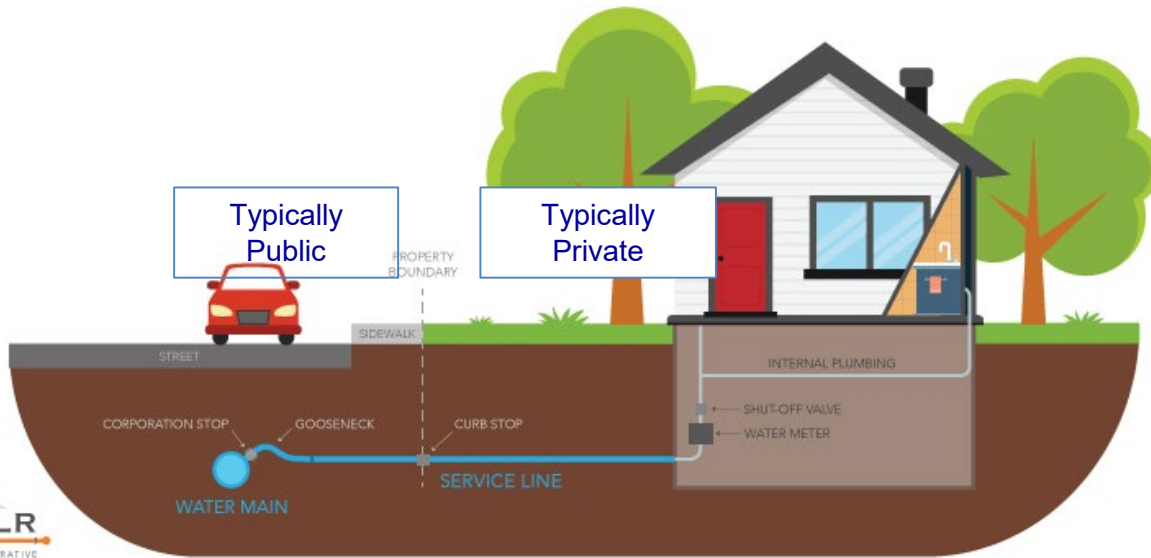
- Inventories to be submitted to MassDEP by:
 - » **October 16, 2024**
- Initial Notice to residents must be sent within **30 Days after submission of inventory.**
Services Lines:
 - ✓ Lead
 - ✓ Galvanized (requiring replacement), and
 - ✓ Lead Status Unknown
- **Annual*** Update to include:
 - ✓ Prior Unknown Services that have been Verified
 - ✓ LSL Replacements Completed

(* Every three years if on triennial monitoring)



LCRR Service Line Inventory

Must identify both Public side and Private side pipe material.



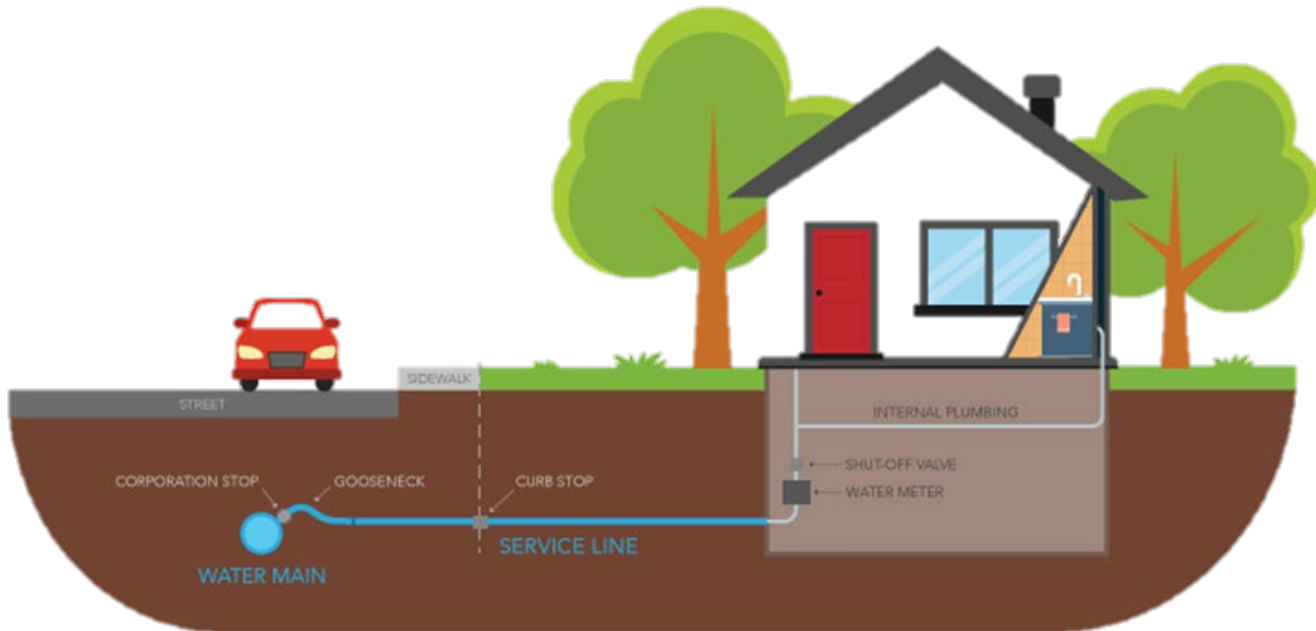
Four (4) Classifications:

- ✓ Lead Service
- ✓ Galvanized Requiring Replacement (GRR)
- ✓ Lead Status Unknown
(assumed lead until status determined)
- ✓ Non-Lead Service Line

If a Galvanized service line is or ever was downstream of a Lead or Unknown = Galvanized Requiring Replacement.

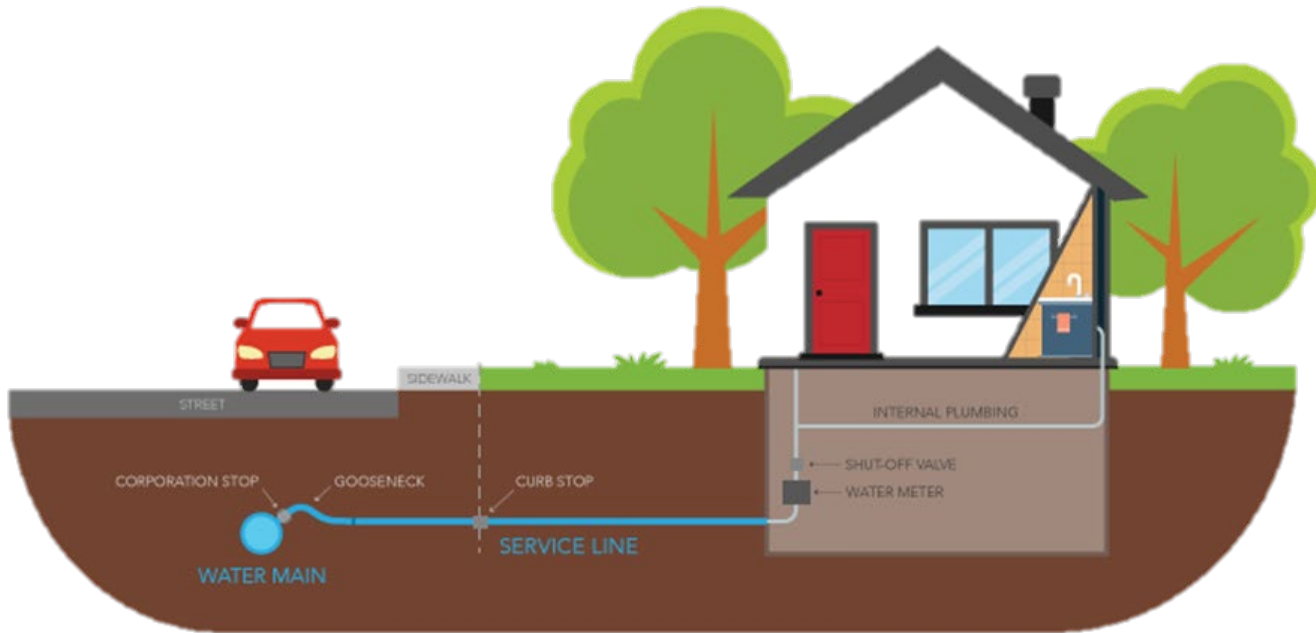


Service Material Combination Determines Classification





Service Material Combination Determines Classification



$$\text{Lead} + \text{GRR} = \text{LEAD}$$



Service Material Combination Determines Classification

Public Side	Private Side	Classification for Entire Service
Lead	Lead	Lead
Lead	GRR	Lead
Lead	Non-Lead	Lead
Lead	Lead Status Unknown	Lead
Non-Lead	Lead	Lead
Lead Status Unknown	Lead	Lead
Non-Lead, and unable to verify it was never previously lead	Galvanized	Galvanized Requiring Replacement
Lead Status Unknown	Galvanized	Galvanized Requiring Replacement
Non-Lead	Lead Status Unknown	Lead Status Unknown
Non-Lead	Non-Lead	Non-Lead



LCRR Service Line Inventory Requirements

Initial Lead Service Line Inventory must include:

Location Identifier

- Service No., Street Address, community block, etc.

Is This a LCR Sampling Location?

- Some additional information required if YES

Connector Present? => Material

Material of Each Portion of Service Line

- Public-side, Private-side

Install Date

Was Public Service Line Material Ever Previously Lead?

Entire Service Classification*

Verification Method

Building Type

* DEP Inventory template will automate the classification



LCRR Service Line Inventory Recommendations

Useful information can be tracked all in one document!

- ✓ Service Line Size
- ✓ Replacement Status and Date
- ✓ New pipe material installed
- ✓ Building Plumbing Material*
- ✓ Comments



Source: NPR

* Conditionally required if a LCR Sample Site



What if my system doesn't have any lead services?

- Still required to submit *initial* inventory;
- Submit the “Certification of Non-Lead Service Lines” to MassDEP; and
- Once approved, PWS will still be required to post a “NONLSL Statement” declaring that it has no LSL, GRR, or unknown service lines.



<https://www.mass.gov/doc/lcrr-certification-of-non-lead-service-lines-request-for-approval>



NONLSL Statement Template

INSERT PWS NAME

INSERT PWS ID #

Our Public Water System has no Lead, Galvanized Requiring Replacement (GRR) or Unknown Service Lines

On **[Insert Date] [Insert PWS Name]** provided MassDEP with a request for approval of no Lead, Galvanized Requiring Replacement (GRR) or Unknown service lines and a service line inventory that was developed using the following verification method(s): (PWS must insert all verification methods used in its evaluation of service lines. Select from list below)

- Field Inspection by PWS
- Records Review
- Statistical Analysis
- Customer Self-Identification
- Sequential Monitoring
- Other(s) MassDEP-Approved Method(s):

On [Insert Date], MassDEP approved our certification for no Lead, Galvanized Requiring Replacement (GRR) or Unknown service lines.

For information on all service lines in the **[Insert PWS Name]** see **[Insert Webpage (if applicable)]** or contact the **[Insert PWS Name]** at **[Insert contact information]**.



Build and Submit an Inventory

MassDEP Inventory Workbook for Community Water Systems

F	G	H	I	J	K	L	M
CURRENT PUBLIC SERVICE LINE MATERIAL	WAS PUBLIC SERVICE LINE MATERIAL EVER PREVIOUSLY LEAD?	PUBLIC SERVICE LINE SIZE (inches)	PUBLIC SERVICE LINE INSTALL DATE (YYYY)	CURRENT PRIVATE SERVICE LINE MATERIAL	PRIVATE SERVICE LINE SIZE	PRIVATE SERVICE LINE INSTALL DATE (YYYY)	ENTIRE SERVICE LINE CLASSIFICATION
C	NO	1"	1974				NON-LEAD

Context menu for cell J4:

- DEP: Inventory Col. Options
 - Column C
 - Column D, Q or G
 - Column E
 - Column F or J**
 - Column I or L
 - Column M
 - Column N
 - Column P
 - Column R or S
 - Column T
 - Column U
 - Column V
 - Column W
 - Column X
 - Column H or K
- DEP: Inventory Validation
- DEP: PWS Information

Material selection menu:

- (L) - Lead
- (C) - Copper**
- (G) - Galvanized
- (PVC) - Plastic (PVC)
- (HDPE) - Plastic (HDPE)
- (DI) - Ductile Iron
- (CI-L) - Lined Cast Iron
- (CI-U) - Unlined Cast Iron
- (B) - Brass
- (UNK-LG) - Unknown, may contain lead and/or galvanized
- (UNK-NOLG) - Unknown, definitely does not contain lead or galvanized

Other menu items:

- Filter
- Sort
- Insert Comment
- Format Cells...
- Pick From Drop-down List...
- Define Name...
- Hyperlink...

