



Tackling Lead Service Lines We Can Work Together

Stephen Estes-Smargiassi
Director of Planning and Sustainability

Massachusetts Environmental Health Association
Marlborough – December 13, 2018



-
- This map illustrates the Merrimack River watershed, highlighting various landholdings and communities. The legend indicates four categories: Sewer Communities (blue), Water Communities (green), Water & Sewer Communities (yellow), and Other Protected Landholdings (grey). The map shows the river's course through the watershed, with numerous towns and cities labeled, including Andover, Amesbury, Haverhill, and Lowell. The map also shows the location of the Merrimack River and its tributaries, as well as the location of the Merrimack River watershed.



Flint Has Changed How We Need to Do Business



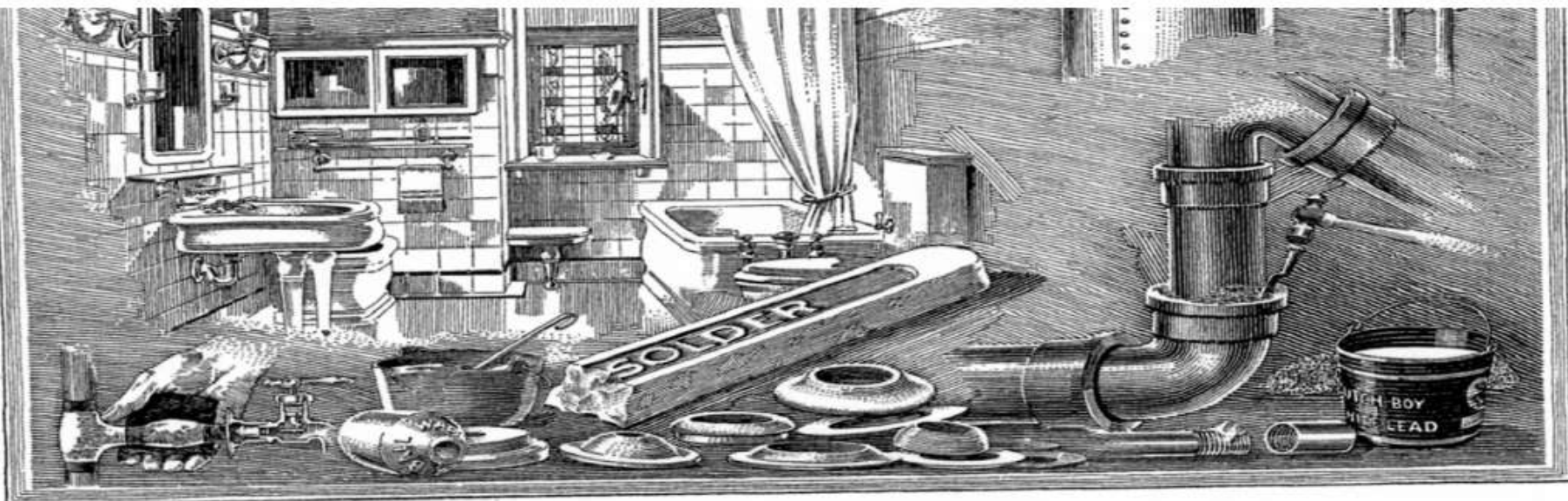
- Public is more sensitive than ever to changes in water quality
- Need to take complaints seriously
 - Respond quickly
 - Provide good customer service
- Maintain customer's confidence in the safety of the water we provide
- Work Cooperatively to Reduce the Real Risks



Some Background on the Lead in Water Issue

- Water is the “universal solvent”
- There is typically no lead in source water or local water mains
- Lead can leach from lead service lines, lead solder, brass pipes and fixtures
- Key issues:
 - Lead Service Lines
 - Stagnant Water
- Simple message to public on shared responsibility:
 - We treat the water to reduce leaching.
 - You should flush your tap before using.
 - If you have any lead: Get it replaced





Lead helps to guard your health

YOU wouldn't live today in a house without an adequate plumbing system. For without modern plumbing, sickness might endanger your life.

Lead concealed in the walls and under the floors of many modern buildings helps to give the best sanitation.

In some cities today the law specifies that lead pipe alone may be used to bring water from street mains into the building.



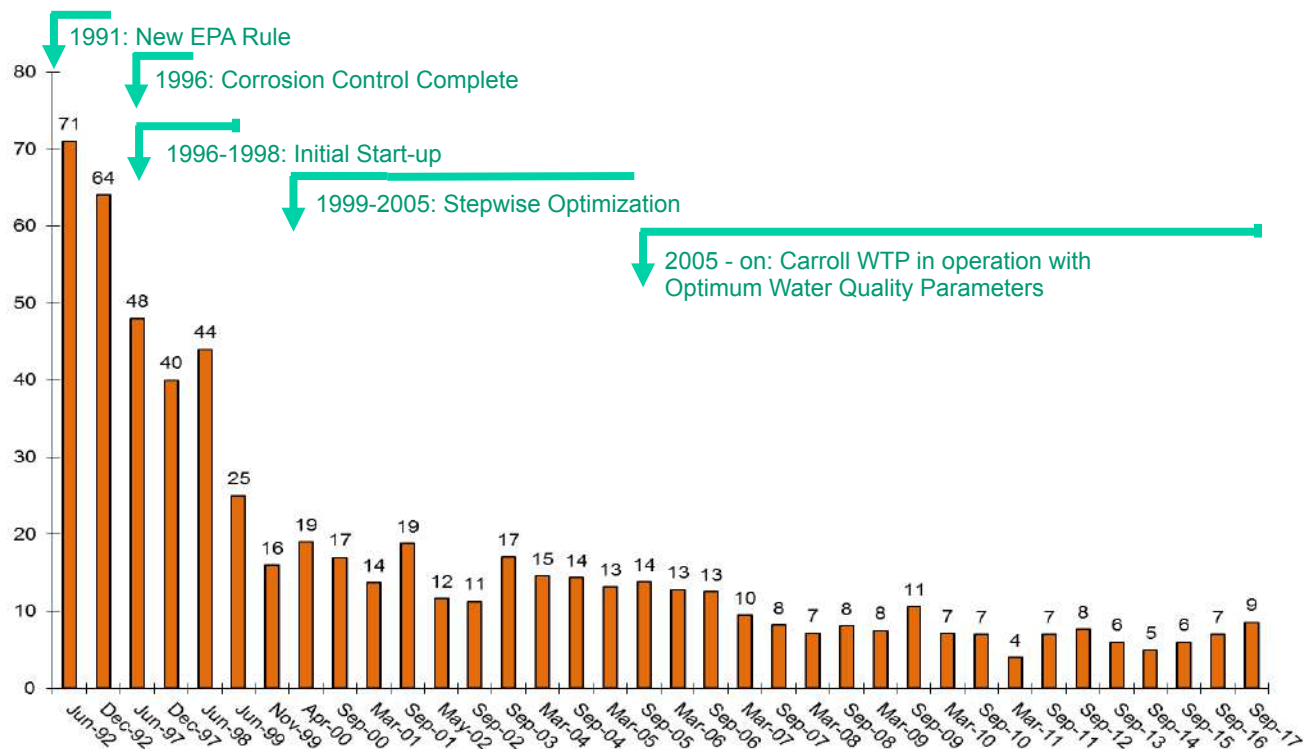
Edited From Ad in National
Geographic 11/1923

NATIONAL LEAD COMPANY
New York, 111 Broadway; Boston, 131 State St.; Buffalo, 116 Oak St.



