

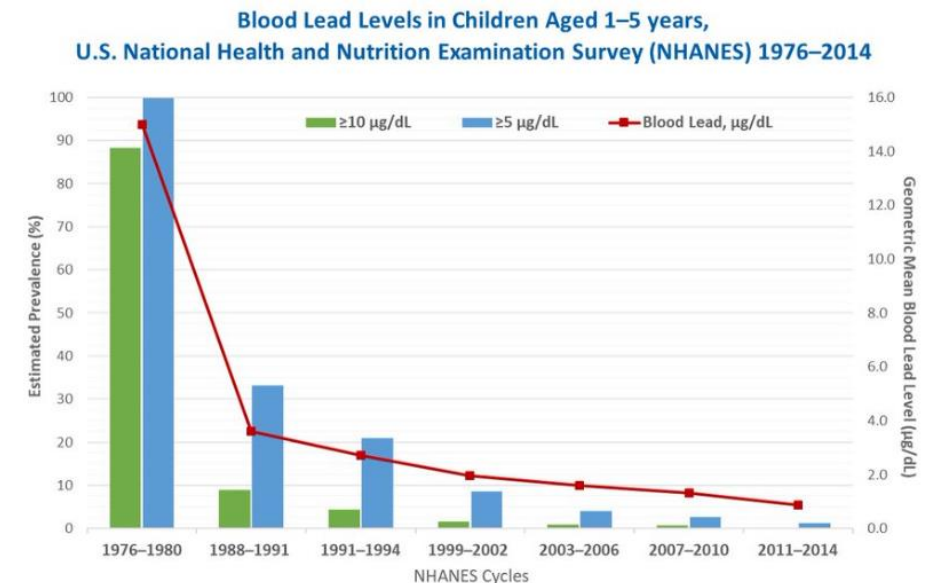


# Stoughton Water Quality

## 2019 Lead and Copper Sampling Program

# History of Lead

- ▶ Lead has been used for thousands of years due to its ease of extraction and malleability
  - ▶ During the Roman Empire, lead was commonly used to make water pipes and for many other uses
  - ▶ In the Industrial Revolution, new uses for lead emerged, including lead-based paints, and leaded gasoline.
- ▶ Increased use caused a greater understanding of the health risks
  - ▶ 1973 – Lead in Gasoline Phased out
  - ▶ 1978 – Residential Lead Paint Ban
  - ▶ 1986 – Lead in Plumbing < 8%
  - ▶ 1995 – Ban on lead solder in food cans
  - ▶ 2014 – Lead Ban in all Plumbing (Fixtures/Meters)



# Health Affects & Lead Exposure Sources

## How lead effects childrens' health

### Brain

Any exposure is linked to lowered **IQ, ADHD, hearing loss, and damaged nerves**. Acute exposures can cause **convulsions, loss of body movement, coma, stupor, hyperirritability, & death**.

### Hormones

Lead disrupts levels of vitamin D, which can **impair cell growth, maturation, and tooth and bone development**.

### Stomach

Severe lead exposure can create intense **abdominal pain and cramping**.

### Reproductive System

A moderate exposure can not only **lower sperm count**, but also **damage them**. Chronic exposures can diminish the concentration, total count, and motility of sperm, though it's unclear how long these effects last after the exposure ends.

### Heart

Studies suggest that adults who endured lead poisoning as children had significantly higher risks of **high blood pressure** 50 years later.

### Blood

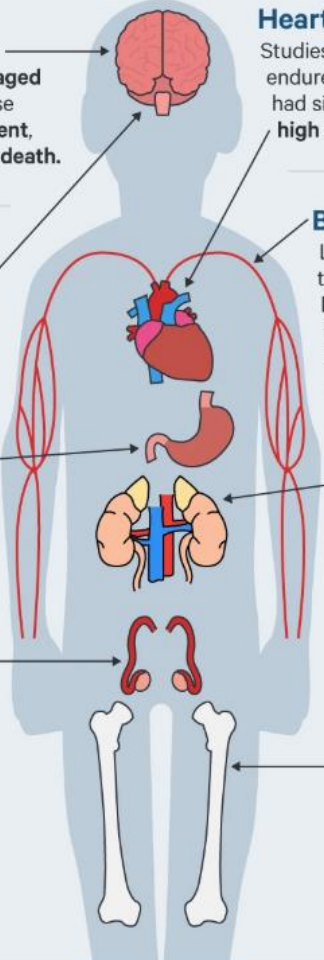
Lead inhibits the body's ability to make hemoglobin, which can lead to anemia. This reduces oxygen flow to organs, causing **fatigue, lightheadedness, rapid heartbeat, dizziness, & shortness of breath**.