<https://www.mass.gov/lists/lead-copper-forms-templates>



Build and Submit an Inventory

MassDEP Inventory Workbook for Community Water Systems

COLUMN NAME	OPTIONAL/REQUIRED	COLUMN DESCRIPTION	VALID VALUES	VALID VALUES DESCRIPTION	CSV HEADER NAME
PUBLIC SERVICE LINE INSTALL DATE	REQUIRED	The four-digit year that the utility-side service was installed (e.g. 1974). If the exact year is not known, enter the decade (e.g. 1970s, 2000s). If unknown, was the service line installed Pre-Lead-Ban (PLB) or After-Lead-Ban (ALB).	PLB ALB Valid Regular Expression Patterns: ^((1{1}(?:[89])[0-9]{1}) (2{1}(?:[0]) 0-2)))(0{1}'?s{1}\$ ^[1-2]{1}[0-9]{3}\$	PLB = Pre lead ban ALB = After lead ban E.g., 1910's, 1910s, 1920's, 1920s E.g., 1974, 1993, 2003, 2020	public_sl_install_date
CURRENT PRIVATE SERVICE LINE MATERIAL	REQUIRED	Service line pipe material, from the curb-stop to water meter.	L C G PVC HDPE DI CI-L CI-U B UNK-LG UNK-NOLG	L = Confirmed Lead C = Confirmed Copper G = Confirmed Galvanized PVC = Plastic (PVC) HDPE = Plastic (HDPE) DI = Ductile Iron CI-L = Lined Cast Iron CI-U = Unlined Cast Iron B = Brass UNK-LG = Unknown, may contain lead and/or galvanized UNK-NOLG = Unknown, definitely does not contain lead or galvanized	current_private_sl_material
PRIVATE SERVICE LINE SIZE	OPTIONAL	Service line pipe diameter, in inches (e.g. 3/4", 0.75), from the curb-stop to water meter. This column may be used by PWSs that wish to track information required in a single document.	3/8" 1/2" 5/8" 3/4" 1" 1 1/4"		private_sl_size



All systems must make the inventory available to the public

- Full Accounting of Services Using: List, Table, or Map with Location Identifier
- Systems greater than **50,000** must post inventory online
- **Initial** and **Annual Notice** to all residents with exposure risks must be sent within **30 Days**





Initial and Annual Notifications

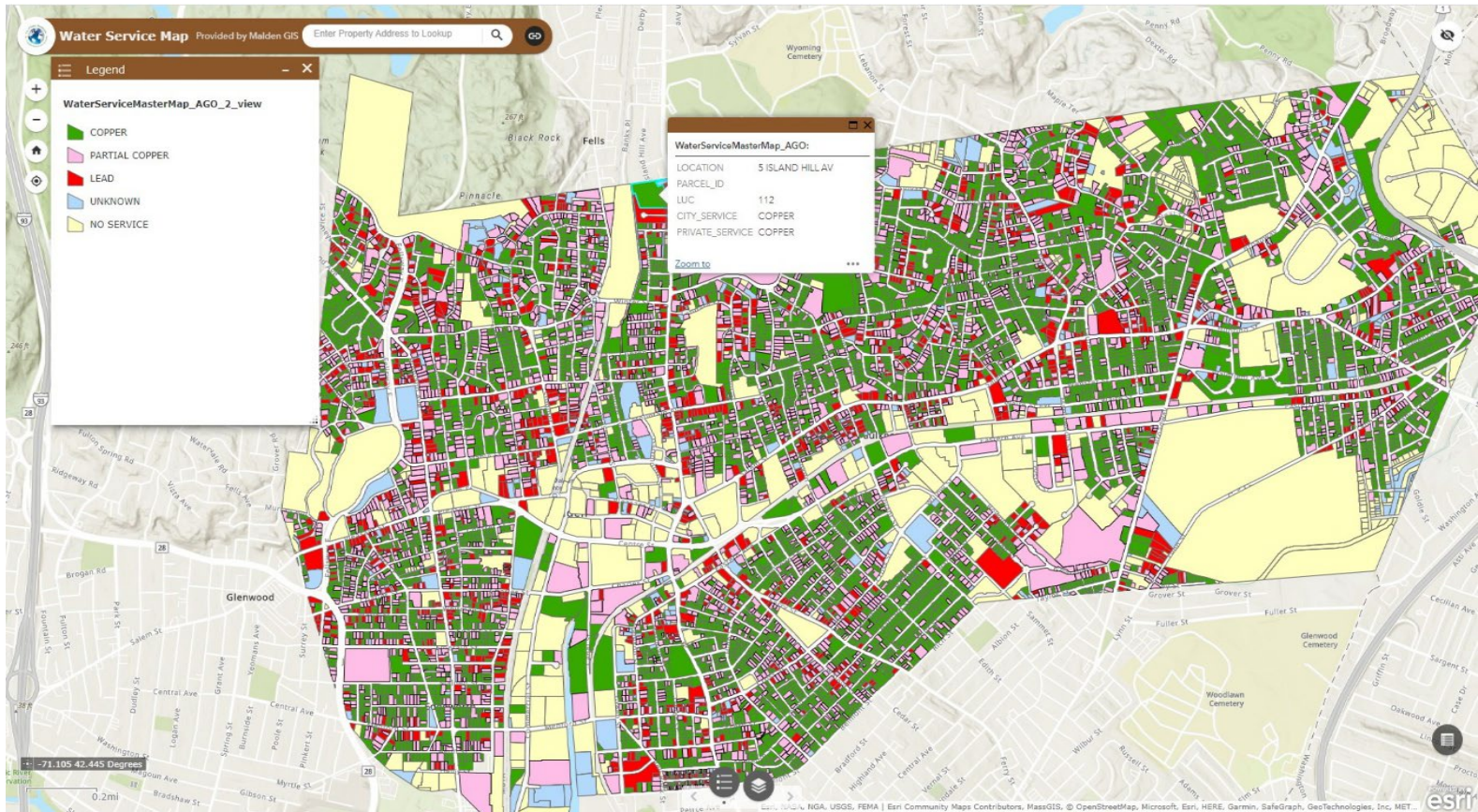
- ❑ **Notify:** PWS are required to inform all residents with **LEAD, GRR,** and **Unknown** connections that their SL may contain lead.
 - Notification must be repeated **every year** until there are no LSLs

- ❑ **Educate:** Letters should include:
 - Statement that SL could be lead
 - Explanation of health effects
 - Actions to reduce exposure
 - Opportunities to verify/replace the material

- ❑ **Certify:** Records (initial and annual) must be sent to MassDEP by **July 1st** of the following year.



Malden Lead Service Line Map






Everett Lead Service Line Dashboard and Map


www.everettwater.org

EVERETT A Lead-Safe Community Water Department




Lead Service Lines (Utility Owned)

639



Lead Service Lines (Customer Owned)

694



Lead Service Lines Replaced

374

We could use your help!
Use the link below to fill out a brief survey regarding the water service line material in your home.

[Water Service Line Material Survey](#)

Lead Service Line Map

Launch in Fullscreen Mode

EVERETT Lead Service Line Inventory Built by Weston & Sampson Inc.

Find address or place

Legend

Lead Service Line

Lead Category

- Lead
- Assumed Lead
- ▲ Galvanized Requiring Replacement
- Non-Lead
- ◆ Unknown

19 Wolcott St.

Attribute	Utility	Customer
Lead Category	Non-Lead	Non-Lead
Material	Copper - COP	Copper - COP

Zoom to

300ft

42° -71.05242, 438 Degrees

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Community Maps Contributors, MassGIS © 2016



Lead Service Lists

Quincy Water, Sewer, & Drain Division

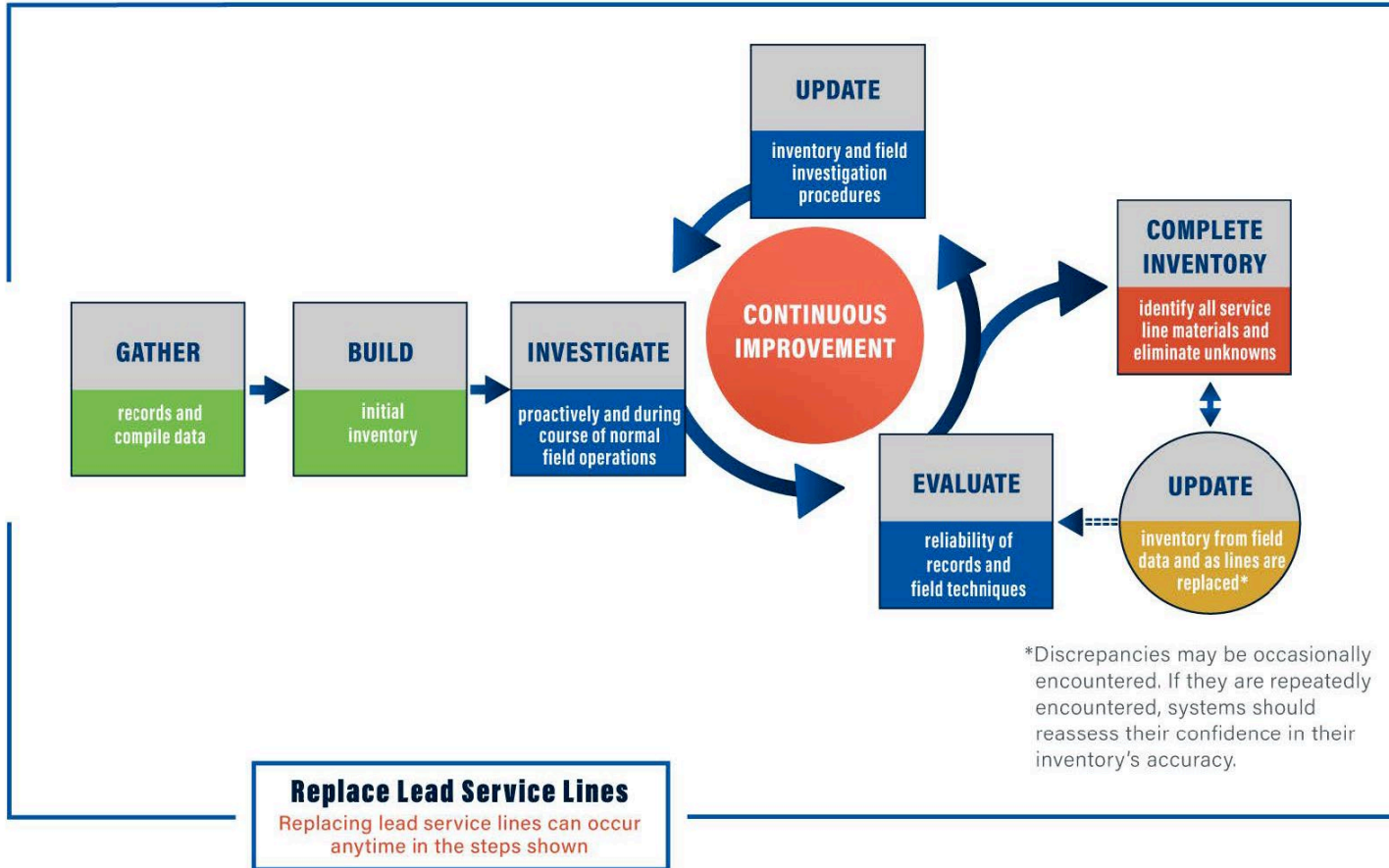
Lead and Lead Lined Water Services			
Ward 1	Type	Ward 4	Type
51 Newton Street	Lead	27 Campbell Street	Lead-Lined
40 Northfield Street	Lead	31 Campbell Street	Lead-Lined
74 Babcock Street	Lead-Lined	66 Campbell Street	Lead-Lined
86 Butler Road	Lead-Lined	127 Centre Street	Lead-Lined
66-68 Chickatabot Road	Lead-Lined	14-15 Durns Court	Lead-Lined
7 Highfield Road	Lead-Lined	160 Intervale Street	Lead-Lined
8 Highfield Road	Lead-Lined	439 Willard Street	Lead-Lined
61 Ratchford Street	Lead-Lined	"493 Willard Street (22 Larry Street)"	Lead-Lined
72 Rock Island Road	Lead-Lined		
Saville Ave (Home Making School)			
		Ward 5	
		74-78 Beach Street	Lead
		207 Thomas Burgin Parkway	Lead-Lined
		38-40 Elm Avenue	Lead-Lined
		2 Euclid Avenue	Lead-Lined
		6-8 Franklin Place	Lead-Lined
		125 Kemper Street (Flagg)	Lead-Lined
		133 Kemper Street	Lead-Lined
		200 Marlboro Street	Lead-Lined
		27-29 Merrymount Avenue	Lead-Lined
		29 Pearl Street	Lead-Lined
		80 Thornton Street	Lead-Lined
		Ward 6	
		26 Bay State Road	Lead
		38 Aberdeen Road	Lead-Lined
		22 Albion Road	Lead-Lined
		282-284 Billings Road	Lead-Lined
		103 Colby Road	Lead-Lined
		14-16 Colby Road	Lead-Lined
		47-49 Flynt Street	Lead-Lined
		69 Holmes Street	Lead-Lined
		343-353 Newport Avenue	Lead-Lined
		58 Royal Street	Lead-Lined
		14-16 Windsor Road	Lead-Lined
Ward 2			
5-13 Shaw Street	Lead		
39-41 South Walnut Street	Lead		
70-72 Arnold Street	Lead-Lined		
14-16 Berry Street	Lead-Lined		
48 Dee Road	Lead-Lined		
2 Endicott Street	Lead-Lined		
134-136 Main & Sumner Street	Lead-Lined		
159-161 Main Street	Lead-Lined		
Ward 3			
33-35 North Central Avenue	Lead		
64 North Central Avenue	Lead		
135 Norfolk Street	Lead		
153 Norfolk Street	Lead		
42 Marion Street	Lead		
40 Bowdoin Street	Lead-Lined		
19 Eddie tree	Lead-Lined		
222 Elmwood Avenue	Lead-Lined		
57 Harvard Street	Lead-Lined		
15 Hilda Street	Lead-Lined		
163 Norfolk Street	Lead-Lined		
103 Oakland Avenue	Lead-Lined		
297 Safford Street	Lead-Lined		

Other Listed Inventories (not listed as public or private)

- Somerville:
<https://www.somervillema.gov/departments/programs/lead-service-line-replacement-program>
- Cambridge:
<https://www.cambridgema.gov/-/media/Files/waterdepartment/Distribution/CWDWaterServiceInfo07202020.pdf>



EPA Factsheet on Inventory Maintenance





RESOURCES + LINKS

MassDEP

<https://www.mass.gov/info-details/lead-and-copper-rule-revisions>

<https://www.mass.gov/doc/frequently-asked-questions-about-the-lead-and-copper-rule-revisions-lcrr>

Public Inventory Guidance:

<https://www.mass.gov/doc/guidance-how-pws-can-make-their-service-line-inventories-accessible-to-the-public/download>

LSL Planning SRF Grant :

<https://www.mass.gov/info-details/lead-service-line-planning->

[program?_gl=1*1ovqbc5*_ga*ODE0MTQ4NDM1LjE2NzUxODAxOTI.*_ga_MCLPEGW7WM*MTY5NTE0NjQ1Ny4yLjAuMTY5NTE0NjQ1Ny4wLjAuMA..](https://www.mass.gov/info-details/lead-service-line-planning-program?_gl=1*1ovqbc5*_ga*ODE0MTQ4NDM1LjE2NzUxODAxOTI.*_ga_MCLPEGW7WM*MTY5NTE0NjQ1Ny4yLjAuMTY5NTE0NjQ1Ny4wLjAuMA..)