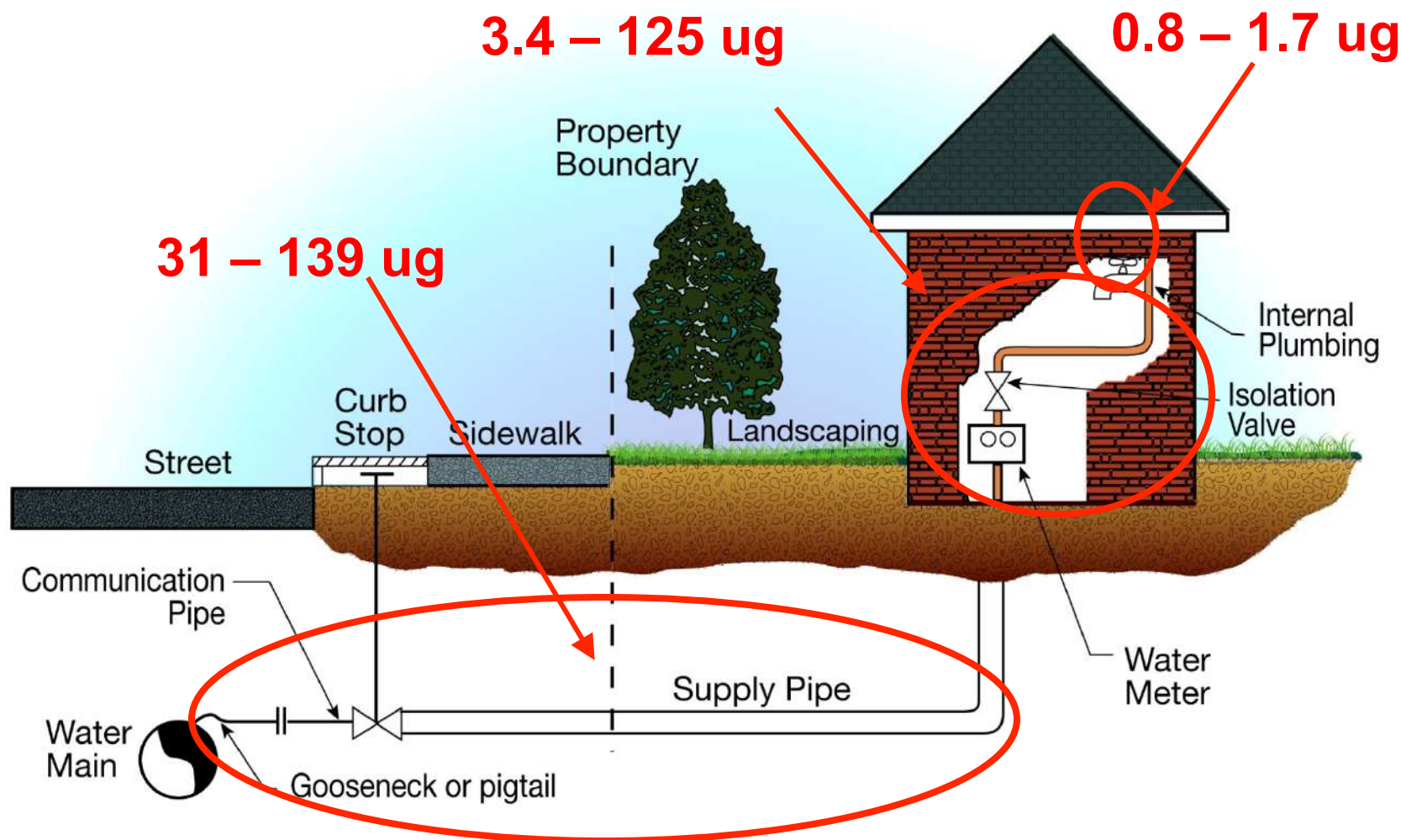
Effective corrosion control can reduce lead levels

- MWRA has seen about 90% Reduction In Lead Levels
- Similar Results or Better Seen In Many Communities