### Kidneys

Chronic exposures can cause chronic inflammation, which can lead to **kidney failure, bloody urine, fever, nausea, vomiting, drowsiness, coma, weight gain, confusion, rash, and urinary changes**.

### Bones

Lead may impair development and the health of bones, which can **slow growth in children**.



SOURCES: Centers for Disease Control, World Health Organization  
TECH INSIDER



## Common sources of lead in the home:

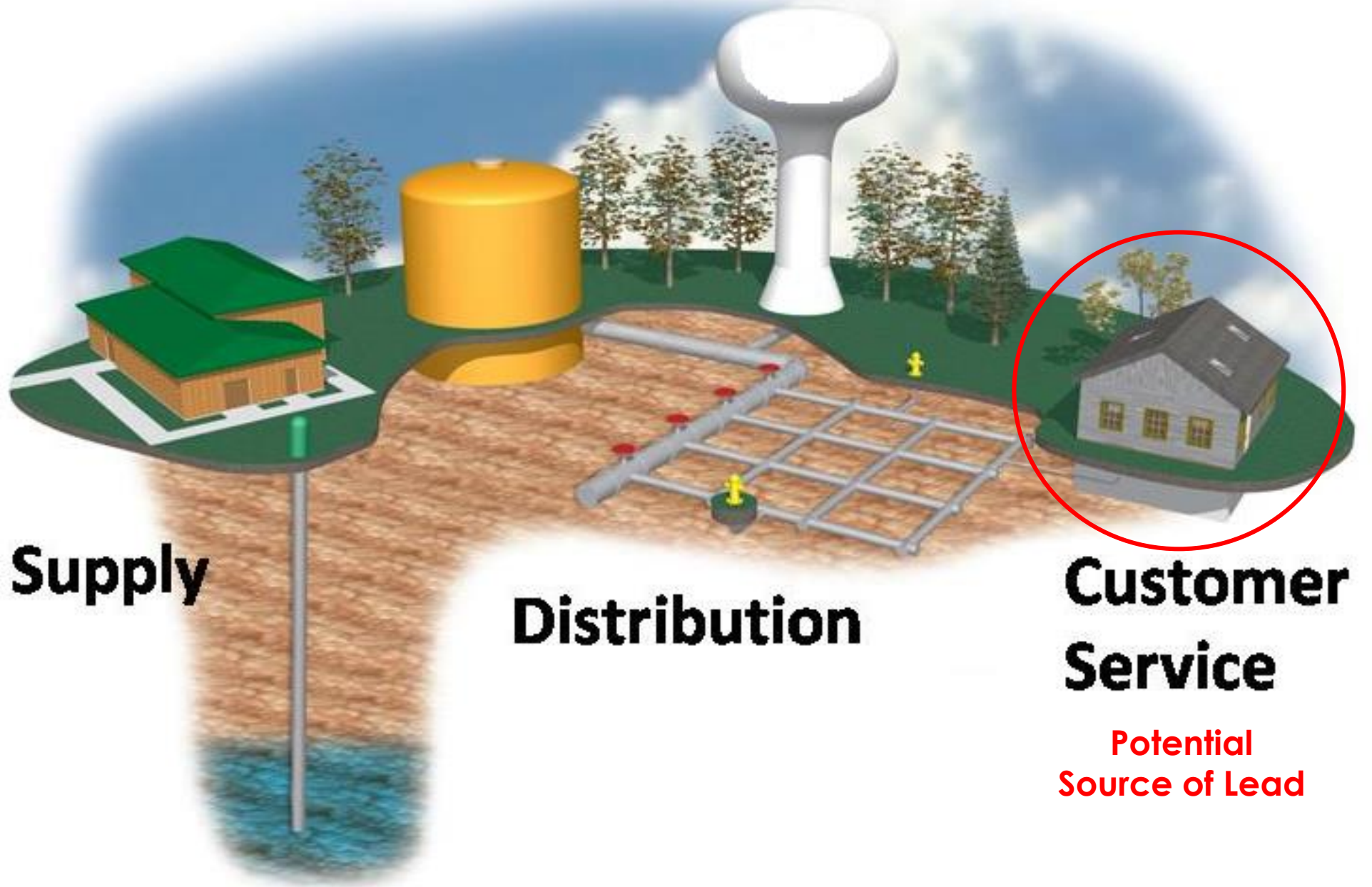
- Dust
- Soil
- **Water in lead pipes**
- Toys
- Nutritional supplements
- Dishware
- Fishing sinkers
- Bullets
- Residue from parent occupations
- Paint/hobby materials