Lead Service Line Replacement Collaborative

<https://www.lslr-collaborative.org/proactive-notification-about-water-service-lines.html>

EPA

Inventory Development/Maintenance Factsheet:

<https://www.epa.gov/system/files/documents/2023-06/EPA-Factsheet-Combined-06072023%20508-final.pdf>

Protect your Tap:

<https://www.epa.gov/ground-water-and-drinking-water/protect-your-tap-quick-check-lead>



- **TIMELINE OF EVENTS**

- December 2021, began negotiations with MADEP for a voluntary Administrative Consent Order (ACO)
- Early 2022, T&H development of database, scanning of 8500 water service tie cards and DWSRF application (100% forgiveness)
- November 2022, began inventory, mapping and verification process; notifications sent to all documented LSL or unknown locations
- December 2022, entered into ACO; must remove 25 LSL per year
- September 2023, apply to MWRA LLP for additional funding
- Concurrently, sampling at least annually at 20 residences and 2 schools for lead





What's Working - City of Melrose

Database/inventory developed using EPA template

	SITE ID	LOCATIONAL IDENTIFIER	LCR SAMPLING LOCATION?	CONNECTOR (GOOSENECK / PIGTAIL) CURRENTLY PRESENT?	CONNECTOR (GOOSENECK / PIGTAIL) MATERIAL	CURRENT PUBLIC SERVICE LINE MATERIAL	WAS PUBLIC SERVICE LINE MATERIAL EVER PREVIOUSLY LEAD?	PUBLIC SERVICE LINE SIZE (inches)	PUBLIC SERVICE LINE INSTALL DATE (YYYY)	CURRENT PRIVATE SERVICE LINE MATERIAL	PRIVATE SERVICE LINE SIZE (inches)	PRIVATE SERVICE LINE INSTALL DATE (YYYY)	ENTIRE SERVICE LINE CLASSIFICATION	VERIFICATION METHOD	OTHER MASSDEP APPROVED VERIFICATION METHOD	BUILDING TYPE	POINT OR POTENTIAL
1																	
2	A12 0 48	10 ROCKLAND ST				C	YES	1"	2003	C	UNK	1980s	NON-LEAD	C			
3	B13 0 47	45 CLIFTON PARK				C	YES	3/4"	UNK	C	3/4"	2004	NON-LEAD	C			
4	B7 0 28	18-20 SANFORD ST				C	YES	3/4"	1985	C	UNK	UNK	NON-LEAD	C			
5	B8 0 64	12 HIGH NORTH ST				C	YES	1"	2017	C	3/4"	UNK	NON-LEAD	C			
6	C5 0 123	40 MT VERNON ST				C	YES	1"	2009	C	UNK	UNK	NON-LEAD	C			
7	D12 0 21	11 SARGENT ST				C	YES	1"	2010	C	UNK	2014	NON-LEAD	C			
8	D12 0 69	48 FAIRVIEW AVE				C	YES	3/4"	1997	C	UNK	UNK	NON-LEAD	C			
9	D8 0 86	79 EMERSON EAST ST				C	YES	Multiple	1965	C	UNK	UNK	NON-LEAD	C			
10	E5 0 109	8 MERIDIAN ST				C	NO	3/4"	1991	C	UNK	2000s	NON-LEAD	C			
11	E7 0 31	69 FIRST ST				C	YES	3/4"	UNK	C	3/4"	UNK	NON-LEAD	C			
12	E7 0 90	292 GROVE ST		YES	L	CI-L	UNK	1"	1926	L	5/8"	1908	LEAD	C			
13	E8 0 109	153 FIRST ST				C	YES	1"	2003	C	UNK	UNK	NON-LEAD	C			
14	F14 0 8	66 WINDSOR ST				C	NO	3/4"	1959	C	3/4"	UNK	NON-LEAD	C			
15	F7 0 121	168 LAUREL ST				C	NO	1"	2007	UNK-NOLG	N/A	1986	NON-LEAD	C			
16	F7 0 29	28 CUMNER AVE				C	NO	3/4"	1964	C	N/A	2023	NON-LEAD	C			
17	F8 0 14	187 FIRST ST				C	YES	1"	2017	L	5/8"	1924	LEAD	C			
18	G3 0 18	5 IRESON CT				C	NO	3/4"	2003	L	N/A	2003	NON-LEAD	C			
19	A10 0 1	22 LYNN FELLS PKWY				C	YES	3/4"	UNK	C	3/4"	2013	NON-LEAD	F			
20	A10 0 11	98 LYNN FELLS PKWY				C	NO	3/4"	1965	C	3/4"	2008	NON-LEAD	F			
21	A10 0 23	154 YOULE ST				C	YES	N/A	2005	C	N/A	2005	NON-LEAD	F			
22	A10 0 24	170 WARWICK RD				C	NO	1"	2018	CI-L	1"	1928	NON-LEAD	F			
23	A10 0 26	184 WARWICK RD				C	YES	1"	2018	L	5/8"	1917	LEAD	F			
24	A10 0 27	190 WARWICK RD				C	YES	1"	2018	L	5/8"	1919	LEAD	F			
25	A10 0 32	189 WARWICK RD				C	YES	1"	2018	L	5/8"	1921	LEAD	F			
26	A10 0 33	185 WARWICK RD				C	NO	1"	2018	C	3/4"	1955	NON-LEAD	F			
27	A10 0 34	181 WARWICK RD				C	YES	1"	2018	C	3/4"	2004	NON-LEAD	F			



What's Working - City of Melrose

Confirmation of service material:

- Replace public side during water main projects
- Building inspections
- Test pits or vacuum excavations at curb stop
- Self-reporting by resident

Resolution:

- Notify homeowner of LSL with next steps
- Offer \$1000 incentive to remove LSL
- Remove public LSL with in-house crews
- Update inventory and tie cards

PW 37		LOCATION		
No.	5 TRENTON ST.			
Registered No.				
Owner	C. A. ESTEY			
Date laid	12/5/35			
Material	MAIN 2" C.L.			
In street	C.L.			1" copper 2023 WMI
In private premises	C.L.			1" copper Cardillo 09/20/23
Length in street	7'			
" " private premises	33'			
Size in street	1"			
" " private premises	1"			
Laid in street by	CITY			
" " private premises by	CITY			
Depth at Main				
12-5-62	" Gate box			
"	" Street line			
"	" Building LAID WITH SEWER			
MAIN IN SIDEWALK				



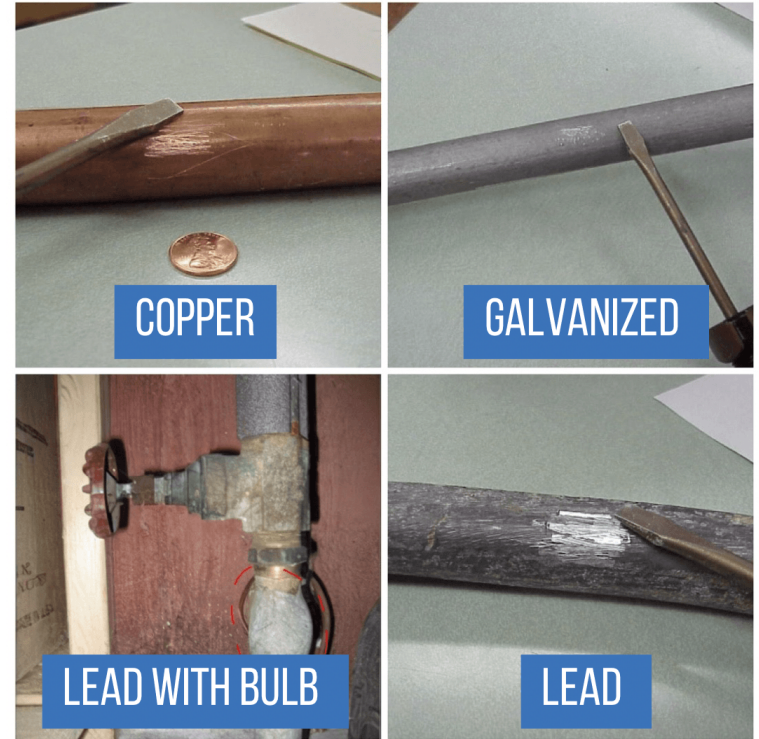
What's Working - City of Melrose

Confirmation of service material:

- 95 of “lead” confirmed to be lead
- 352 of “lead” confirmed to be non-lead
- 47 of “unknown” confirmed to be non-lead

Removal of services:

- 16 private side removed since 11/01/22
- 5 public side removed since 11/01/22
- 19 “Full” removals





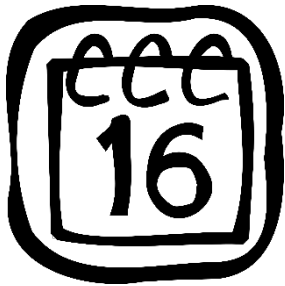
Lessons Learned (so far):

- Document meticulously
- When in doubt, do vacuum excavations
- Coordinate public side replacements with private
- Update tie cards as information comes in
- Don't forget to include public side replacements due to water main projects!





The Lead and Copper Rule Revisions Take Effect on October 16, 2024



386 Calendar Days

55 Weeks

262 Working Days



TCH Question #1

How many service line classifications are there?

- A. 2
- B. 3
- C. 4**
- D. 5



LCR Revisions: Lead Service Line Replacement Plan

Dave Granados

Project Manager, Community Support



Initial and Annual Notifications

- Within **30 days** after submitting LSL inventories, WS are required to inform all residents with **LEAD, GRR, and unknown** connections that their SL may contain lead
- Notification must be repeated **every year** until there are no LSLs in the system
 - Statement that SL could be lead
 - Explanation of health effects
 - Actions to reduce exposure
 - Opportunities to verify the material
- Records (initial and annual) sent to MassDEP by **July 1st** of the following year.



Lead Service Line Replacement Plan Requirements

Who Needs a LSL Replacement Plan?

All water systems with one or more lead, galvanized requiring replacement, or lead status unknown service lines in their distribution system must submit a LSLR Plan.

When Must the LSL Replacement Plan be Submitted?

By October 16, 2024



Lead Service Line Replacement Plan Requirements

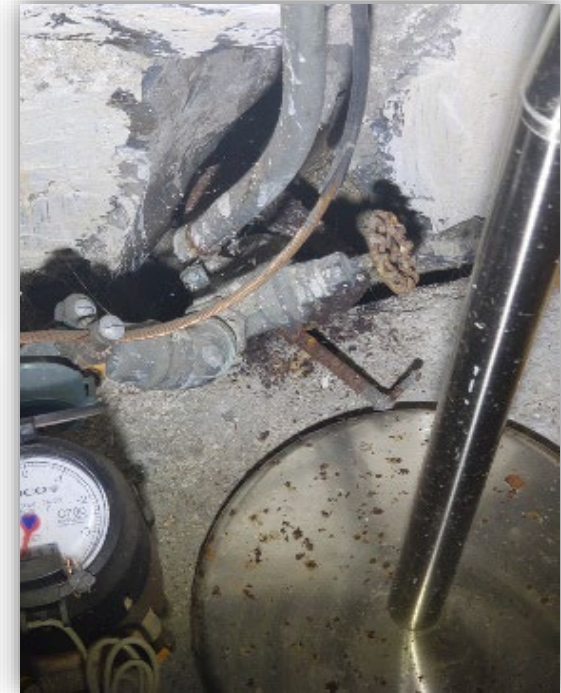
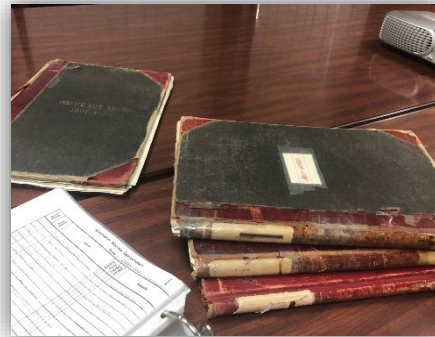
What must be included the Replacement Plan?