When Present, a Lead Service Line Can Contribute Substantial Lead Mass

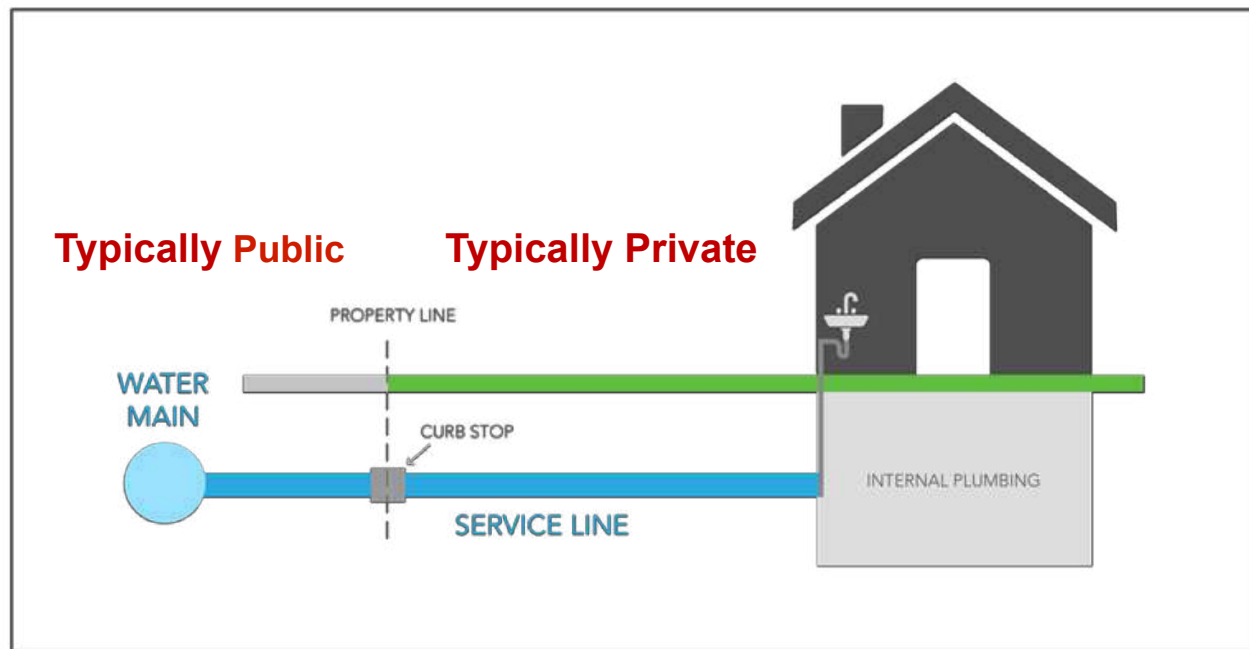


Data: Water Research Foundation



Ownership Complicates Lead Service Line Replacements

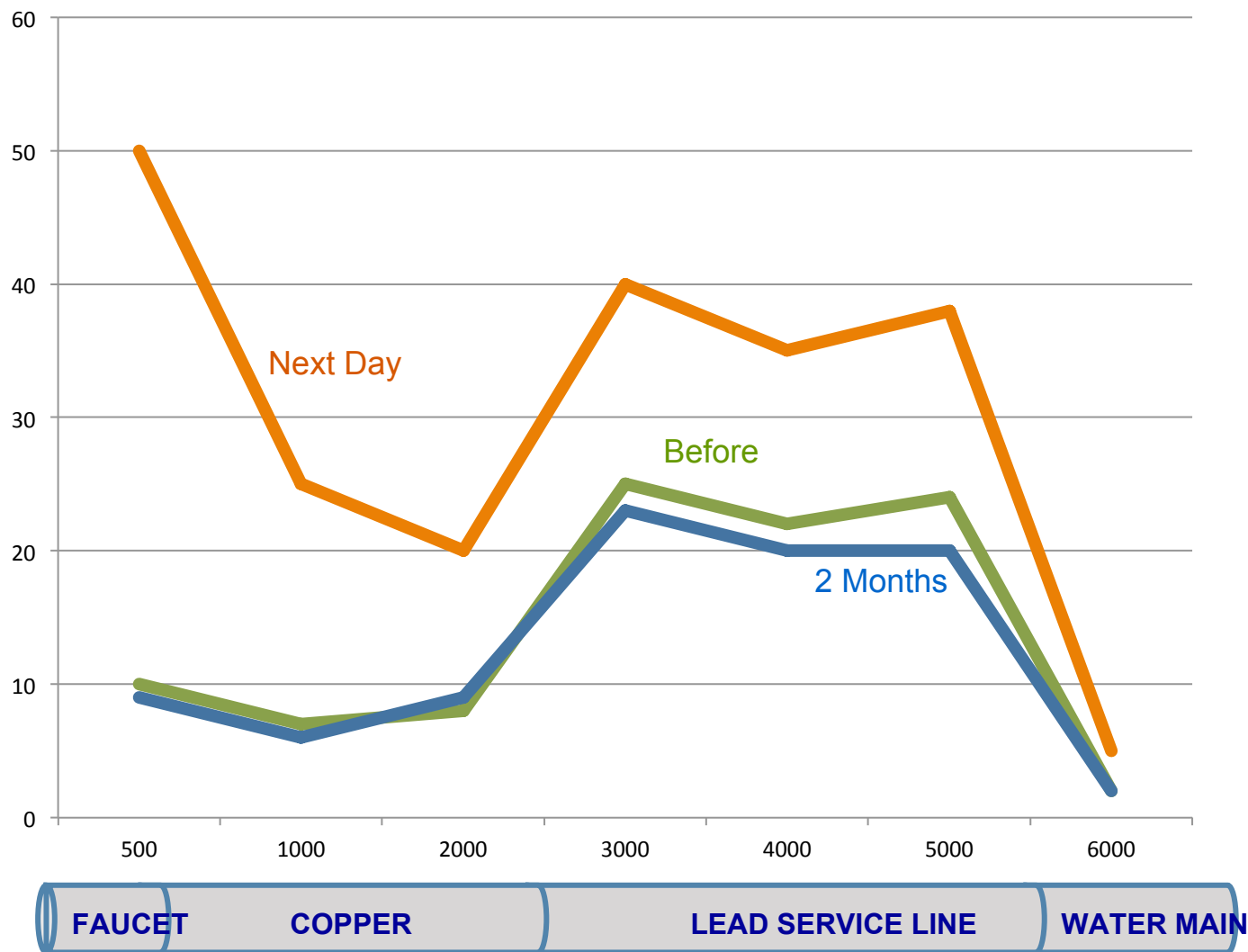
- Ownership is typically split between system and property owner
- Who Pays (or is Allowed To Pay) Matters
- Partial replacement (i.e. only public portion) can result in increased lead levels





Partial Lead Service Replacement Provides No Benefit, Can Increase Risk

- Levels rise for days to weeks; level off similar to before



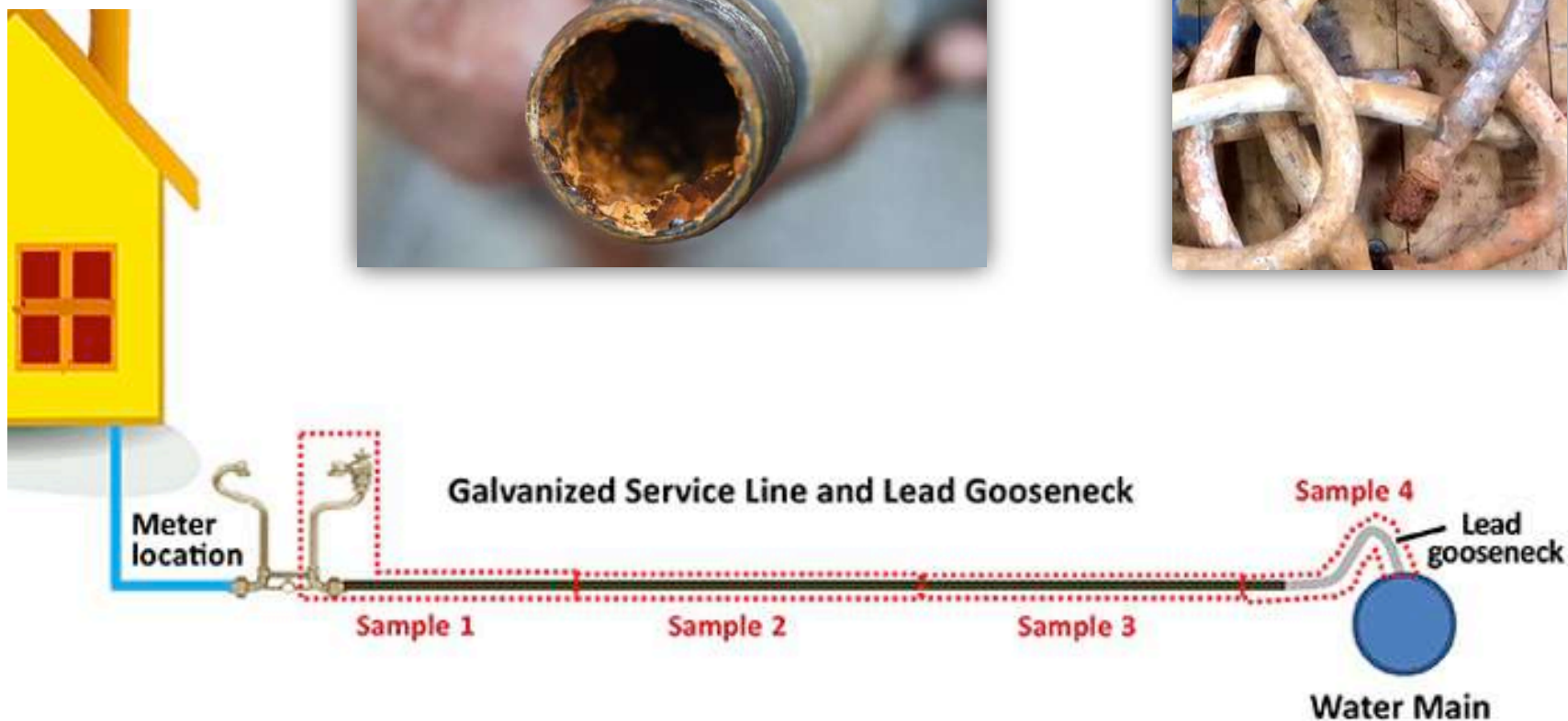


Lead and Lead-Lined Steel Service Pipes





Lead Goosenecks and Galvanized Pipe Can Also be a Source



Sketch: Quincy DPW



Transparency About LSL is Key, But Can be Difficult

- Records can be 150 years old
- Inconsistency in record keeping with repairs and replacements
- Split between public side and private side
- Even great records may just be paper card files
- But Our Customers Expect Us to Have this Info
- We and They Need this Data to Plan and Take Action