# Stoughton Water Quality

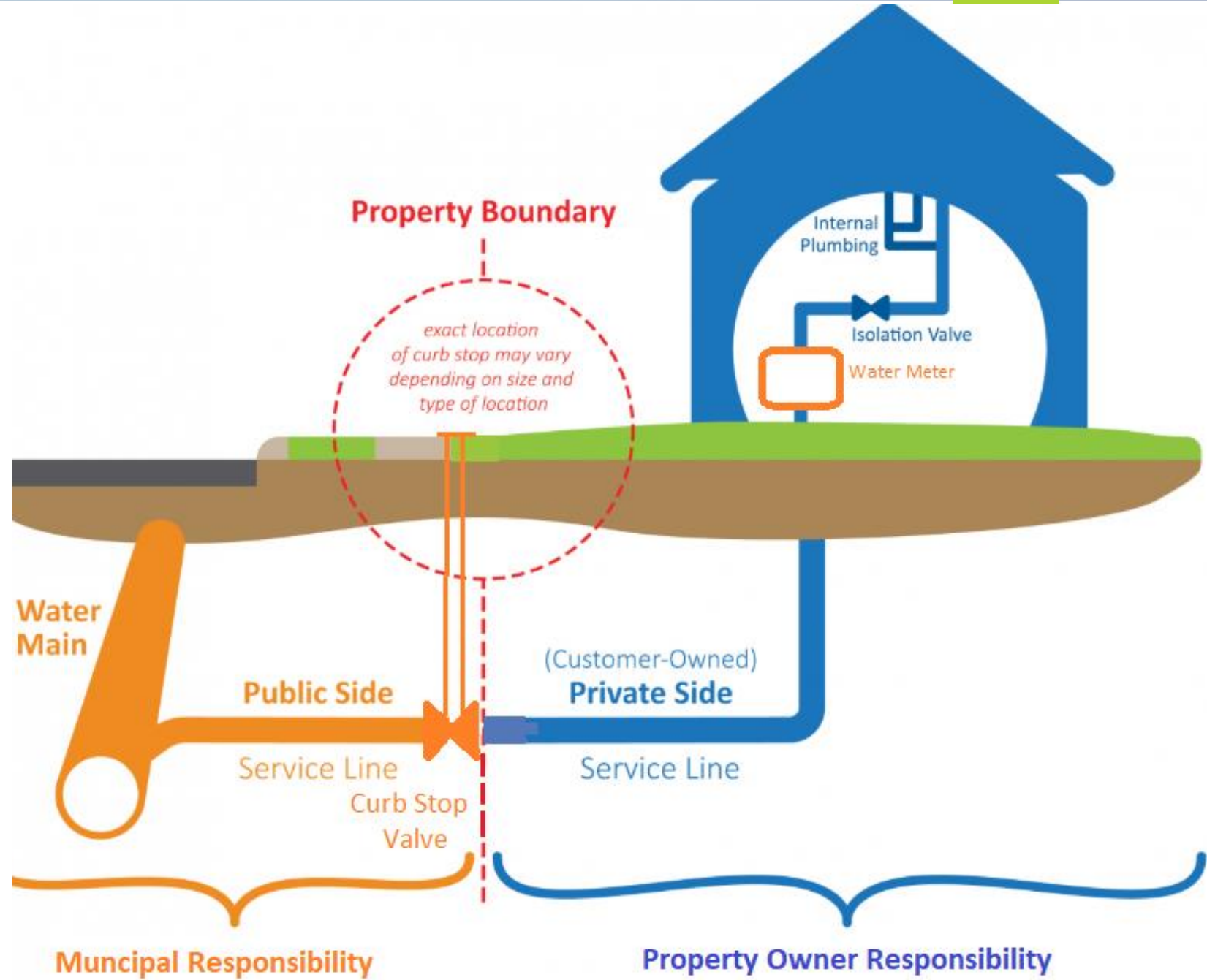
- ▶ Municipal water supplies are regulated by the Wisconsin Department of Natural Resources (DNR)
  - ▶ Municipal water supplies are more regulated than bottled water
- ▶ City of Stoughton Groundwater – Very high quality water
  - ▶ Pumped from groundwater aquifers
  - ▶ Important to continue to limit treatment