- Strategy for resolving “unknowns”
- Procedure for FULL LSL Replacement
- Strategy for informing customers before a replacement
- Goal Replacement Rate
- Flushing Procedure for Customers
- LSL Replacement Prioritization Strategy
- Funding Strategy for those that cannot afford private replacement
- Gooseneck Replacement for planned or unplanned work



Strategies for Eliminating Unknowns

- Reviewing Documents
- Visual Inspection
- Scrape Test
- Magnet Test
- Water Quality
- Test Pits
- Full Test Pit Excavation





Partial Replacements Requirements

By Utility:

At least **45 days** notification to owner and resident prior to work

- Include temporary increased lead levels, health effects of lead and actions to reduce exposure (DEP may require 2 notices)
- Information about service line flushing
- ANSI certified Pitcher Filters or POU devices and 6 months of cartridges replacements
- Samples:
 - LCR: within 72 hours. Provide results to customer within 3 days of receiving results
 - LCRR: Between 3 and 6 months after completion



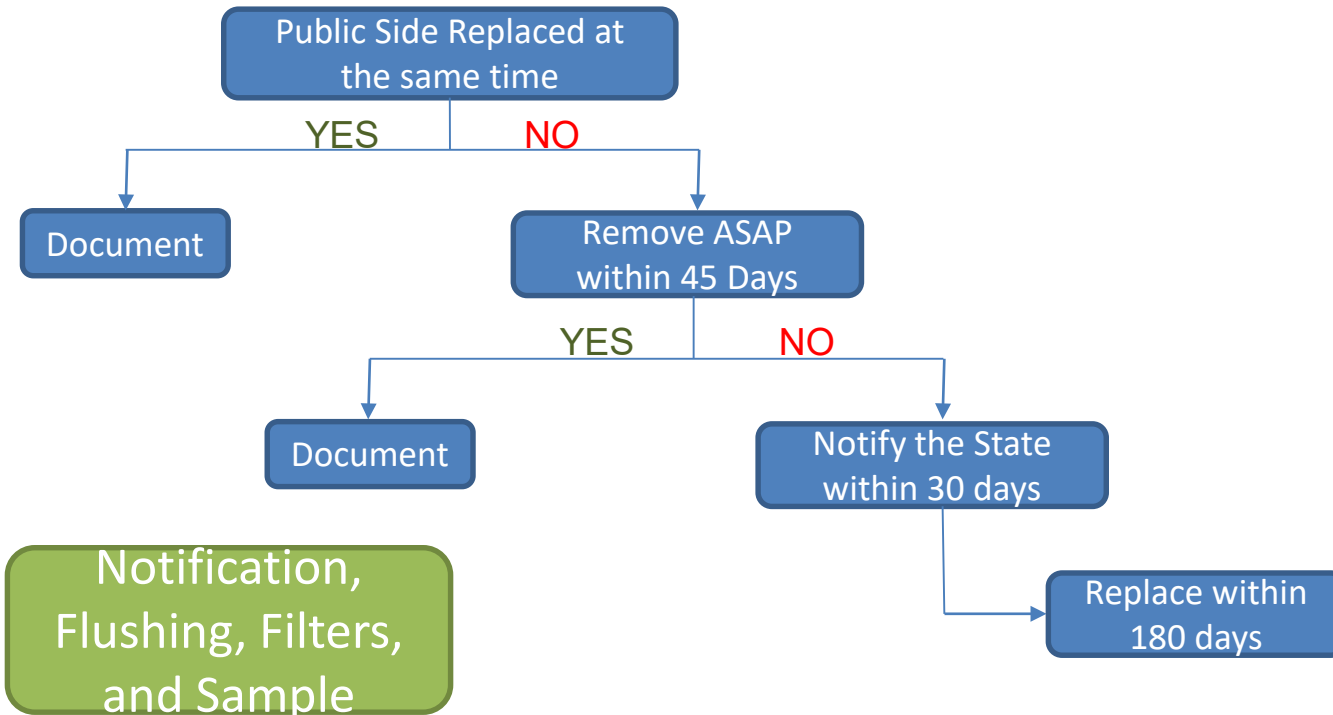
Notification,
Flushing, Filters,
and Sample

RECORD KEEPING



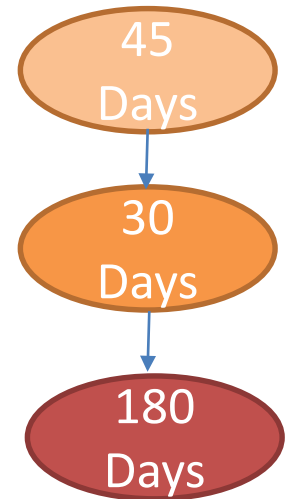
Partial Replacements Requirements

By Homeowner:



RECORD KEEPING

Time Clocks

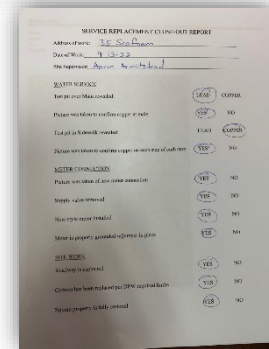
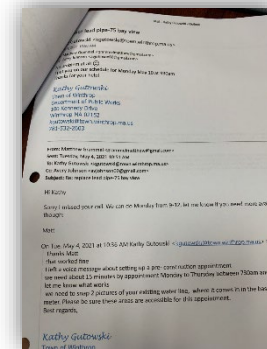
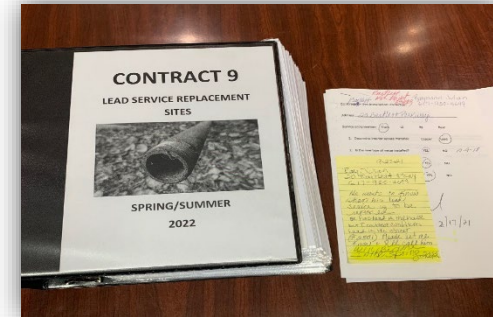




Full Replacements Requirements – No Lead Left Behind

Notify owner and resident within **24 hours** of the completion of the replacement (ideally before SL is returned to service)

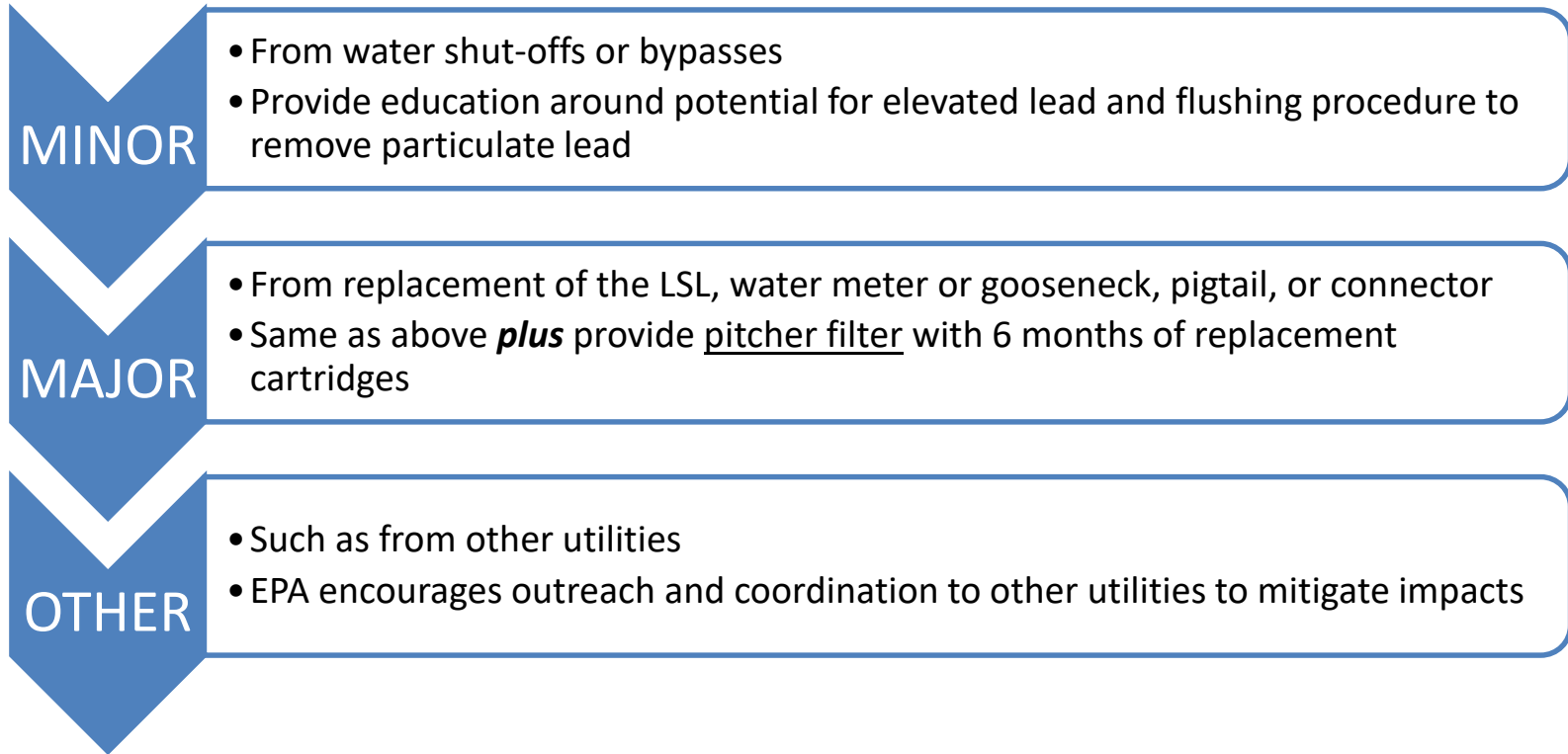
Notification,
Flushing, Filters,
and Sample



RECORD KEEPING



Responses to Disturbances



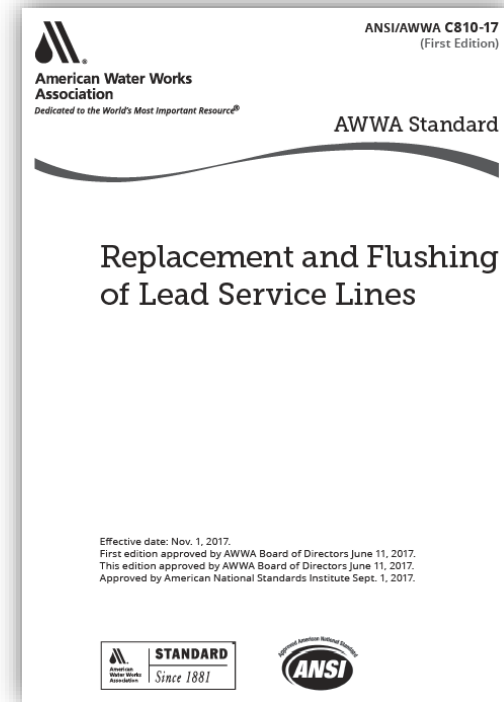
Notification,
Flushing, Filters,
and Sample

RECORD KEEPING



Service Line Flushing

- By the utility
 - Flush water from an outside connection from the house side of the meter installation immediately after replacing the LSL
 - Replace the meter for a straight pipe.
 - Flush at full velocity for 10 minutes.
 - Reconnect meter.

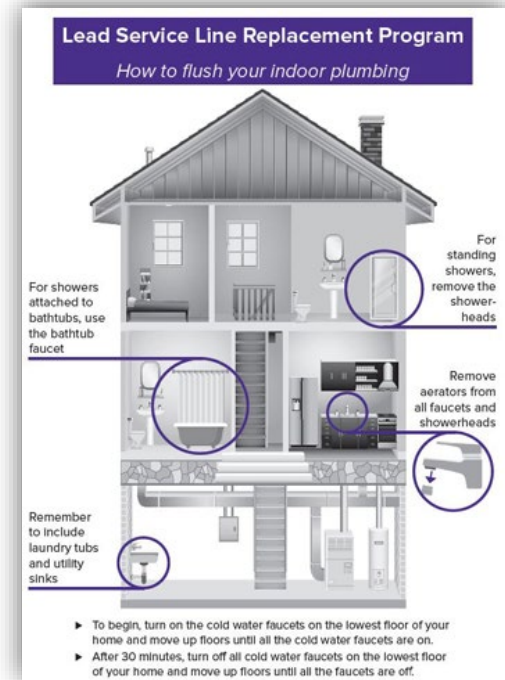


Source: ANSI/AWWA Standard C810-17 Replacement and Flushing of Lead Service Lines



Service Line Flushing

- By the customer
 1. Locate ALL faucets that will drain.
 2. Remove aerators and screens (include laundry tubs, bathtubs, and showers)
 3. Open the cold water valves to the full extent of all faucets in the lowest floor in the house.
 4. Open faucets on the next highest floor until all faucets are opened.
 5. Leave the water running for 30 minutes.
 6. Close the faucet first opened and continue in the same ordered they were opened.
 7. Replace aerators/screens.

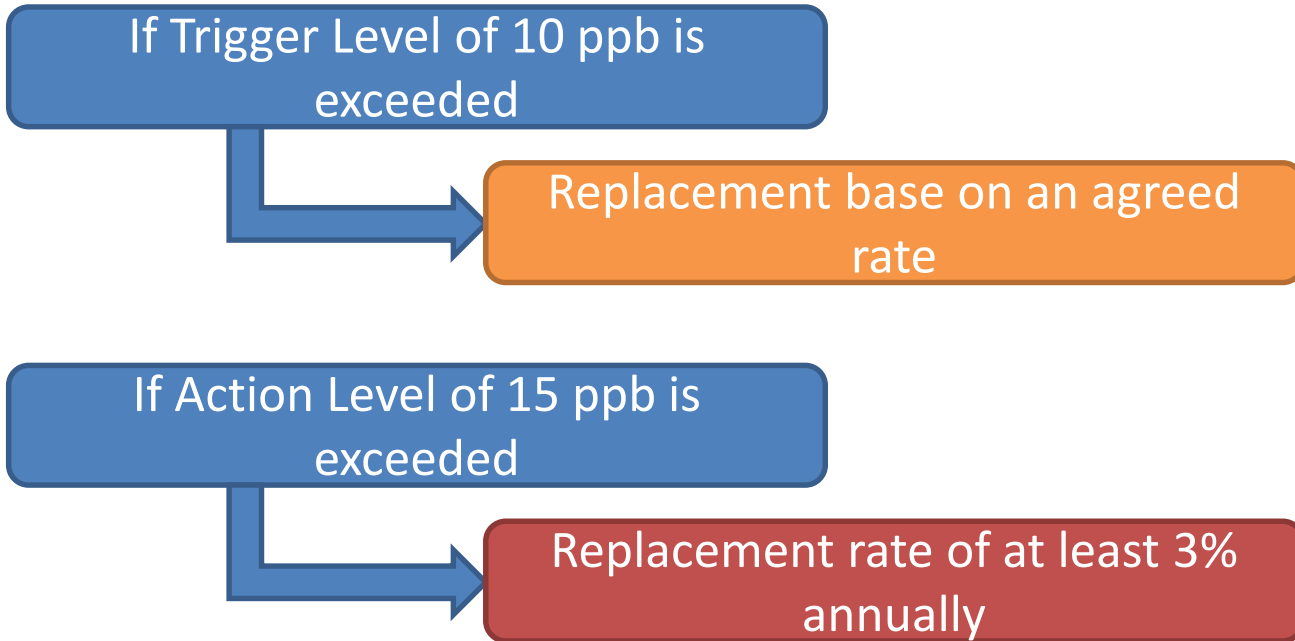


Flushing should be done at least once every 2 weeks for 3 months on low water usage times.