RETURN OF SERVICE PIPE

Date Laid *May 24-1897* Reg. No. *1077*

Owner of Premises *Chas. G. Thaxter*

Street *2 Glenview Ave*

Main Pipe *6* Inches Diam. Distance Main to Curb Stop Cock *7 1/2* feet

Foreman

| COST TO TOWN - Main to Curb Stop Cock inc. | | COST TO OWNER | |
|--|---------|---|---------|
| <i>7 1/2</i> Feet <i>1/2</i> Inch <i>Lead</i> Pipe | | <i>35</i> Feet <i>3/4</i> Inch <i>Lead</i> Pipe | |
| <i>1/2</i> Inch <i>1/2</i> Inch Corporation Stop | | | |
| One Inch Curb Stop | | Inch Stop and Waste | |
| One Sidewalk Box | | Elbows | |
| Couplings | | Tees | |
| Elbows | | Hours Labor | Man |
| Hours Labor | Man | Hours Labor | Foreman |
| Hours Labor | Foreman | Trucking | |
| Total | | Total | |

RETURN OF SERVICE PIPE

Date Laid *10-27-2008* Reg. No. *5538*

Owner of Premises

Street *567 WINTER ST - New House*

Main Pipe *8* Inches Diam. *CLP-2008* Distance Main to Curb Stop Cock *20* feet *2" copper*

Foreman *TOMASSEN*

| COST TO OWNER TOWN | | COST TO OWNER | |
|---|---------|---|---------|
| <i>28</i> Feet <i>2</i> Inch <i>Pipe Copper</i> | | <i>123</i> Feet <i>2" Plastic</i> | |
| <i>1</i> Inch Corporation Stop | | <i>123</i> Feet <i>1/2</i> Inch Cement lined Pipe | |
| One Inch Curb Stop | | Brass | |
| One Gate Valve | | | |
| One Sidewalk Box | | Inch Stop and Waste | |
| Couplings | | Elbows, Lead lined | |
| Elbows | | Tees, Lead lined | |
| Hours Labor | Man | <i>1" x 3/4" Rad. Coupling, Lead lined</i> | |
| Hours Labor | Foreman | <i>Coupling, Lead lined</i> | |
| | | Hours Labor | Man |
| | | Hours Labor | Foreman |
| | | Trucking | |
| | | <i>10% Overhead</i> | |
| Total | | Total | |



- 20 Foster St Wd 2 4001
V. Wentworth
Mar. 8/89
Repaired leak
in sidewalk
hole in LEAD
July 27-71
-
- 77-17 S.B.



Other Inventory Enhancement Techniques

- Use Every Opportunity to Inspect the Service Line – Meter Installs, Complaint Investigations, Water or Sewer Repairs, Sump Pump Checks
- Encourage Homeowner Scratch Test with Reporting System
- Actual Confirmatory Excavation






BWSC Website – Interactive Lead Service Map

Lead Service Map


Guest

bwsc.org/COMMUNITY/lead/leadmaps.asp#TOP_PAGE

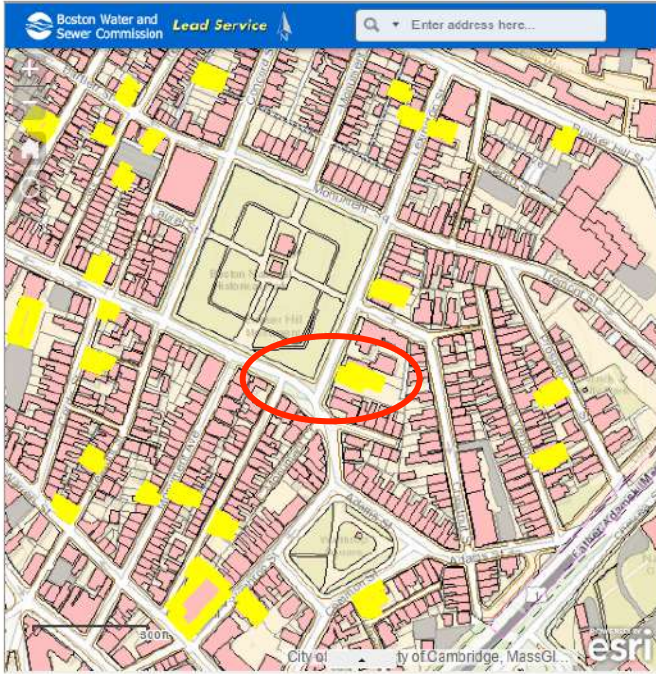


- To view a list of the buildings in the current map extent with lead service, click the up-arrow button at the bottom center of the map.
- To export the data in the Lead Buildings table to a CSV excel file, click the 'Options' button to open a drop down list. Click 'Select Records in All Pages' to select all records, or choose your own selection. Next, click the 'Options' button again to open the drop down list, and click 'Export to CSV' at the bottom of the list. Click OK to generate the CSV file.

For more information on the health risks of lead, see our [Lead in Drinking Water](#) brochure.

 **Lead Service**

Enter address here...



DISCLAIMER: The maps provided by the Boston Water and Sewer Commission (BWSC) are based on property surveys conducted during the installation of the Automated Meter Reading system, as well as information directly provided by customers and acquired during physical inspections. BWSC 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 information regarding their private water services, and not for any commercial, legal or other use. These records will be updated on a monthly basis, or at such alternate times as BWSC designates. BWSC reserves the right to alter, amend or terminate at any time the display of these maps and records.

Sewer Lateral Bonded Contractor List

Bonded Contractors - Full List

Customer Safety Alert

DID YOU KNOW?
A tributary is a small stream that flows into a larger stream.

RELATED LINKS

- Steps to Reduce Exposure
- Lead Pipe Replacement Program
- Lead Testing Centers
- Other Lead Sources

Contact Us | Employment | Links | Glossary | Site Map | Privacy Policy | FAQ

Copyright © 2017 | Boston Water and Sewer Commission | 980 Harrison Ave. Boston, MA 02119 | (617) 686-7000