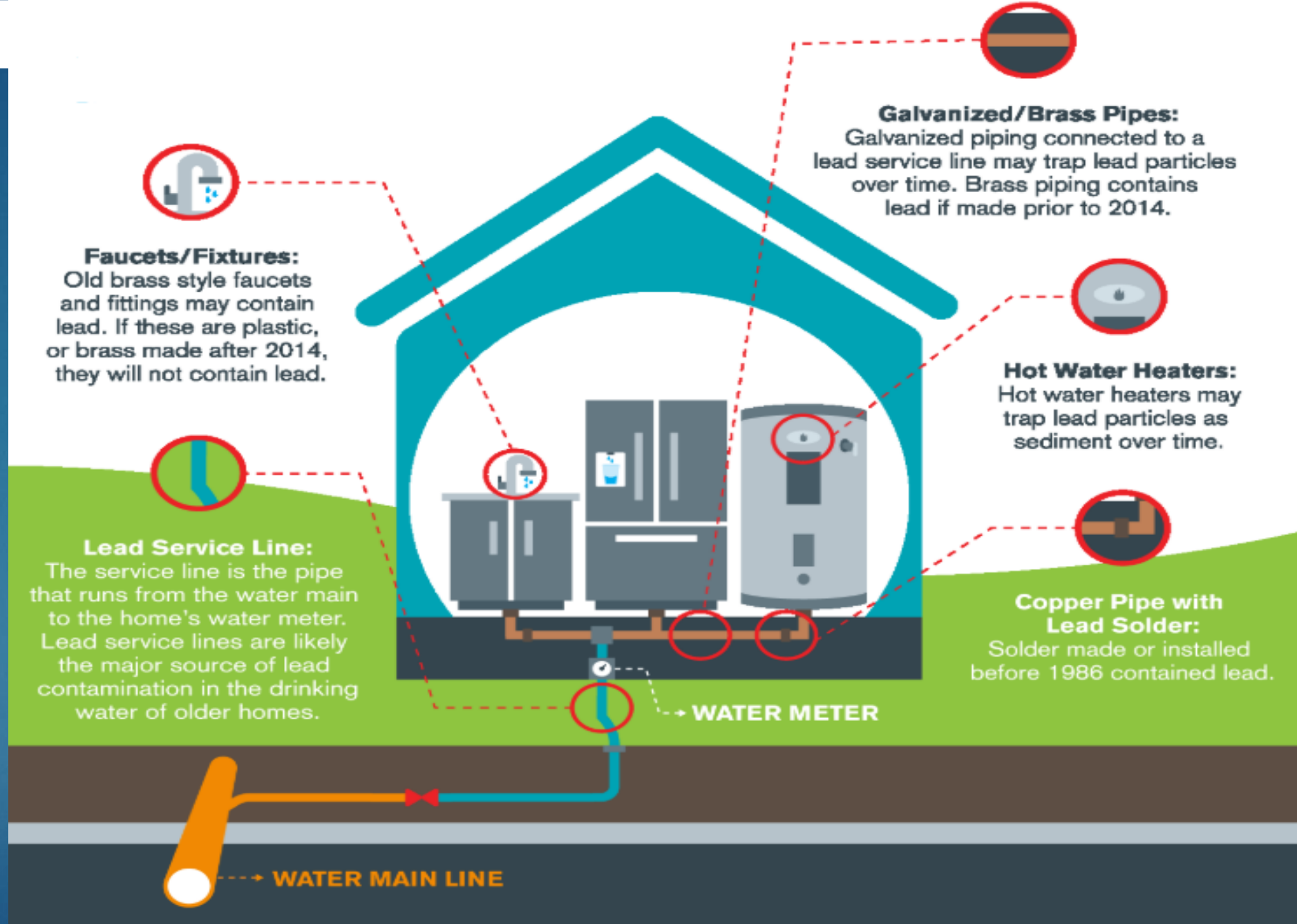
# Municipal Drinking Water System



# Water Service Line Pipe from the Water Main to the Home



# Sources of Lead in Drinking Water



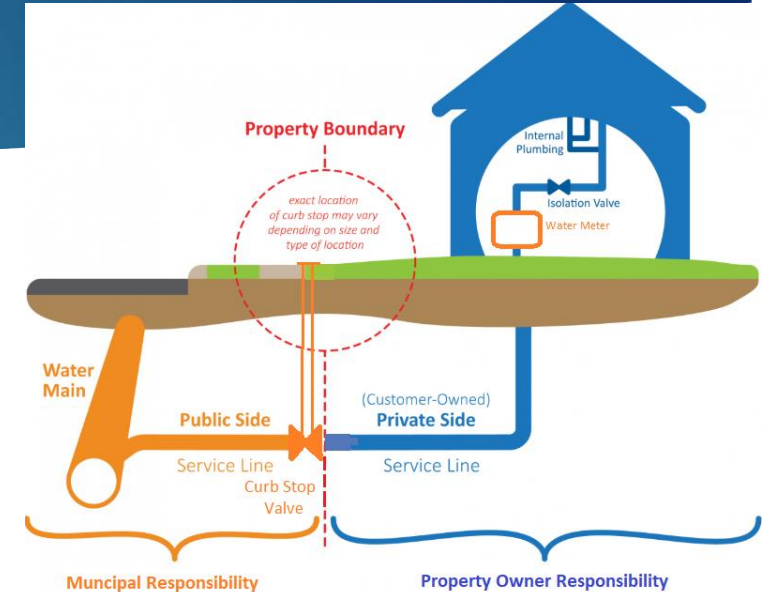
# Lead & Copper Rule

- ▶ 1991, EPA published a regulation to control lead and copper in drinking water – the Lead and Copper Rule (LCR)
  - ▶ Purpose: Protect public health by minimizing lead (Pb) and copper (Cu) levels in drinking water, primarily by reducing water corrosivity. Pb and Cu enter drinking water mainly from corrosion of Pb and Cu containing plumbing materials.
  - ▶ Establishes **action level (AL) of 0.015 mg/L for Pb and 1.3 mg/L for Cu based on 90th percentile level of tap water samples**. An **AL exceedance is not a violation** but can **trigger other requirements** that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement (LSLR).



# Sampling – Water Quality to the Tap

- ▶ Lead & Copper Sampling
  - ▶ Sampled at the tap (faucet used for drinking water)
  - ▶ Cold water
  - ▶ Unfiltered
  - ▶ No water use for at least 6 hours (stagnation)
    - ▶ Create contact between water and lead for a period of time
- ▶ Sample site – DNR approved sites (Greatest potential to have significant lead levels)
- ▶ Sampling taken from within homes
  - ▶ Utility has no control over private service materials and interior plumbing