Additional daily mini-flushes (when water has been sitting for 6 hours. Flush for 5 minutes)



Replacement Rate – Trigger Level vs Action Level



Replacements on a **2 year** rolling basis



Replacement Rate – Current Rule vs New Rule

LCR

LCR Replacements = (LSL+GRR) x (Replacement Rate)

LCR	Amount
Total Connections	15,000
Lead	2,000
GRR	1,000
Total LSL	3,000
Rate	7%
Replacements Required per year	210

LCRR

LCRR Replacements = (LSL+GRR+Unknowns) x (Replacement Rate)









LCRR	Amount
Total Connections	15,000
Lead	2,000
GRR	1,000
Unknown	5,000
Total LSL	8,000
Rate	3%
Replacements Required per year	240

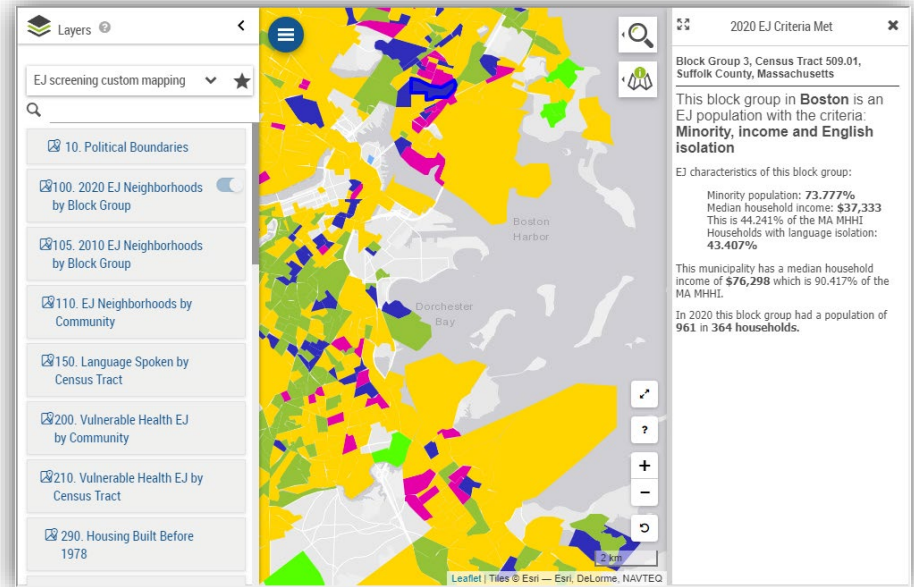
- No credit for partial replacements
- Verification of unknown to non-lead does not count
- Updated annually for verified unknowns

WORK ON THE UNKNOWN!!!



Priority Setting - Recommended

-  Sensitive Populations
-  Proximity to high lead results
-  Previous Partial Replacements
-  Areas that receive a lot of WQ complaints
-  Environmental Justice Communities
-  Licensed Childcare Centers
-  Nursing Homes / Senior Centers
-  Areas with high density of Children





Priority Setting - Others

- Areas where all Service Lines are of unknown material
- Areas where water mains replacements are planned or conducted
- Previous participation in Lead and Copper Sampling
- Age of current water mains
- Proximity to other known contaminants
- Road moratorium
- Areas where all residents have agreed to participate





Cost of LSLs Replacements in MA

- Typical Cost to Fully Replace LSLs: \$7,000 to 15,000
 - Mean Cost: \$11,000 - \$12,000
 - Private Side: \$6,000
 - Public Side: \$7,500
-
- Contracts structured per connection, LF or
 - More cost to do them separately.
 - Water main and sewer should include line item for LSLR.
 - Required for goosenecks





Approaches for Private Side Cost – Just Pay for it!


- Paid in full by the water system. Zero cost to customers.
- Rebates
 - \$4,000
 - \$1,200
 - \$1,000
- Loans (10 year, 0% interest)
- No resolution



Just Pay for It!



Mass DEP LSLRP Summary



Lead Service Line Replacement Plan (LSLRP) Summary

BACKGROUND & INSTRUCTIONS

MassDEP will use the information in this LSLRP Summary to provide technical assistance to your system and assist your system to identify resources to further develop and implement your plan and replace all lead service lines. This information is not intended for enforcement purposes.

All public water systems (PWS) with one or more lead, galvanized requiring replacement (GRR), or lead status unknown service lines in their distribution system must complete and submit a lead service line replacement plan to the Department by October 16, 2024. According to the US Centers for Disease Control (CDC) "Because no safe blood level has been identified for young children, all sources of lead exposure for children should be controlled or eliminated". See <https://www.cdc.gov/nceh/lead/prevention/sources/water.htm>. As such, MassDEP is encouraging PWS to plan to expeditiously remove all lead service lines.

PWSs seeking Drinking Water State Revolving Funds (DWSRF) to address lead service lines are expected to complete the MassDEP Lead Service Line Inventory Workbook and this Lead Service Line Replacement Plan Summary Form or provide comparable electronic data that is acceptable to the Department.

1. GENERAL INFORMATION AND CERTIFICATION

PWS ID *

PWS Name *

PWS Class *

Plan Submission Type *
Select whether this is an INITIAL plan summary or REVISED plan summary that you are submitting today.

SYSTEM OWNER CONTACT INFORMATION

PWS Owner Name *

PWS Owner's Title

PWS Owner Phone # *

PWS Owner Email Address *

PLAN PREPARER CONTACT INFORMATION

Preparer Name *

Preparer's Title

- <https://app.smartsheet.com/b/form/8f676b18cc224884a7069e3cc727f968>



Useful Links

First Notice

<https://www.mass.gov/doc/lead-service-line-replacement-program-work-notice-first-notice/download>

Second Notice

<https://www.mass.gov/doc/lead-service-line-replacement-program-work-notice-second-notice/download>

Summary Table

<https://www.mass.gov/doc/lead-service-line-replacement-program-summary-table-0/download>

Lead Results above AL

<https://www.mass.gov/doc/lead-service-line-replacement-program-lead-test-result-above-the-action-level-0/download>

Lead Results below AL

<https://www.mass.gov/doc/lead-service-line-replacement-program-lead-test-result-below-the-action-level-0/download>

LSLR Plan Summary

<https://app.smartsheet.com/b/form/8f676b18cc224884a7069e3cc727f968>

EJ DPH Tool - <https://matracking.ehs.state.ma.us/Environmental-Data/ej-vulnerable-health/environmental-justice.html>



What's Working



Who is paying for the private side removal in your community?
What is the LSL removal strategy?
Do you have notifications ready?



Who has to submit a LSLR Plan?

- A. Water systems with no LSL
- B. Water systems that have not submitted an inventory
- C. Water systems with one or more LSL, GRR, or unknowns**
- D. Nobody



Funding Sources for LSL Replacement and Inventories

Jon Szarek

Senior Program Manager, Community Support



MWRA Lead Loan Program

- \$100 Million for community projects
- 10 year interest-free loans
- Projects must replace **ALL** lead pipe within a service line - **BOTH** public and private portions
- If any portion of service is lead or brass, entire service is eligible for replacement
- Funding for LSL Inventories is also an eligible cost





47 MWRA Communities with Potential to Utilize Lead Loan Program

- 3 Communities with Greater than 1000 Lead Services
- 5 Communities with 100 - 800 Lead Services
- 14 Communities with less than 80 Lead Services and some Lead Goosenecks
- 12 Communities with No Known Lead Services and some Lead Goosenecks
- 13 Communities with high confidence of No Lead Services and No Lead Goosenecks



MWRA Lead Loan Program – First 7 Years

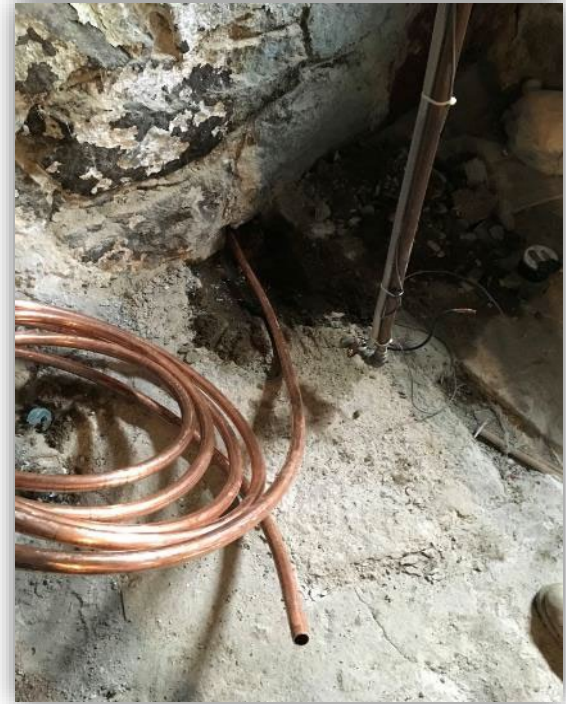
- Distributed \$36 Million to 15 Communities (40 Distributions):
 - BWSC: \$3.5M
 - Chelsea: \$1.5M
 - Everett: \$5.5M
 - Malden: \$500,000
 - Marlborough: \$5.0M
 - Needham: \$1.0M
 - Newton: \$4.0M
 - Quincy: \$1.5M
 - Reading: \$1.5M
 - Revere: \$1.5M
 - Somerville: \$2.5M
 - Watertown: \$1.5M
 - Weston: \$160,000
 - Winchester: \$2.8M
 - Winthrop: \$3.7M





What Should Be Replaced – Eligible Items

- Lead Service Pipe
- Lead-Lined Service Pipe
- Lead Goosenecks and Galvanized Pipe or Any Other Pipe Connected with Lead
- Brass Pipe and Fittings





Lead and Lead-Lined, Galvanized Service Lines





LSL Removal





Lead Service Line Project Planning

- Establish community goal to fully remove all lead pipe from both publicly-owned and privately-owned water services
- Project Planning – Community Staff and Consultant Engineer
- Inventory of Lead Services, Mapping and Public Disclosure
- Community Planning for Private-Side Incentive
 - Fully Fund Private Side
 - Partially Fund Private Side
 - Multi-Year Payment Plan for Private Side
- Targeted Outreach to Homeowners (Entry/Waiver Form)





Community Planning for Private-Side Incentive

- Fully Fund Private Side: Thirteen (13) Communities with MWRA Loans
- Partially Fund Private Side: One (1) Communities with MWRA Loans
- Multi-Year Payment Plan for Private Side: One (1) Community with MWRA Loan
- Rebate to Homeowner after Private-Side Lead Service is Replaced by Contractor: One (1) MWRA Community
- Moved from Partially to Fully Fund Private Side: One (1) MWRA Community



Lead Loan Program Components

- Application to MWRA for Lead Loan
- Community Authorization for Loan Repayment (via Town Meeting or City Council Vote)
- Community Executes Financial Assistance and Loan Agreements
- Bond Counsel Issues Bond
- Distribution of Funds to Community MMDT Account
- Community Utilizes Funds for Project





Other Funding Sources MA- SRF

Massachusetts expects to receive approximately \$173 million in supplemental Bipartisan Infrastructure Law funding:

- CWSRF All Projects \$70.8M
- CWSRF Emerging Contaminants \$7.2M
- DWSRF All Projects \$45.2M
- DWSRF Emerging Contaminants \$16.4M
- **DWSRF LSL Replacements \$33.7M**

Maria Pinaud - MassDEP: maria.pinaud@mass.gov

Nate Keenan - MCWT: nkeenan@tre.state.ma.us

Massachusetts Department of Environmental Protection – <https://www.mass.gov/state-revolving-fund-srf-loan-program>

Clean Water Trust - <https://www.mass.gov/orgs/the-massachusetts-clean-water-trust>



Community Support Programs
Massachusetts Water Resources Authority

WATER SYSTEM TOPICS

- Local Water System Assistance Program (LWSAP)**
Loan program to fund local water system improvement projects for member water communities from FY11 through FY20.
- Lead Service Line Replacement Program/Lead Loan Program (LLP), an Enhancement to the Local Water System Assistance Program**
Loan program to fund local projects for member water communities that will fully remove lead service lines from the community water main all the way to the home or business.
- Water Conservation and Efficiency**
Information for member communities, local businesses and residents; free educational brochures and low-flow fixtures; case studies.
- Leak Detection Task Order Contract**
This contract provides member communities access to high quality leak detection service at a reasonable cost. Services performed under the task order contract are paid by MWRA; communities are billed the following year.
- The MWRA Water System**
Information about our water system, including drinking water quality and recent improvement projects.

MWRA Lead Loan Contacts

Jon Szarek

jon.szarek@mwra.com

David Granados

david.granados@mwra.com

Claudia Baptista

claudia.baptista@mwra.com

<http://www.mwra.com/comsupport/communitysupportmain.html>

Questions or Comments?

Drink with Confidence
Flush with Pride

This presentation represents the opinions of the authors and not necessarily those of the MWRA



BREAK



LCR Revisions: Changes in Sampling Protocols

Beverly Anderson
Project Manager, Public Health



New Tier Schedule for Lead and Copper Sampling

- Systems with any lead service lines, must sample at these sites
- Priority for sampling must always be given to homes with LSL's
- Tier 1: Single family homes with lead service lines
- Tier 2: Multifamily homes with lead service lines
- Tier 3: Single family homes with a galvanized line,
 - currently or formerly preceded by a lead line, or
 - currently preceded by a lead gooseneck.
- Tier 4: Single family homes with copper pipes and lead solder built prior to 1986 lead solder ban.
- Tier 5: Representative single and multi-family homes
- Updated sampling plans must be submitted to DEP for 2025 LCR sampling.