15



Quincy On-Line PDF Map and List

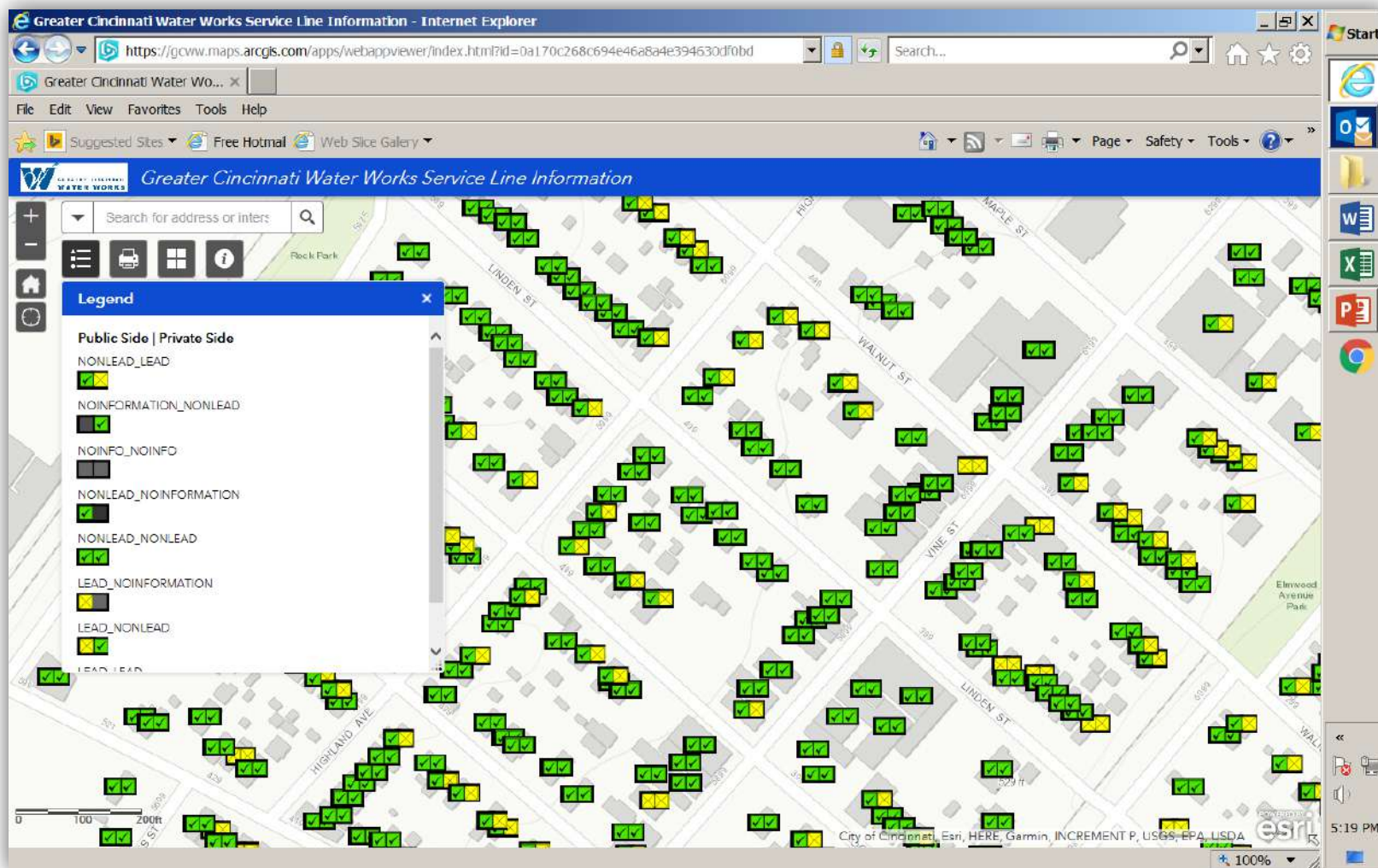


Site Address

| | | |
|-------------------------------|------------------------|----------------------------|
| 188 ALBATROSS ROAD | 110 DYSART STREET | 45-47 NIGHTINGALE AVENUE |
| 35 APPLETON STREET | 43 ELM AVENUE | 135 NORFOLK STREET |
| 41 APPLETON STREET | 130-132 ELM STREET | 153 NORFOLK STREET |
| 166 ARLINGTON STREET | 104 ELMWOOD AVENUE | 183 NORFOLK STREET |
| 225 ARLINGTON STREET | 143 ELMWOOD AVENUE | 109 NORTH CENTRAL AVENUE |
| 74 ARNOLD ROAD | 21 ENDICOTT STREET | 28 NORTH CENTRAL AVENUE |
| 21 ARTHUR STREET | 29 EUSTIS STREET | 33 NORTH CENTRAL AVENUE |
| 30 ARTHUR STREET | 231 EVERETT STREET | 39 NORTH CENTRAL AVENUE |
| 32 ARTHUR STREET | 235-237 EVERETT STREET | 64 NORTH CENTRAL AVENUE |
| 35 ARTHUR STREET | 34 FAIRMOUNT WAY | 92 NORTH CENTRAL AVENUE |
| 13 BALLOU STREET | 196 FARRINGTON STREET | 35-37 NORTH PAYNE STREET |
| 15 BALLOU STREET | 252 FARRINGTON STREET | 40 NORTHFIELD AVENUE |
| 18 BARRY STREET | 248 FARRINGTON STREET | 32 PROSPECT AVENUE |
| 23 BARRY STREET | 312 FARRINGTON STREET | 98 PUTNAM STREET |
| 51 BARRY STREET | 243 FAYETTE STREET | 891 SEA STREET |
| 25-27 BAXTER STREET | 76-78 GLOVER AVENUE | 1173 SEASTREET |
| 26-28 BAXTER STREET | 63 GODDARD STREET | 5-13 SHAW STREET |
| 85 BAYSIDE ROAD | 250 GRANITE STREET | 251 SOUTH CENTRAL AVENUE |
| 74 BEACH STREET | 342-344 GRANITE STREET | 39-41 SOUTH WALNUT STREET |
| 99 BEACH STREET | 32 GREENE STREET | 41 STEWART STREET |
| 129-131 BEACH STREET | 167 HARRIET AVENUE | 2-4 TOWN HILL STREET |
| 309 BEALE STREET | 243 HIGHLAND AVENUE | 32 VERCHILD STREET |
| 188 BELMONT STREET | 313 HIGHLAND AVENUE | 18 WALL STREET |
| 254 BELMONT STREET | 314 HIGHLAND AVENUE | 182 WARREN AVENUE |
| 269 BELMONT STREET | 25 HIGH SCHOOL AVENUE | 25-27 ARTHUR STREET |
| 31 THOMAS BURGIN PARKWAY | 48 HOBART STREET | 81 SOUTH WALNUT STREET |
| 117-119 THOMAS BURGIN PARKWAY | 17-19 HOLMES STREET | 26 BAY STATE ROAD |
| 94 BUTLER ROAD | 269 MANET AVENUE | 41-43 BRADFORD STREET |
| 21-23 CALEDONIA AVENUE | 14 MARION STREET | 199 THOMAS BURGIN PARKWAY |
| 69 CENTRE STREET | 42 MARION STREET | 35 CRESCENT STREET |
| 100-102 CENTRE STREET | 129 MARLBORO STREET | 288 FAYETTE STREET |
| 42-44 CHESTER STREET | 64-68 MERRYMOUNT ROAD | 1022 FURNACE BROOK PARKWAY |
| 22 CLIVE STREET | 118 MERRYMOUNT ROAD | 313 GRANITE STREET |
| 186 COMMON STREET | 15 MINIHANS LANE | 244 INDEPENDENCE AVENUE |
| 251 COMMON STREET | 151 MONROE ROAD | 70 KENT STREET |
| 51 COMMONWEALTH AVENUE | 8 MYRTLE STREET | 21 ROBERTSON STREET |
| 72 COMMONWEALTH AVENUE | 1-3 NELSON STREET | 35 SAGAMORE AVENUE |
| 321 COPELAND STREET | 15 NELSON STREET | 85 TABER STREET |
| 26 CRESCENT STREET | 40 NELSON STREET | |
| 106 CRESCENT STREET | 45 NELSON STREET | |
| 33 CUMMINGS AVENUE | 49 NELSON STREET | |
| 9 CUSHING STREET | 99 NEWBURY AVE. | |
| 11 CUSHING STREET | 52 NEWCOMB STREET | |
| | 51 NEWTON AVENUE | |
| | 37 NIGHTINGALE AVENUE | |
| | 42 NIGHTINGALE AVENUE | |
| | 87 NIGHTINGALE AVENUE | |
| | 35 NIGHTINGALE AVENUE | |



Cincinnati Interactive Service Line Map





BWSC Website – Disclosure Statement

Lead Service Map

Guest

bwsc.org/COMMUNITY/lead/leadmaps.asp#TOP_PAGE

200ft

City of Cambridge, MassGl...

POWERED BY esri


DISCLAIMER: The maps provided by the Boston Water and Sewer Commission (BWSC) are based on property surveys conducted during the installation of the Automated Meter Reading system, as well as information directly provided by customers and acquired during physical inspections. BWSC 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 information regarding their private water services, and not for any commercial, legal or other use. These records will be updated on a monthly basis, or at such alternate times as BWSC designates. BWSC reserves the right to alter, amend or terminate at any time the display of these maps and records.