# Stoughton Lead & Copper Rule Results

Action Level – 15 ppb

Samples sites –potential to have high lead levels

- lead services
- older homes

	2005	2008	2011	2014	2015-1*	2015-2*	2016	2017	2018	2019
<i>Average</i>	4.70	2.29	3.51	4.18	4.19	4.09	2.16	3.66	2.55	5.39
1	30	54	20	33	30	41	29	25	77	26
2	15	40	12	24	27	22	28	22	19	26
3	13	11	11	20	21	18	26	17	16	18
4	<b>12</b>	<b>9.8</b>	<b>8.4</b>	<b>19</b>	21	15	<b>12</b>	<b>15</b>	<b>11</b>	<b>18</b>
5	9.9	9.7	8.4	13	21	<b>13</b>	8.3	14	5.6	17
6	8.9	8.6	8	12	16	10	5.2	11	5.5	16
7	7.7	8.6	7.3	11	<b>15</b>	8.9	4.2	8.6	4.9	14
8	7.4	6.1	5.8	8.7	11	8.9	3.9	7.4	4.8	10
9	6.8	5.4	5.7	7.5	10	7.7	3.6	6	4.8	12
10	5.6	4.8	5.4	7.3	9.6	7.0	2.9	5.8	4.3	8.9
11	5.5	4.7	4.4	5.4	9.1	7	2.9	4.7	4	6
12	4.7	2.9	4	4.2	7.2	5.8	2.7	4.2	3.6	5.7
13	4.7	3.7	4.1	4.9	7	5.1	2.3	4.1	3.4	5.7
14	4.6	2.3	3.3	3.9	6.8	4.6	2.2	3.6	3	5.4
15	4.6	2.8	3.9	4.2	6.5	4.5	2.1	3.6	2.9	4.1
16	4.5	0.0	3.3	3.6	6.3	4.5	2	3.6	2.6	3.9
17	4.4	0.0	2.8	3.6	5.5	4.5	1.7	3.3	2.3	3.7
18	4.2	0.0	2.6	3.4	5.1	4.1	1.4	2.7	1.9	3.4
19	4.1	0	2.5	1.9	5	3.9	1.3	2.5	1.7	3.3
20	4.1	0.0	2.5	2	4.9	3.8	1.2	2.4	1.6	3.3
21	3.7	0.0	2.4	1.8	4.4	3.3	1.1	2.4	1.4	2.9
22	3.5	0.0	2	1.5	4.3	3.2	1.1	2.1	1.4	2.9
23	3.5	0.0	2.2	1.5	4.3	3.0	1	1.9	1.1	2.4
24	3.3	0.0	1.7	1.1	4	2.2	0.99	1.8	1.1	2.5
25	3.3	0.0	1.8	1.5	3.7	2.1	0.91	1.6	0.96	1.9
26	3.2	0.0	1.7	1	3.3	1.8	0.9	1.6	0.89	1.3
27	2.8	0.0	1.6	0.91	3	1.8	0.73	1.5	0.8	1.3
28	2.7	0.0	1.6	0.71	3	1.7	0.57	1.4	0.67	1.1
29	2.3	0.0	1.2	0.65	3	1.6	0.5	1.1	0.6	1
30	2.2	0.0	1.1	1.4	2.9	1.6	0.39	1.1	0.59	0.47

\* More than 30 samples taken – only highest 30 samples shown

90<sup>th</sup> Percentile  
- bold numbers

Threat of exposure exists as long as water can come into contact with lead.