Sampling Procedures Clarified in Rule

- At least 6 hours stagnation
- Must not direct pre-stagnation flushing
- Must not direct cleaning or removing aerators
- Requires wide mouth bottles
 - Wide bottle is 55 mm wide (~2 in)
- No POE or POU filter
- Must continue to use same sites each monitoring period when possible
- Major change -- 5th liter sample for lead





Homes with LSL use new 5th liter sampling approach

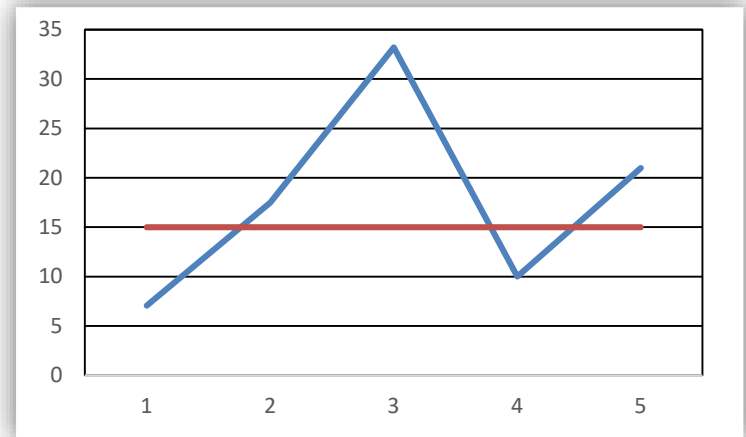
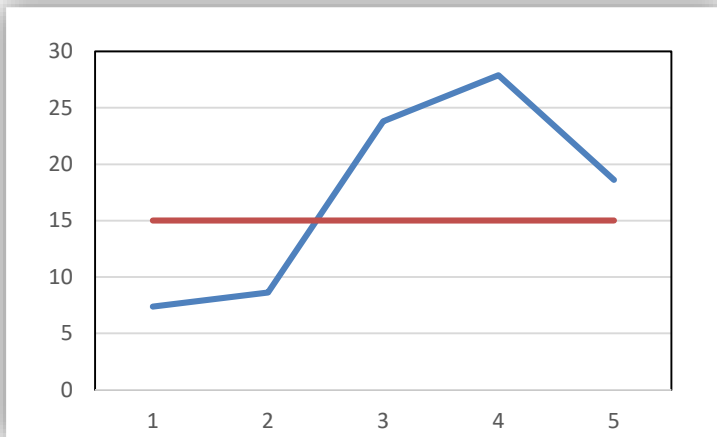
- EPA believes that a 5th liter sample will more likely characterize water in the Lead Service Line
- New Sampling Procedure for Homes with LSL
 1. Provide owner with 5 1-liter bottles.
 2. After stagnation period of at least 6 hours, bottles should be filled in sequence (1 through 5) with tap running
 3. Bottle No. 5 (last taken) will be analyzed for lead
 4. Bottle No. 1 will be analyzed for copper.





Impact of the "5th Liter" sample on Lead Results

- MWRA worked with a community to evaluate changes in lead levels under the new sampling approach.
- Five samples were taken at 5 different Tier 1 sites.
- Lead levels measured in the 5th liter in 3 out of 5 single family homes showed higher results than the first draw sample.





Change in Sampling = Change in Results

- If System has any LSLs – all samples must now be from homes with LSL's
- If LSL is present – revised rule requires “5th liter sample” for lead – essentially a service line sample
- So no change in actual lead levels, but reported results will likely be higher
- **You need to be prepared for this change**
- Many systems will be more likely to be over the Action Level and require **immediate (24 hours)** notice to consumers
- Even more systems will exceed the new Trigger Level of 10 ppb and begin mandatory LSL replacement programs



Sampling Frequency

- Initially (2025), all systems will be on twice-annual LCR sampling
- With new Trigger Level and changes to sampling tiers and 5th liter protocol, more systems should anticipate more frequent monitoring.
- MWRA will continue to provide sampling assistance, laboratory analysis, and reporting for all fully supplied communities. New sampling instructions and any other required materials will be developed.



LCR Revisions: Sampling in Schools and Childcare Facilities

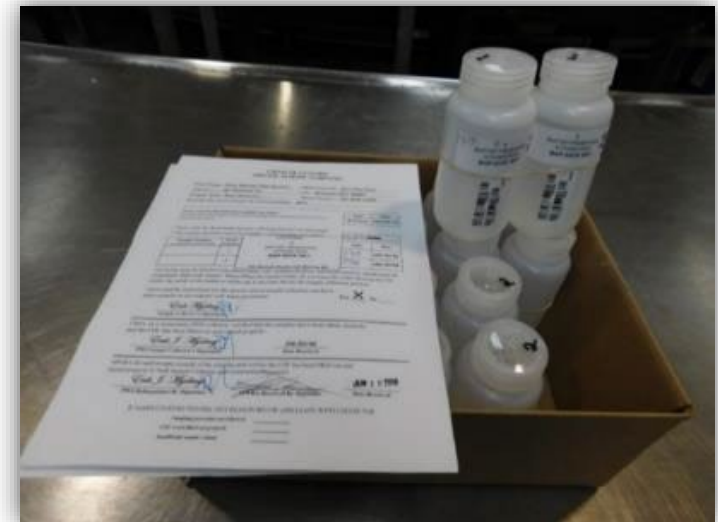
Beverly Anderson

Project Manager, Public Health



New Sampling Requirements for Schools/Childcares

- Provide annual information to schools and child care facilities about lead and health risks-“3-Ts” Information about risks and an offer to sample
- Massachusetts already has a complete list of schools and child care facilities on-line at: <https://www.mass.gov/guides/sampling-for-lead-and-copper-at-schools-and-childcare-facilities>
- Community Water Systems Must Annually Sample for First 5 years:
 - 20 percent of public, private and charter “non-secondary” schools
 - 5 samples each
 - 20 percent of all licensed childcare facilities,
 - Including family daycare
 - 2 samples each
- Provision for documenting refusal or non-response
 - This may affect scheduling and meeting 20%
- Provide results to DEP, local health, and school or childcare facility within 30 days





New Sampling Requirements for Schools/Childcares

- School/childcare sampling can be spread out over the full calendar year
- Upon request, you must sample secondary schools
- After first 5 years, continue annual outreach and sample at any school or childcare facility upon request
- MWRA will continue to provide laboratory analysis for school/childcare facility samples
- All lead testing results will be posted on the MassDEP website





What percentage of schools and child care facilities must be tested annually?

- A. 20% of public schools and large day care facilities
- B. 10% of all public, private, and charter elementary and middle schools
- C. 20% of all public, private, and charter elementary and middle schools
- D. 20% of all licensed child care facilities
- E. C and D**



LCR Revisions: “Find and Fix” Actions After 2024

Josh Das

Program Manager, Water Quality



“Find and Fix” requirements for any sample over Action Level

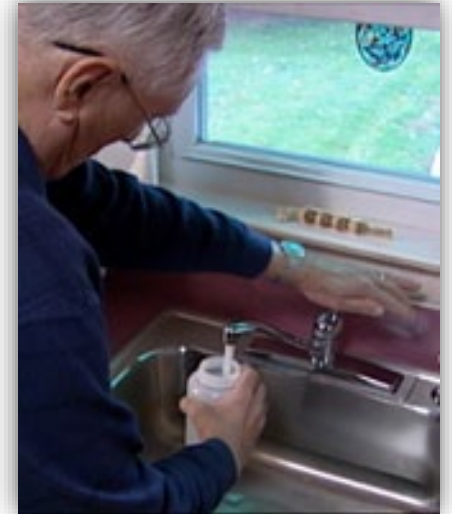
- EPA is imposing this new requirement in advance of the LCR Revisions
- Follow-up within 30 days
 - (You will already have provided data within three days)
 - Offer to investigate causes
 - Offer investigatory sampling (can be anything useful)
 - Consider removing LSL
- Keep good records of all actions and results
 - Including all phone calls
- MWRA will also do some system sampling





“Find and Fix” System Sampling

- Within 5 days, perform OWQP sampling near residence over AL
 - MWRA will take sample
 - pH and alkalinity
 - TCR or other regulatory site
 - Pilot Program until official rule
- MWRA will contact you about access to site
 - Make sure site is in same pressure zone/pipe size
 - Within 0.5 miles of residence
 - Unclear how DEP will implement rule
 - Site may become part of MWRA’s OWQP sampling plan





What is required after a individual sample over the AL?

- A. Notify the customer with 3 days of results
- B. Offer to investigate the cause within 30 days
- C. Work with MWRA to take OWQP samples within 5 days
- D. All of the above**



LCR Improvements: What Might Change?

Stephen Estes-Smargiassi
Director of Planning and Sustainability



Potential Anticipated Changes to LCR with “Improvements”

- Draft LCR Improvements (LCRI) proposal expected in October 2023
- Replacement goal of all LSL within 10 years
- Use of highest of 1st and 5th liter lead sample for calculating 90th percentile (for sites with LSL)
- Reduce lead Action Level from 15 ppb to 10 ppb. And eliminate LCRR lead Trigger Level
- Require that disadvantaged neighborhoods be prioritized for full-lead service line replacement
- Change in galvanized requiring replacement for goosenecks

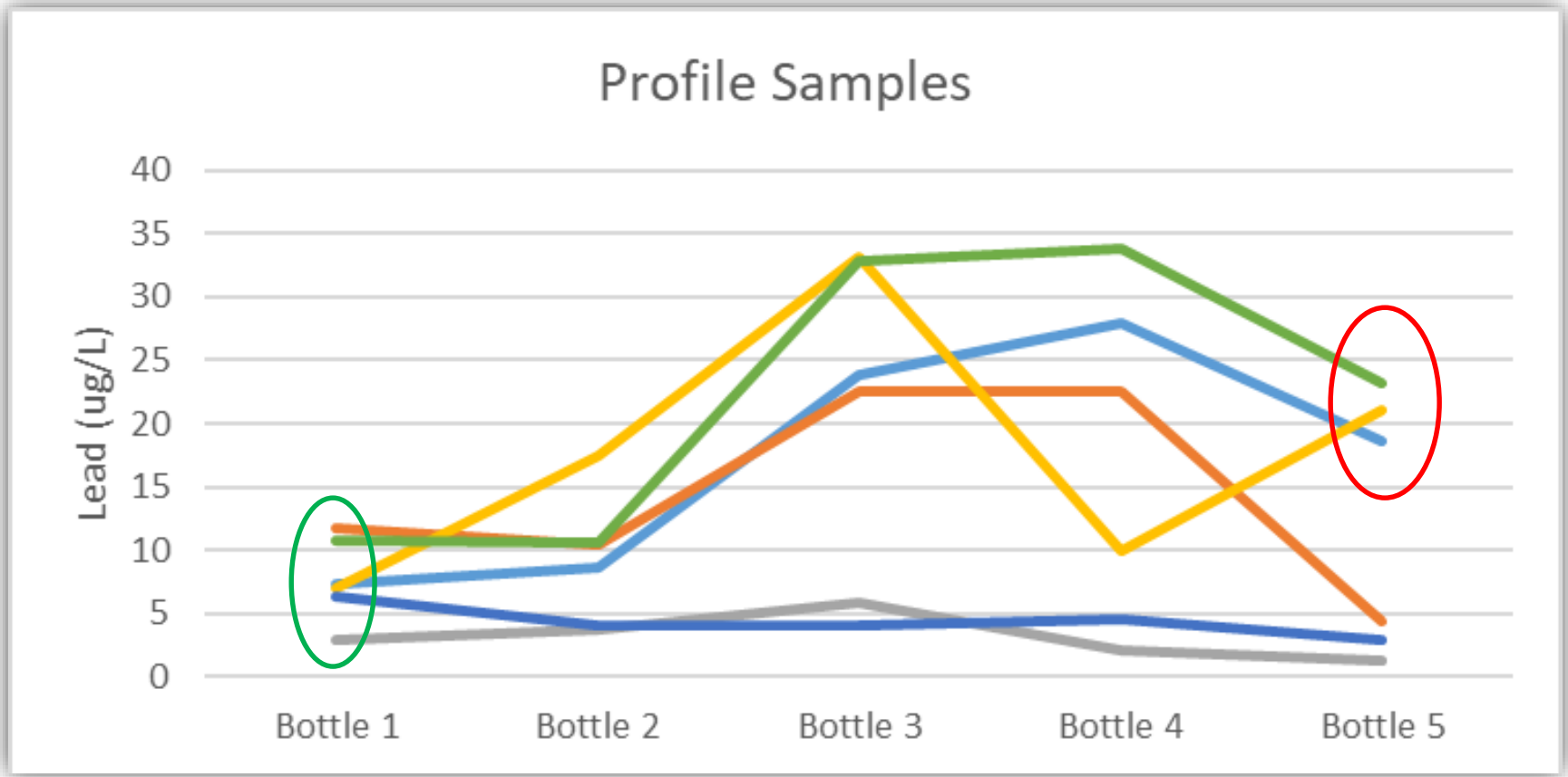


Not Expected to Change with LCRI

- Tier 1 24-hour public notification provisions will remain unchanged
- Service Line Inventory – Likely Unchanged
- School and Childcare Facility Sampling – Likely Unchanged
- No significant delays in LCRR implementation timeline (e.g., school sampling, compliance sampling, inventory, etc.)