Home | Employment | Links | Glossary | Site Map | Privacy Policy

Copyright © 2017 | Boston Water and Sewer Commission | 980 Harrison Ave. Boston, MA 02119 | (617) 989-7



EPA Urging More Transparency With Lead Sample Results -- We're Setting an Example -- www.mwra.com



Massachusetts Water Resources Authority
Charlestown Navy Yard, 100 First Avenue
Boston, Massachusetts 02129
(617) 242-6000

Home

WELCOME!

About MWRA

Transparency

Water System

Sewer System

Harbor and Bay

School Program


Doing Business with MWRA

Contact MWRA

Job Postings


Links

Current Projects



Updates on ongoing projects

Renewable Energy at MWRA




What's Happening in Flint's Water System and How is MWRA Different (PDF)

More:

- Facts about Lead in Drinking Water
- How to Get Your Water Tested

Notice for Residents of Winchester:


Town Will Temporarily Use of MWRA Water March 2 - May 15, 2016



News

MWRA Pipe Repair May Cause Discolored Water in Areas of Medford and Somerville

March 17, 2016




Fix A Leak Week: March 14-20, 2016

Find and fix leaks!

In just **10 minutes** you could **save...**

10 percent on your water bill

10 thousand gallons of water



Search

Important Notice

There are no notices at this time.

Sign Up For Notifications

Want to know how your water quality is? Looking for updates on the MWRA construction project in your neighborhood? What if there is a water emergency in your area? MWRA can keep you informed when you're at home, at work or on the road. Take a few minutes to **sign up** and get notifications on your phone, by email, or text message.

[Sign Up for MWRA Alerts](#)

MWRA 24-Hour Emergency Contacts

| | |
|-----------|--------------|
| Water: | 617-305-5950 |
| Sewer: | 617-305-5940 |
| Security: | 877-697-6972 |
| TTY: | 617-371-1903 |

Non-Emergency Contacts

Follow Us

[Twitter](#) [Facebook](#) [YouTube](#) [RSS](#)

What You Need About Lead in Water

Test Results

Water Quality Hotline 617-5323

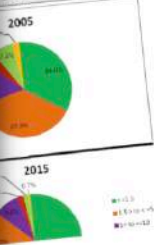
Joshua Dan

Protection Agency - usually older homes tested. Also, only first flush EPA rule requires that the Action Level of 15

readily since 1992. Also, dropped nearly 90%. Also,

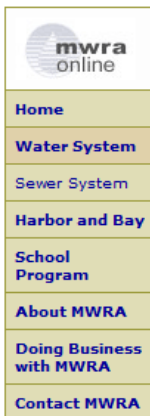
2005

2015





Transparency With Lead Results – They're All There



Lead Test Results, Drinking Water: Historical Household Data Massachusetts Water Resources Authority

Linked to this page are individual results going back to 1992, when lead levels had already dropped by about 50%.

[1992-2009 \(PDF\)](#) | [2010-2015 \(PDF\)](#)

The results are presented with addresses eliminated to protect the individuals' privacy. Each volunteer who participated in the sampling program received his or her own individual results.

These individual results provide a snapshot of what is happening in a specific house when the water has sat stagnant. Because the sampling protocol is designed to evaluate the effectiveness of corrosion control, the results do not provide real information about the water a typical customer would typically drink.

We sample only the homes most likely to have any lead, and then sample that stagnant water most likely to have leached any lead. Most consumers do not actually consume that stagnant water.

To remove stagnant water from your home's system, and to reduce the potential of lead leaching into your tap water, run the faucet for about one minute, until the water turns noticeably colder. Visit our [What You Need to Know about Lead in Drinking Water](#) page for more information.

If you have questions or would like more information about lead in drinking water, please call our Water Quality Hotline: 617-242-5323, or email Joshua Das, Project Manager, Public Health: joshua.das@mwra.com

Updated December 18, 2015

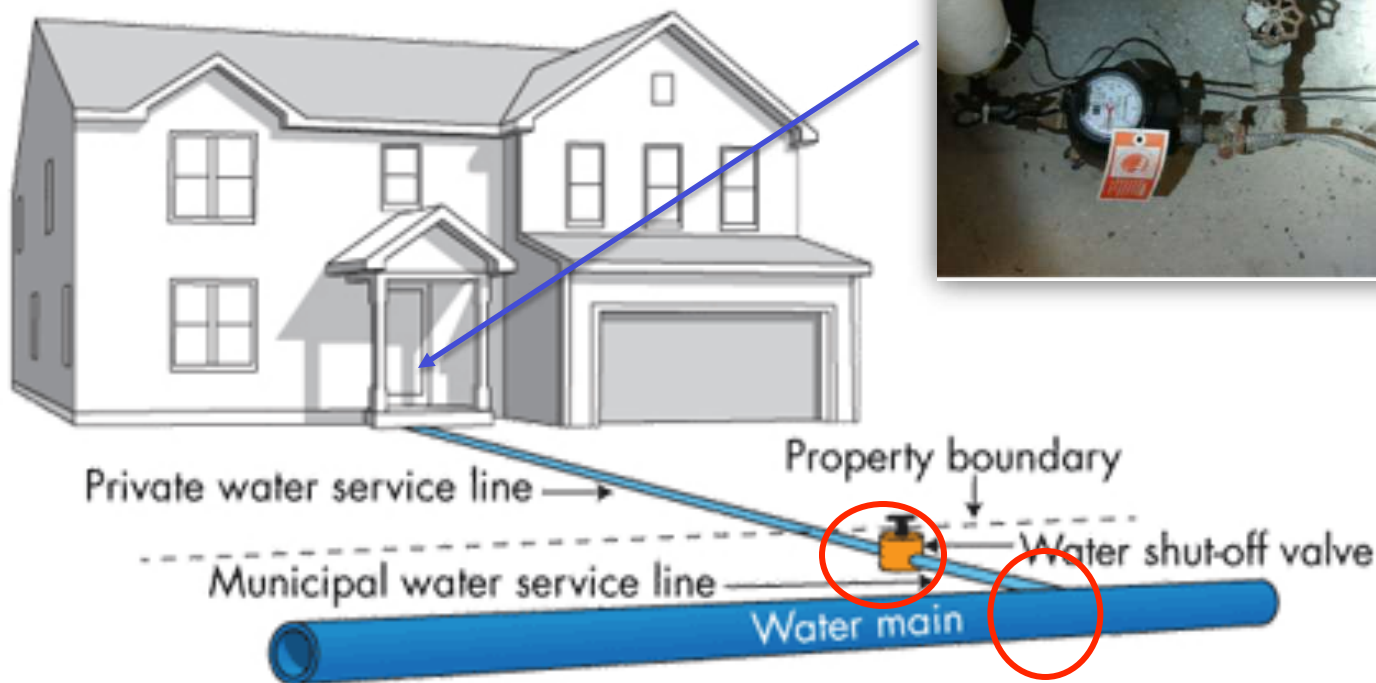
| MORE INFORMATION | |
|---|--|
| Back to lead test results - graphs | |
| Back to lead test results main page | |
| Back to "What You Need To Know About Lead in Tap Water" page | |
| PRINTER-FRIENDLY DATA | |
| Analysis of Lead Levels from MWRA Communities 1998-2011 (PDF) | |
| Individual Household Results | |
| 1992-2009 (PDF) | |
| 2010-2014 (PDF) | |
| MORE WATER TEST RESULTS | |
| Annual Test Results | |
| Monthly Test Results | |
| CONTACT US | |
| MWRA Water Quality Hotline 617-242-5323 | |
| Email: Joshua Das | |