# LEAD SERVICE ESTIMATE

## Summary:

Total Laterals: 4,853

Total Public Lead: 596

Total Private Lead: 756

## Breakdown:

Public & Private: 525

Public Only\*: 71

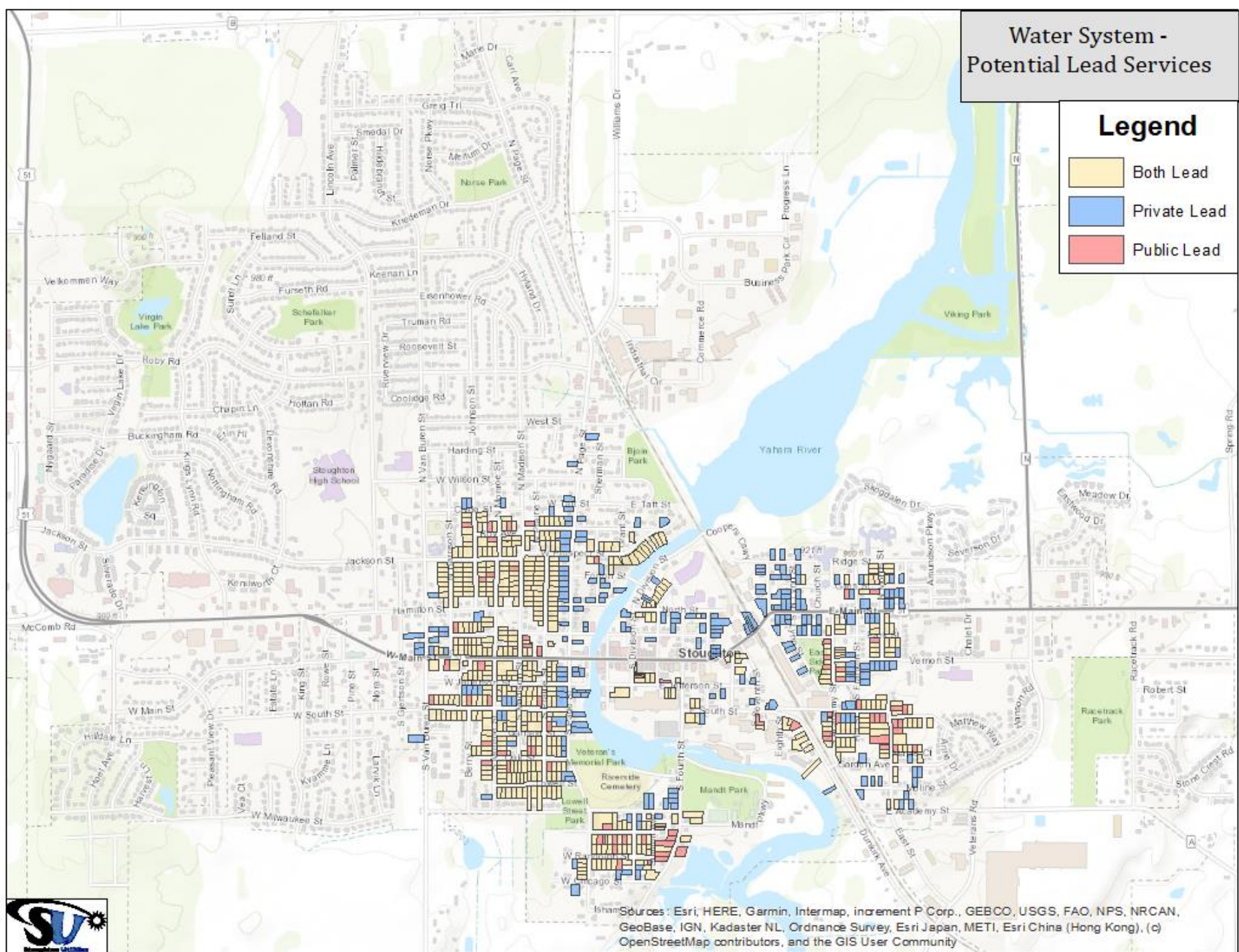
Private Only: 231

## Percentages:

Public Lead: 12.3%

Private Lead: 15.6%

\* Excavating to verify



# How to identify a lead water service line



1. Gather the necessary tools. You will need a flathead screw driver and a magnet.
2. Locate the water service line coming into your building. This is typically found coming into the basement through the wall or floor. Connected to that pipe there should be a valve, followed by the water meter.
3. Locate the pipe test area. Test the section of pipe between where the pipe comes into the building and the first valve. If it is covered or wrapped, expose a small area to test.
4. Use the flat edge of the screwdriver to scratch through any outside corrosion on the pipe.
5. If the scraped area is shiny and silver, your service line is lead. A magnet will not stick to lead.
6. If the scraped area is copper in color like a penny, then your service line is copper. A magnet will not stick to copper.
7. If the scraped area remains a dull gray and the magnet sticks to the pipe, then your service line is galvanized steel.



Lead Pipe



Copper Pipe



Galvanized Steel Pipe

# Solution? Eliminate Source of Lead!

## What to do if you have a lead water service line



If you determine that your home has a lead water service line, the best way to ensure that you continue to have safe drinking water is to replace the privately-owned portion of the line with copper, iron, or plastic pipe. Stoughton Utilities will replace the publicly-owned portion at the same time. Replacement of the privately-owned water service line will be done at the homeowners expense and costs on average \$3,000 - \$5,000. A licensed plumber can provide you with a price quote for your property.