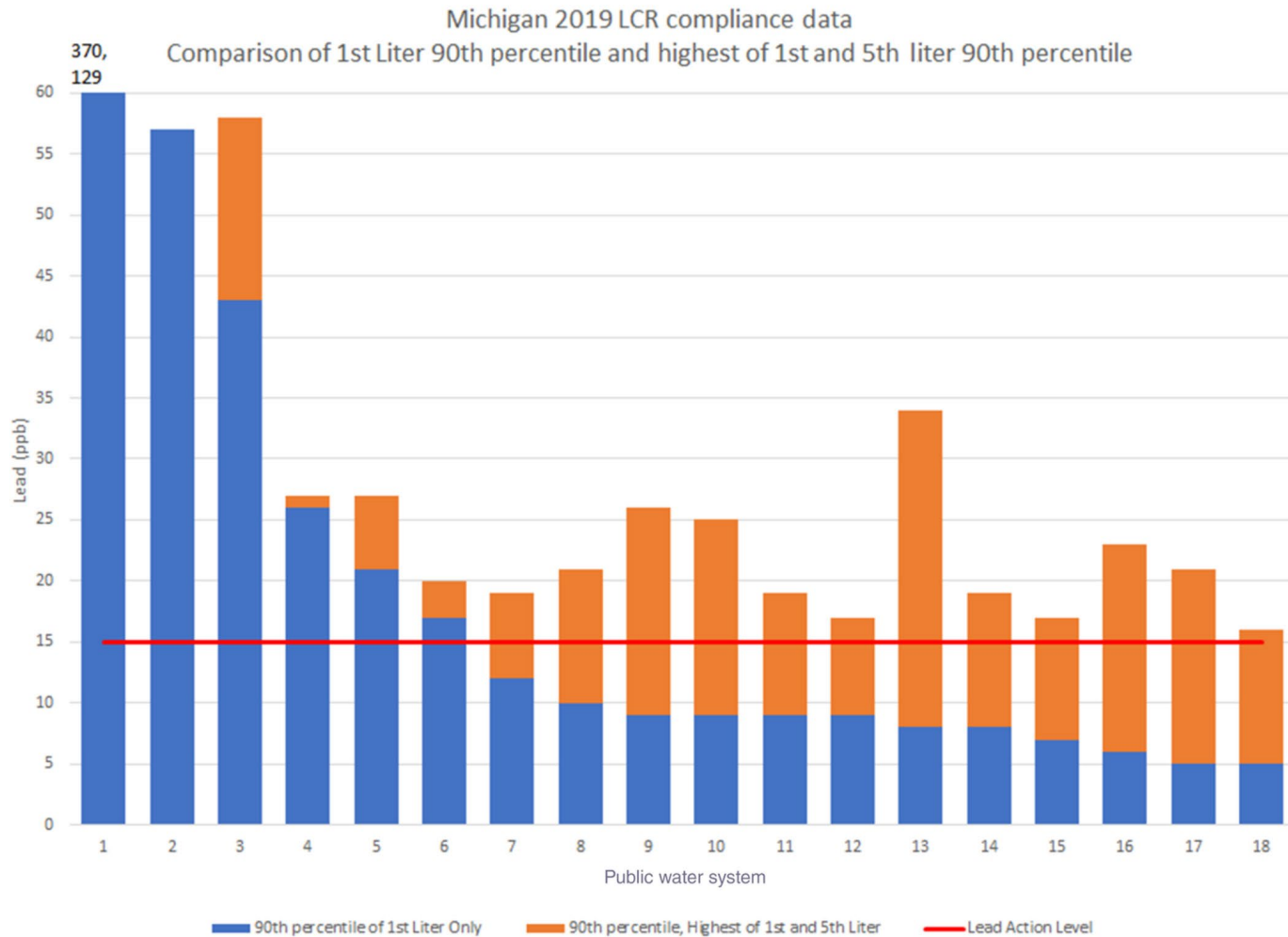
Fifth liter samples frequently higher than first draw sample



Data from MWRA community pilot profile sampling



Using higher of 1st and 5th liter samples yields higher results



Lessons from the first year of compliance sampling under Michigan's revised Lead and Copper Rule and national Lead and Copper Rule implications AWWA Water Science, Volume: 3, Issue: 6, 02 December 2021



Lowering the Action Level Doubles or Triples Systems over AL

	2018	2019	2020	2021	2022
System 90 th	9.7 ppb	8 ppb	6.5 ppb	8.6 ppb	7.3 ppb
# Over 15 ppb	3	5	3	5	1
# Over 10 ppb	10	8	6	12	7
# Over 5 ppb	13	15	11	15	14

Data from fully-supplied communities in MWRA's consecutive system sampling plan



What factors might increase reported lead levels after 2024?

- A. Sampling in homes with lead service lines
- B. Sampling the 5th liter,
- C. Using highest of 1st and 5th liter samples
- D. All of the above**



Proactive Corrosion Control Evaluation

Anna Hayden

Project Manager, Process Engineering and Control



Motivation for the Pipe Rig Study

- Lead and Copper Rule Revisions- Oct 2024
 - How we measure and respond to lead will change
 - 5th liter sampling
 - 10 ppb trigger level
 - MWRA is proactively running a pipe rig study, in case future lead results require treatment re-optimization
 - EPA timeline for mandatory studies is compressed
 - Starting early improves quality of results



Pipe rig test conditions

- If a pipe rig study is triggered:
 - Orthophosphate (PO_4) must be tested
 - 1 and 3 mg/L doses
- MWRA study:
 - 1, 2, and 3 mg/L PO_4
 - 4 pipes sent for scale analysis in Aug 2023
 - Chemical addition began in Aug 2023
 - Completion anticipated in Q4 2024





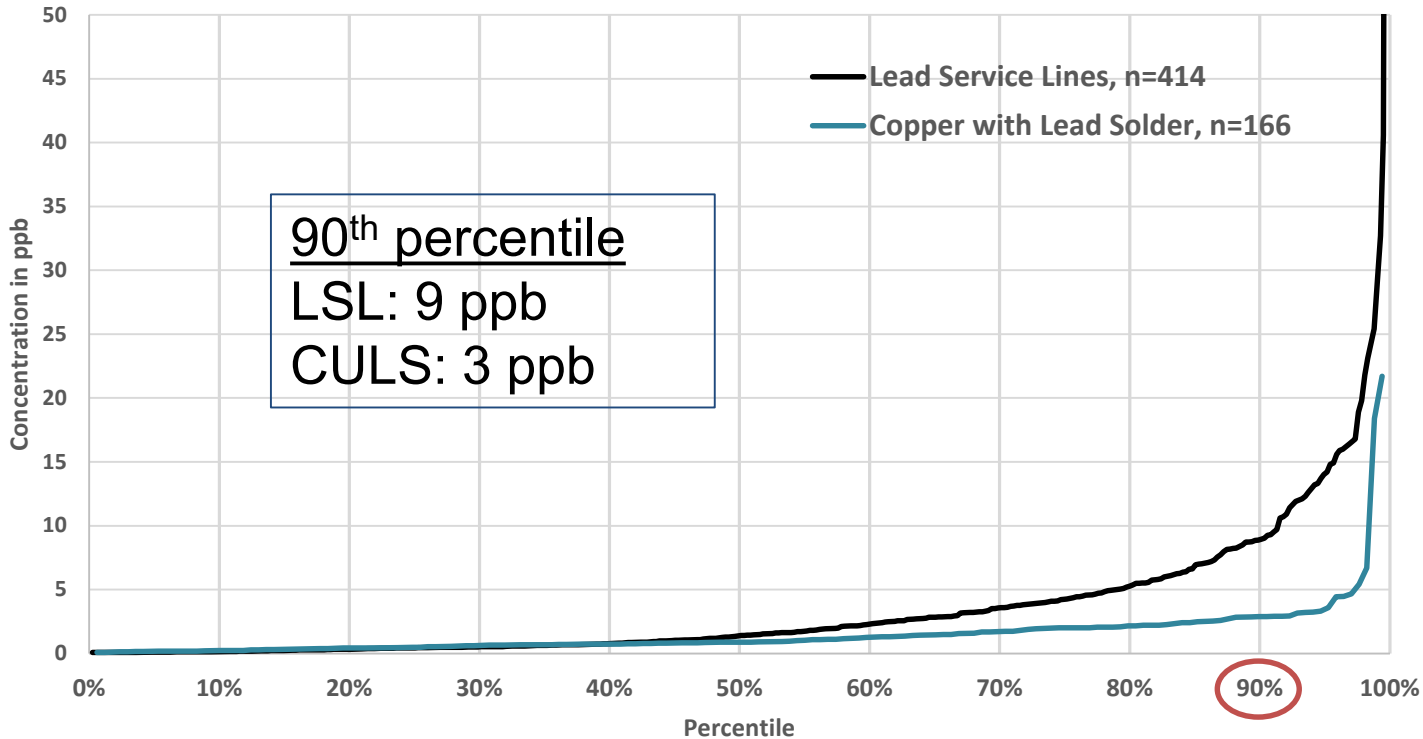
Simultaneous Compliance

- Must consider secondary impacts of PO_4 to ensure:
 - Compliance with all regulations
 - No unanticipated negative impacts
- Ongoing contract researching impacts of PO_4 addition on:
 - Aesthetics – taste, odor
 - Distribution system biofilm
 - Local WWTPs
 - Partly served communities (blending)
 - Emergency open reservoirs



2022 Sampling Results: 90th Percentile 7.3 ppb, 70% LSLs

2022 Sampling Round Results



First-Draw Samples

Most samples with elevated lead came from homes with LSLs



Removal of Lead Service Lines

- As regulations tighten, LSL removal becomes a more important tool in LCR compliance
- Because most elevated samples come from LSLs:
 - Continue planned LSL replacement
 - Consider option to remove LSLs faster
- Newark, NJ: In response to elevated lead levels, removed nearly 24,000 LSLs in under 3 years at no cost to residents (completed Feb 2022)
- Denver, CO: First utility to receive EPA approval to accelerate LSL removal in place of adding a corrosion inhibitor
 - 15,000 LSLs in first 3 years
 - Total of 64k-84k over 15 years (2035)



Water Quality Conditions Update

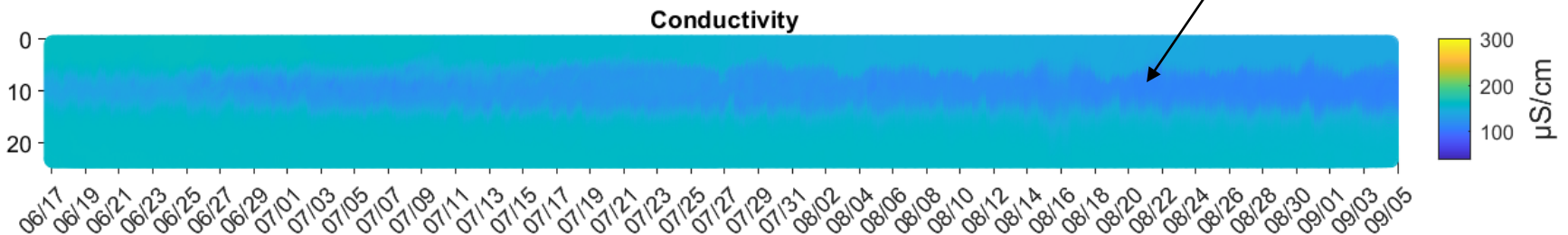
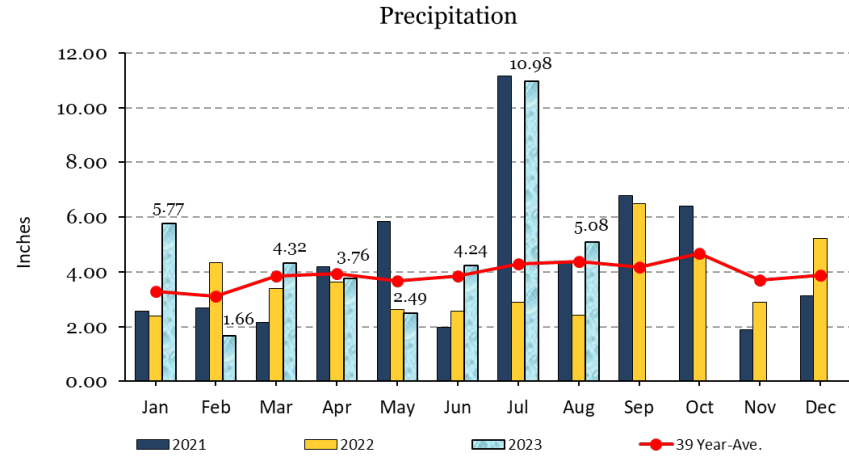
Kim LeBeau

Senior Program Manager, Quality Assurance



Reservoir WQ and Wet Weather

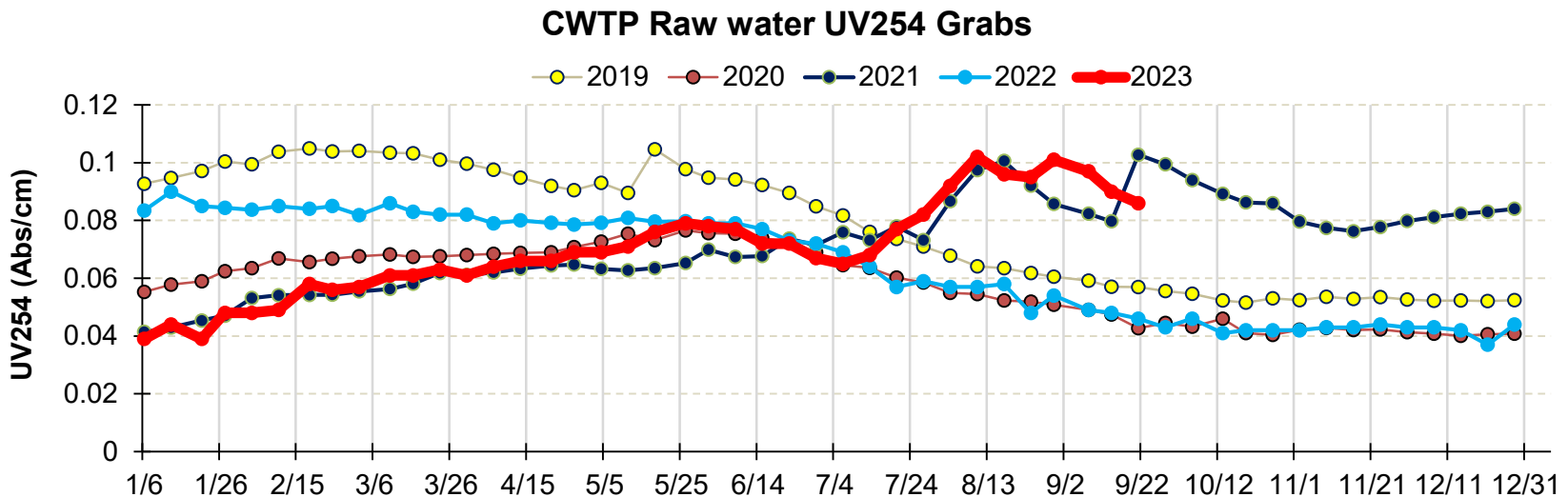
- Transfers of Quabbin water through Wachusett creates a band of high quality water (interflow). This is best detected by measurement of conductivity.
- Benefits of the transfer include decreases in UV254, and reduced ozone and chlorine demand
- Since July, precipitation events have reduced our ability to maintain higher transfer rates.
- Buoy monitoring stations are helpful to watch water quality trends.