Lead and Copper Results from 2010 through 2015
All results in ppb

| Community | Mar-10 | Sep-10 | Mar-11 | Sep-11 | Mar-12 | Sep-12 | Mar-13 | Sep-13 | Mar-14 | Sep-14 | Mar-15 | Sep-15 |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Arlington | | | | | | | | | | | | |
| 1 | 2.91 | 1.08 | 0.936 | 1.13 | | 1.89 | 2.85 | | 1.19 | 1.94 | | |
| 2 | 0.038 | 0.044 | 0.113 | 0.145 | 0.608 | 0.126 | 0.126 | 0.126 | 0.126 | 0.126 | 0.126 | 0.126 |
| 3 | 1.72 | 1.6 | 1.99 | 1.88 | 1.17 | 1.53 | 1.53 | 1.53 | 1.53 | 1.53 | 1.53 | 1.53 |
| 4 | 1.45 | 0.409 | 1.07 | 1.59 | 20.5 | 7.18 | 7.18 | 7.18 | 7.18 | 7.18 | 7.18 | 7.18 |
| 5 | 11.6 | 16.2 | 2.13 | 26.6 | 1.1 | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| 6 | 0.881 | 0.388 | 0.756 | 0.779 | 0.103 | 0.478 | 0 | 1.53 | 1.53 | 1.53 | 1.53 | 1.53 |
| 7 | 0.295 | 1.42 | 0.183 | 0.688 | 1.66 | | | | | | | |
| 8 | | | | | | | 2.72 | 3.08 | | | | |
| 9 | 1.15 | 2.45 | 3.33 | 3.51 | | | 0.0664 | 0.0762 | 0.0762 | 0.0762 | 0.0762 | 0.0762 |
| 10 | | | | | 0.0641 | 0.154 | | | | | | |
| 11 | 0.127 | 1.04 | 0.0807 | 0.342 | | | | 0.125 | 0.125 | 0.125 | 0.125 | 0.125 |
| 12 | | | | | | | 2.04 | | | | | |
| 13 | | | | | 1.28 | | 0.101 | | | | | |
| 14 | 0.75 | 0.187 | 0.288 | 2.85 | | | 1.09 | 0.137 | 0.137 | 0.137 | 0.137 | 0.137 |
| 15 | 0.172 | 0.177 | 0.109 | 0.181 | 1.17 | 0.0891 | 0.0891 | 0.158 | 0.158 | 0.158 | 0.158 | 0.158 |
| 16 | 0.293 | 1.29 | 1.22 | 1.09 | | | 0.989 | 0.934 | 0.934 | 0.934 | 0.934 | 0.934 |
| 17 | 0.175 | 0.629 | 0.112 | 0.111 | | | | | | | | |
| 18 | 0.358 | 0.405 | 0.623 | | 0.823 | | | | | | | |
| 19 | 1.21 | 1.08 | 0.969 | 1.05 | | | 1.54 | 0.960 | 0.960 | 0.960 | 0.960 | 0.960 |
| 20 | | | | | 1.75 | 1.54 | 0.903 | 1.76 | 1.76 | 1.76 | 1.76 | 1.76 |
| Belmont | | | | | | | | | | | | |
| 1 | 51.4 | 0.482 | 4.46 | 2.72 | 1.34 | | | 1.34 | 1.34 | 1.34 | 1.34 | 1.34 |
| 2 | 3.08 | 1.87 | 0.95 | 1.55 | | | 1.62 | 0.588 | 0.588 | 0.588 | 0.588 | 0.588 |
| 3 | | | | | 1.93 | | | | | | | |
| 4 | 1.49 | 1.53 | 1.81 | 1.24 | 1.75 | 0.629 | 0.558 | 0.52 | 0.52 | 0.52 | 0.52 | 0.52 |
| 5 | 1.57 | 4.8 | 1.09 | 0.768 | 0.162 | | | | | | | |
| 6 | 0.134 | 0.113 | 0.209 | 18.1 | | | 0.622 | 1.24 | 1.24 | 1.24 | 1.24 | 1.24 |
| 7 | 0.236 | 0.29 | 0.151 | 0.205 | 1.28 | 3.7 | 2.35 | 2.35 | 2.35 | 2.35 | 2.35 | 2.35 |
| 8 | 1.52 | 0.293 | 0.305 | 1.09 | 1.59 | 4.29 | 0.471 | | | | | |
| 9 | 6.98 | 2.76 | 4.62 | 5.87 | 3.79 | 0.728 | | | | | | |
| 10 | 4.24 | 1.24 | 3.64 | 3.34 | 1.75 | | | | | | | |
| 11 | 0.732 | 0.987 | 0.606 | 0.889 | | | 3.98 | 4.53 | 4.53 | 4.53 | 4.53 | 4.53 |
| 12 | | | | | 0.571 | 0.716 | 1.49 | 1.13 | 1.13 | 1.13 | 1.13 | 1.13 |
| 13 | 3.49 | 3.49 | 3.58 | 0.85 | 2.13 | 1.64 | 0.564 | 0.684 | 0.684 | 0.684 | 0.684 | 0.684 |
| 14 | 1.46 | 1.3 | 1.64 | 1.45 | | | 0.357 | 0.185 | 0.185 | 0.185 | 0.185 | 0.185 |
| 15 | 2.71 | 2.22 | 0.373 | 0.589 | | | 0.515 | 0.408 | 0.408 | 0.408 | 0.408 | 0.408 |
| 16 | 1.45 | 0.435 | 1.71 | | | | | | | | | |
| 17 | | | | | | | | | | | | |
| 18 | 0.251 | 0.328 | 2.13 | 0.252 | | | | | | | | |
| 19 | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | |
| Boston | | | | | | | | | | | | |
| 1 | 0.372 | 0.484 | | 4.27 | 4.36 | 7.89 | 5.82 | 5.99 | 5.99 | 5.99 | 5.99 | 5.99 |
| 2 | | | | | | | | | | | | |
| 3 | 5.35 | 7.18 | 5.86 | 3.79 | | | | | | | | |
| 4 | | | | | | | | | | | | |
| 5 | 2.36 | 0.75 | | | 0.174 | 0.231 | 0.813 | 0.963 | 0.963 | 0.963 | 0.963 | 0.963 |
| 6 | 1.91 | 0.961 | 0.582 | 0.247 | 4.27 | 0.58 | 0.559 | 0.115 | 0.115 | 0.115 | 0.115 | 0.115 |
| 7 | 7.4 | 5.23 | 5.26 | 5.09 | 1.47 | 0.381 | 0.27 | 7.17 | 7.17 | 7.17 | 7.17 | 7.17 |
| 8 | 0.782 | 0.345 | 0.83 | 0.429 | | | 5.82 | 5.82 | 5.82 | 5.82 | 5.82 | 5.82 |
| 9 | | | | | 6.19 | 0.896 | 0.965 | 2.31 | 2.31 | 2.31 | 2.31 | 2.31 |
| 10 | 6.6 | 4.54 | 6 | 1.77 | 0.917 | | | 13.9 | 13.9 | 13.9 | 13.9 | 13.9 |
| 11 | 1.52 | 0.727 | 0.318 | 0.96 | 0.676 | 15.3 | 7.1 | 24.2 | 24.2 | 24.2 | 24.2 | 24.2 |
| 12 | 0.954 | 1.52 | 0.55 | 1.25 | 6.78 | 6.2 | 4.72 | 1.06 | 1.06 | 1.06 | 1.06 | 1.06 |
| 13 | 18.9 | 14.4 | 11.8 | 14.9 | 5.9 | | | 0.960 | 0.960 | 0.960 | 0.960 | 0.960 |
| 14 | 9.25 | 6.58 | 6.39 | 0.01 | 0.018 | 0.127 | 0.583 | 7.15 | 7.15 | 7.15 | 7.15 | 7.15 |
| 15 | 2.88 | 4.07 | 3.55 | 7.22 | 0.188 | | | 0.529 | 0.529 | 0.529 | 0.529 | 0.529 |
| 16 | 0.614 | 0.559 | 0.152 | 0.295 | 17.4 | 10.7 | 4.21 | 0.236 | 0.236 | 0.236 | 0.236 | 0.236 |
| 17 | 18.5 | 30.3 | 18.6 | 18.4 | 6.47 | 0.997 | 0.676 | | | | | |
| 18 | 5.34 | 7.11 | 6.5 | 9.25 | | | | | | | | |
| 19 | 1.35 | 1.58 | 1.17 | 0.995 | | | | | | | | |
| 20 | | | | | 3.84 | | | | | | | |
| 21 | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | |
| 23 | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | |



Replacement Construction - \$5,000 to \$10,000



Meter Photo: Tata and Howard
Sketch: Quincy MA



Sometimes a bigger excavation is needed

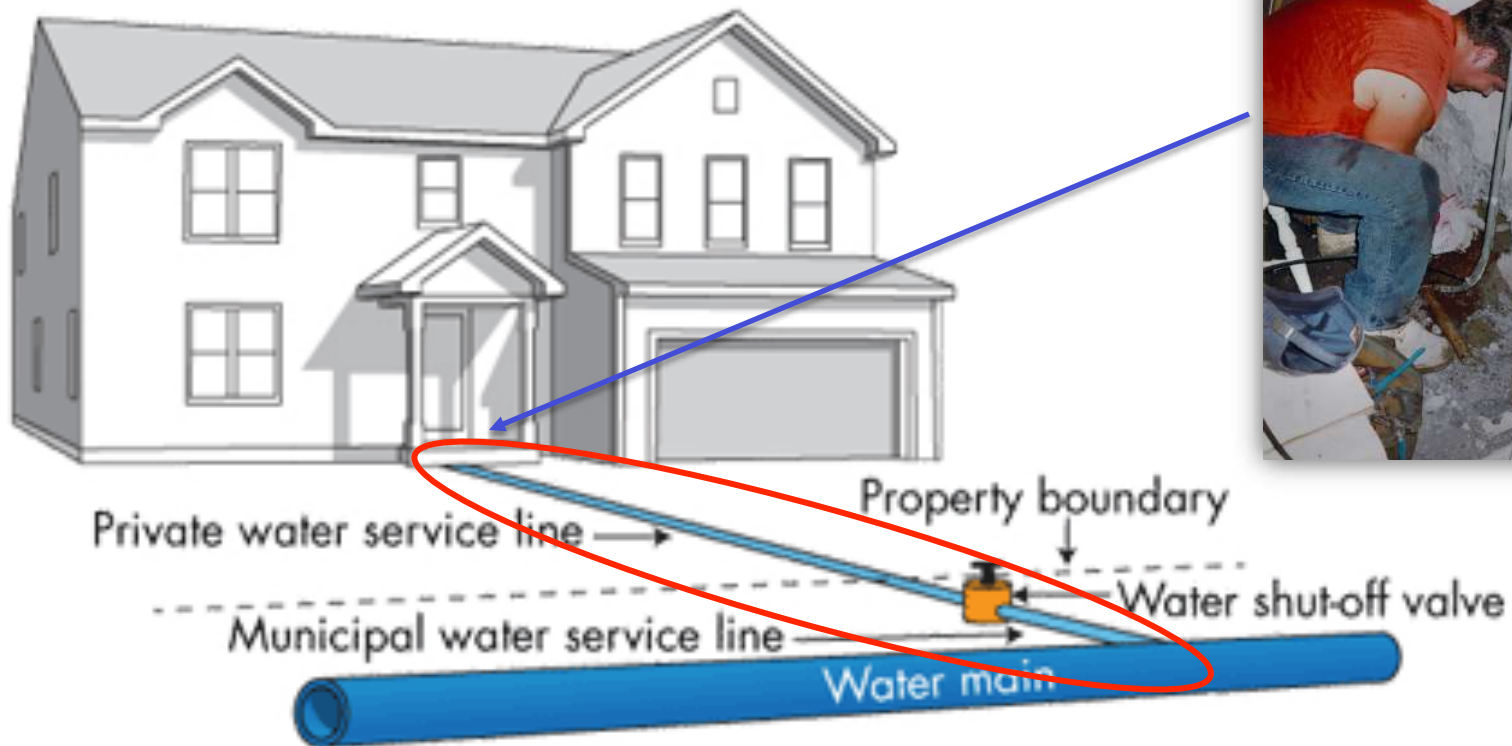




Photo: Tata and Howard

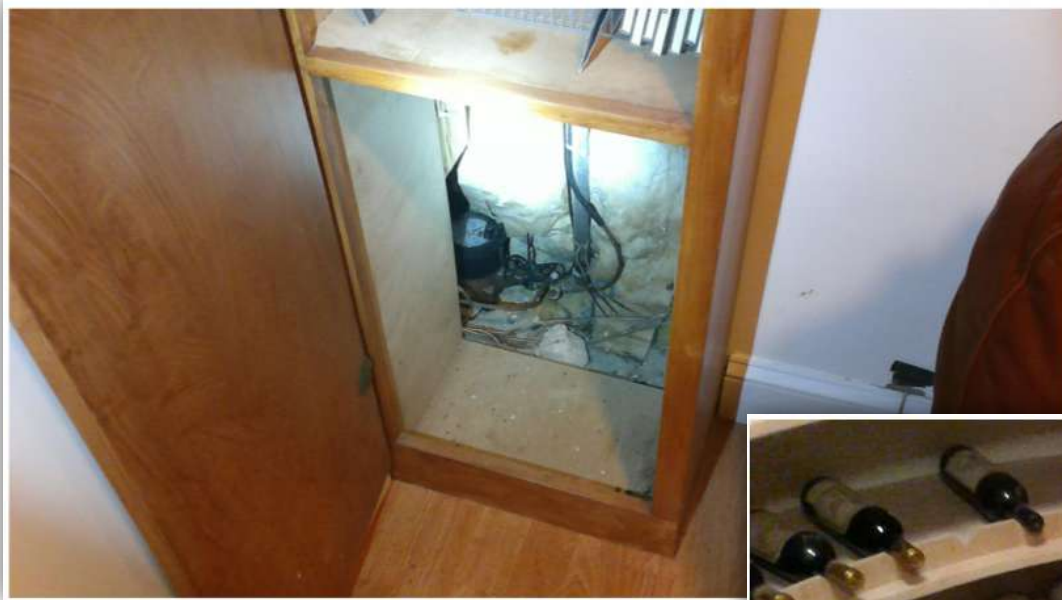








Of course it's not always easy...



Photos: Tata and Howard



How to Deal with the Cost?

- As Part of Routine Pipe Rehab Projects
- Special LSL Replacement Efforts
- Operating Funds, Bonds, SRF Funds, Special State Programs
- Biggest Hurdle is the Cost of Replacements on Private Property
 - System Pays for it All (Quincy, and several others)
 - System Pays All But \$1000 (Newark)
 - System Pays First \$2000, Zero Interest over 4 years (Boston)
 - Homeowner, with Zero Interest over 10 Years (Newton)
 - Homeowner Pays for All of Private Portion
- Who Hires the Contractor?



LEAD SERVICE LINE REPLACEMENT COLLABORATIVE

WWW.LSLR-COLLABORATIVE.ORG

Questions or Comments?

Stephen Estes-Smargiassi
smargias@mwra.com
617-788-4303
www.mwra.com



This presentation represents the opinions of the author and not necessarily those of the MWRA or the LSLR Collaborative