Stoughton Utilities will provide a water filtration pitcher at no cost to homes served by lead service lines where residents may be at a higher risk of the health impacts from lead, such as homes with young children or expectant mothers. These water pitchers are NSF/ANSI 53 certified to reduce lead levels in your drinking water. If a member of your household is at a higher risk, simply bring a picture of your lead water service line into our office during business hours so that we can verify that your water service line is lead.

To have the water tested at your home, you may contact one of the following certified laboratories in the area:

- Wisconsin State Laboratory of Hygiene - (800) 442-4618
- Northern Lake Service, Inc - (715) 478-2777

# Intermediate Plan... Reduce Exposure

- ▶ Think contact time – Let cold water run before use

## Reduce Your Exposure To Lead



Use only cold water for drinking, cooking and making baby formula. *Boiling water does not remove lead from water.*



Regularly clean your faucet's screen (also known as an aerator).



Consider using a water filter certified to remove lead and know when it's time to replace the filter.



Before drinking, flush your pipes by running your tap, taking a shower, doing laundry or a load of dishes.

To find out for certain if you have lead in drinking water, **have your water tested.**

# Immediate Action Following Sample Results

- ▶ Stoughton Utilities initiated the following actions:
  - ▶ Engaged in community education and outreach,
    - ▶ Personally contacted:
      - ▶ Clinics
      - ▶ Hospital
      - ▶ Schools
      - ▶ Daycares
    - ▶ Media outlets – The Stoughton Courier Hub and other sources
    - ▶ Stoughton Utilities Website – [www.stoughtonutilities.com](http://www.stoughtonutilities.com)
    - ▶ Bill Messaging



# Immediate Action Following Sample Results

- ▶ Stoughton Utilities initiated the following actions:
  - ▶ Provided a water filtration pitcher at no cost to homes served by lead service lines where residents may be at a higher risk of the health impacts from lead, such as homes with young children or expectant mothers,





# Immediate Action Following Sample Results

- ▶ Stoughton Utilities initiated the following actions:
  - ▶ Conduct additional sampling,
  - ▶ Continue to remove lead service lines that are publicly-owned by the water utility, including prioritizing affected neighborhoods for street reconstruction projects,
    - ▶ 75 services being replaced in 2019 (public side)
  - ▶ Continue to encourage the removal of lead service lines that are privately-owned by property owners,
    - ▶ Six services being replaced in 2019 (private side)
  - ▶ Engage the Utilities Committee and Stoughton City Council to enact an ordinance requiring property owners and formalize lead service line replacement program to replace lead service lines present on the private side of the water system
    - ▶ Presentation to inform and next steps planning
    - ▶ Potential ordinance language being researched and reviewed

# Immediate Action Following Sample Results

- ▶ Stoughton Utilities initiated the following actions:
  - ▶ Collaborated with the DNR to achieve the requirements required of the utility following exceedance of the action level.
    - ▶ DNR Action Level letter received August 6, 2019
      - ▶ Initial requirements already in process
    - ▶ Corrosion Control Treatment Report
      - ▶ DNR next steps
    - ▶ Lead Service Line Replacement Program
      - ▶ Ordinance creation
      - ▶ Program / plan development
      - ▶ Funding sources & rate impact analysis



# Next Steps to Achieve Solution – Lead Free

- ▶ Continue Education and Outreach Program
- ▶ **Complete Corrosion Control Treatment Report**
  - ▶ **DNR Response**
    - ▶ **Platform for Creation of Lead Service Line Replacement Program**
- ▶ Sampling
  - ▶ 2020 Sampling 60 sites
    - ▶ 90<sup>th</sup> percentile below 15 ppb and Action Level No Longer Designation
- ▶ **EPA – New Lead & Copper Rule**
  - ▶ **Lowered Action Level (10 ppb or 7 ppb discussed)**
  - ▶ **Disallow partial replacement (no long replace public if private not also replaced)**
- ▶ **Plan for lead service replacement types - Lead Service Line Replacement Program**