CWTP Raw water quality

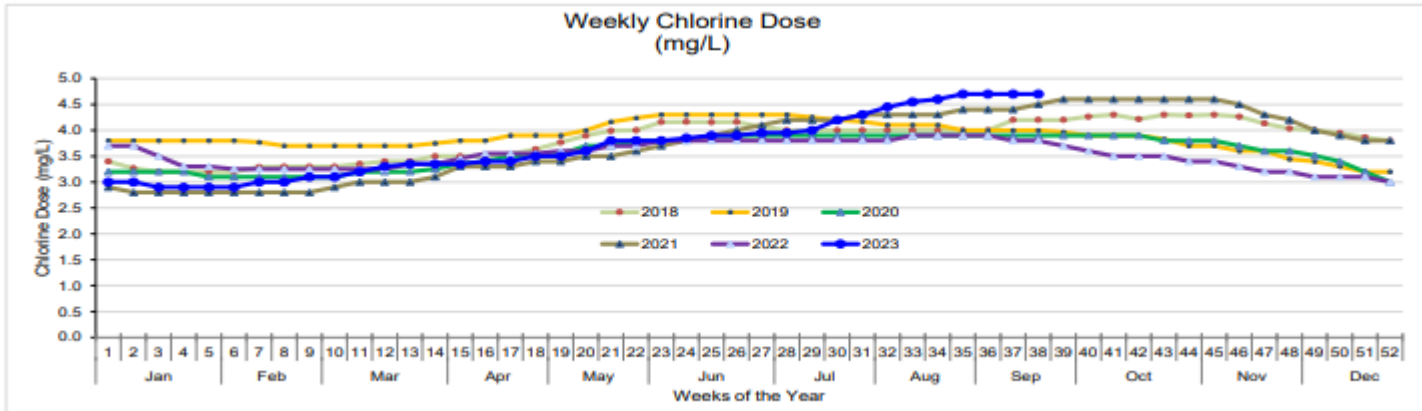
- UV254 levels less than 0.06 Abs/cm represent good water quality.
- Current UV254 levels at CWTP raw water tap is 0.086 Abs/cm. Quabbin UV254 levels are 0.025 Abs/cm.





Chlorine Dose/Decay Status

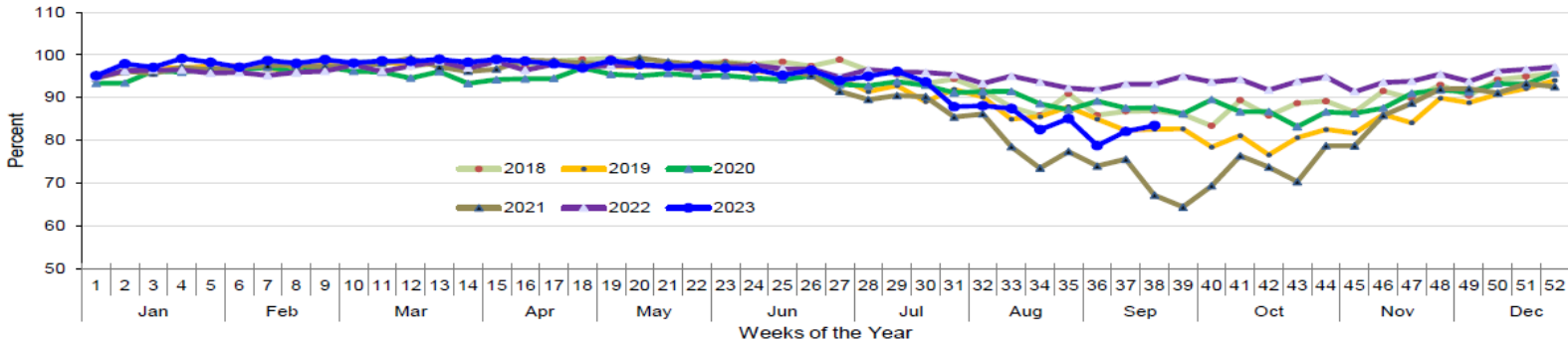
- Elevated UV254 can cause increased ozone demand, chlorine demand & decay, lead solubility
 - Chlorine Demand = Dose – CWTP Finished Water Chlorine Residual
 - Chlorine Decay = CWTP Finished Water Chlorine Residual – Shaft 9A Chlorine Residual (sentinel MWRA system site)





Fully Served Community Residuals Tracking

Fully Served Communities - Weekly Residual Disinfection
Percent samples w/ Cl2 >1.0 mg/L



Please note that y-axis is from 50 to 110% to show the variability more.

Residual Disinfection Status: Cl2T units = mg/L			Fully Served Communities Only				Fully Served & MWRA TCR sites			Current	Calculated	
Week#	Week ending	#Samples	#Locations	%Cl2T	#Locations	%Cl2T	Overall	%Cl2T	%Cl2T	%samples	Cl2 Dose	Cl2:NH3
			<0.5	<0.5	>1.0	>1.0	Min Cl2T	<0.1	<0.2	>0.2	(PI)	ratio (PI)
21	05/26/23	375	2	0.5	365	97.3	0.31	0.00	0.00	100	3.80	5.0
22	06/02/23	249	3	1.2	243	97.6	0.31	0.00	0.00	100	3.80	5.0
23	06/09/23	422	4	1.0	409	96.9	0.22	0.00	0.00	100	3.80	5.0
24	06/16/23	396	2	0.5	383	96.7	0.27	0.00	0.00	100	3.85	5.0
25	06/23/23	420	5	1.2	400	95.2	0.32	0.00	0.00	100	3.90	5.0
26	06/30/23	361	3	0.8	348	96.4	0.37	0.00	0.00	100	3.90	5.0
27	07/07/23	400	7	1.8	376	94.0	0.20	0.00	0.00	100	3.95	5.0
28	07/14/23	420	6	1.4	399	95.0	0.29	0.00	0.00	100	3.95	5.0
29	07/21/23	417	2	0.5	401	96.2	0.32	0.00	0.00	100	4.00	5.0
30	07/28/23	396	6	1.5	371	93.7	0.18	0.00	0.23	99.8	4.20	5.0
31	08/04/23	429	14	3.3	377	87.9	0.11	0.00	0.42	99.6	4.30	5.0
32	08/11/23	419	6	1.4	369	88.1	0.23	0.00	0.00	100	4.45	5.0
33	08/18/23	423	16	3.8	370	87.5	0.17	0.00	0.21	99.8	4.55	5.0
34	08/25/23	417	18	4.3	344	82.5	0.12	0.00	0.43	99.6	4.60	5.0
35	09/01/23	221	3	1.4	188	85.1	0.20	0.00	0.00	100	4.70	5.0
36	09/08/23	470	30	6.4	370	78.7	0.05	0.39	1.75	98.3	4.70	5.0
37	09/15/23	468	25	5.3	384	82.1	0.04	0.19	1.17	98.8	4.70	5.0
38	09/22/23	435	33	7.6	363	83.5	0.07	0.42	2.32	97.7	4.70	5.0



Total coliform positives (Full & Partial) in 2023 compared to 2021.

Total coliform positives categorized as singletons (single coliform positives) and non-singletons (repeat positives).

2023 (Full & Partial)		
Month	Singleton	Non-singleton
Jan-23	5	0
Feb-23	3	0
Mar-23	2	0
Apr-23	0	0
May-23	3	0
Jun-23	4	1
Jul-23	16	2
Aug-23	25	33
Sep-23*	46	41
Oct-23		
Nov-23		
Dec-23		
TOTAL	104	77

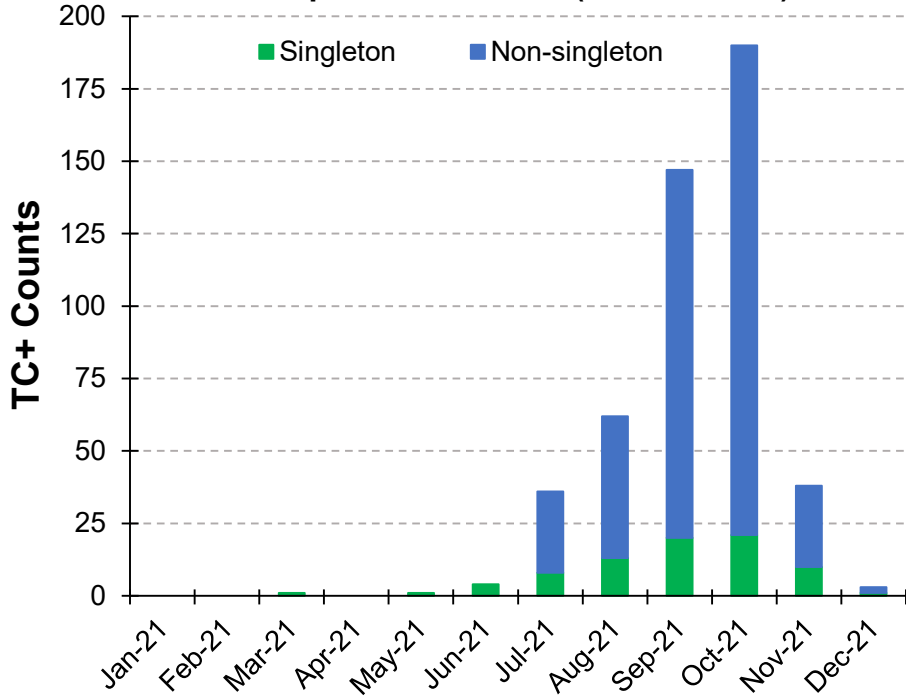
2021 (Full & Partial)		
Month	Singleton	Non-singleton
Jan-21	0	0
Feb-21	0	0
Mar-21	1	0
Apr-21	0	0
May-21	1	0
Jun-21	4	0
Jul-21	8	28
Aug-21	13	49
Sep-21	20	127
Oct-21	21	169
Nov-21	10	28
Dec-21	1	2
TOTAL	79	403

Note: September data for 2023 is from September 1 – 20.*

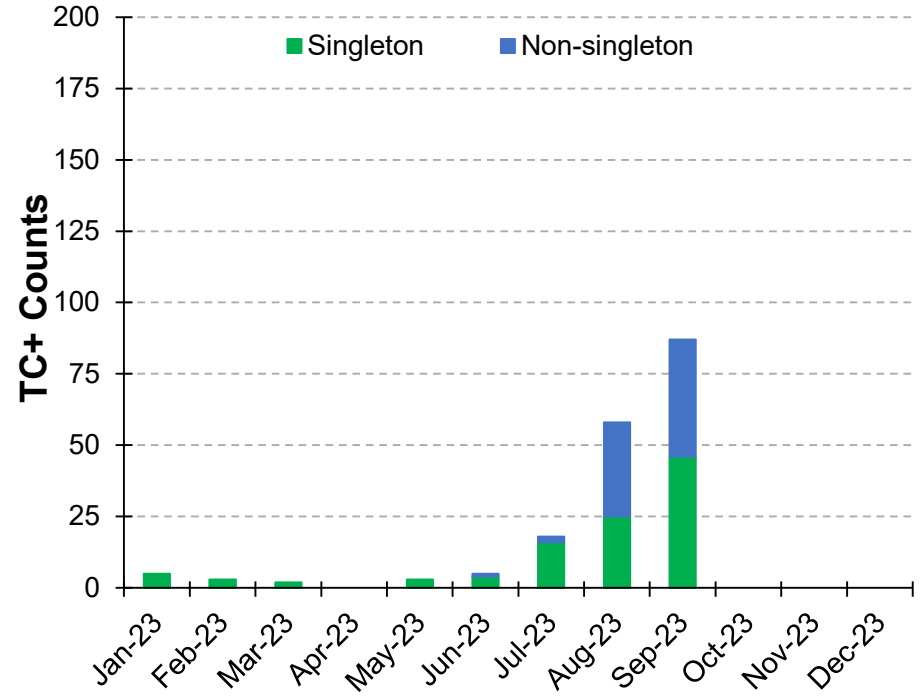


Total coliform positives (Full & Partial) in 2023 compared to 2021.

Coliform positives in 2021 (Full & Partial)



Coliform positives in 2023 (Full & Partial)



Note: September data for 2023 is from September 1 – 20.*



Community Actions

- Samplers should be cautious with Routine & Repeat Sampling
 - TC+ followed by EC+ is a BWO
- Have samplers speak up when low residuals, issue identified at tap/room
- Superintendents should survey site (and up/down) upon first coliform detection
- Sample over multiple days, if time is needed to troubleshoot issue
- Ask DEP for repeat sampling timeline extension, if needed
- Reach out to Equal-Water for compliance assistance (ask Lab staff who is on call)
- Be cautious with potential hydrant flushing impacts
- Routinely cycle tanks at the start of the summer

MWRA Assistance

- Sampling and site investigations
- Training (coliform sampling, SL1000, chlorine)
- RTCR Level assessments
- Communications with Mass DEP
- WQ data requests



America's Water Infrastructure Act (AWIA) Deadlines

- Seems like just yesterday that we certified compliance with AWIA:
 - Risk and Resiliency Assessments, and
 - Emergency Response Plan requirements
- Risk and Resiliency Assessments must be updated and certified again by:
 - More than 100K population -- March 31, 2025
 - 50K to 100K – December 31, 2025
 - 3,300 to 50K – June 30, 2026
- Emergency Response Plans must be updated and certified again by:
 - 6 months after RRA certification

Questions or Comments?

Drink with Confidence
Flush with Pride

This presentation represents the opinions of the authors and not necessarily those of the MWRA



To qualify for TCHs --

- Please fill out the survey at this link or scan the QR code below:

<https://www.surveymonkey.com/r/PB8DMXC>

