

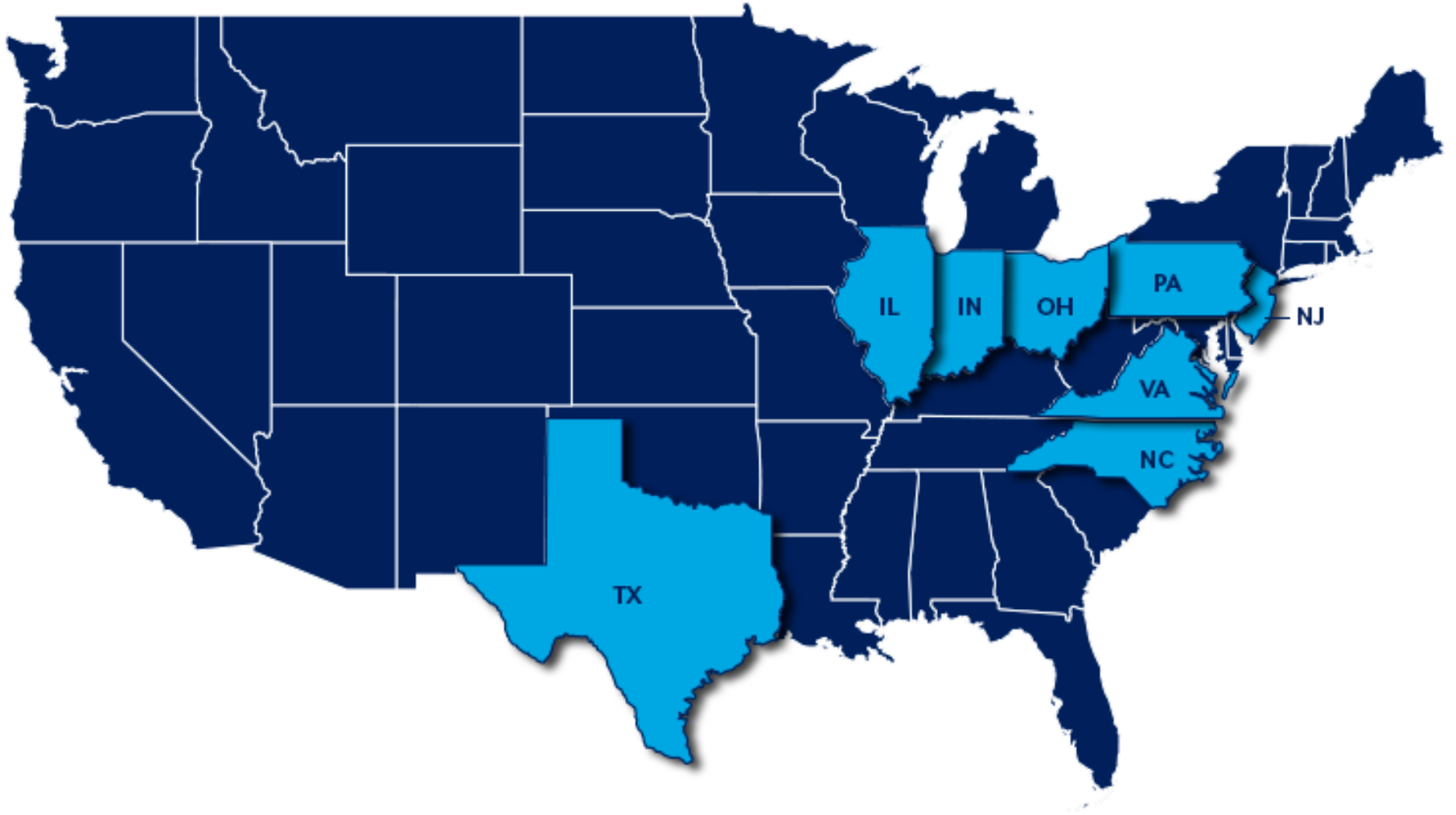


**Lead in Drinking
Water – Moving
Beyond Regulation
to Protect Public
Health**

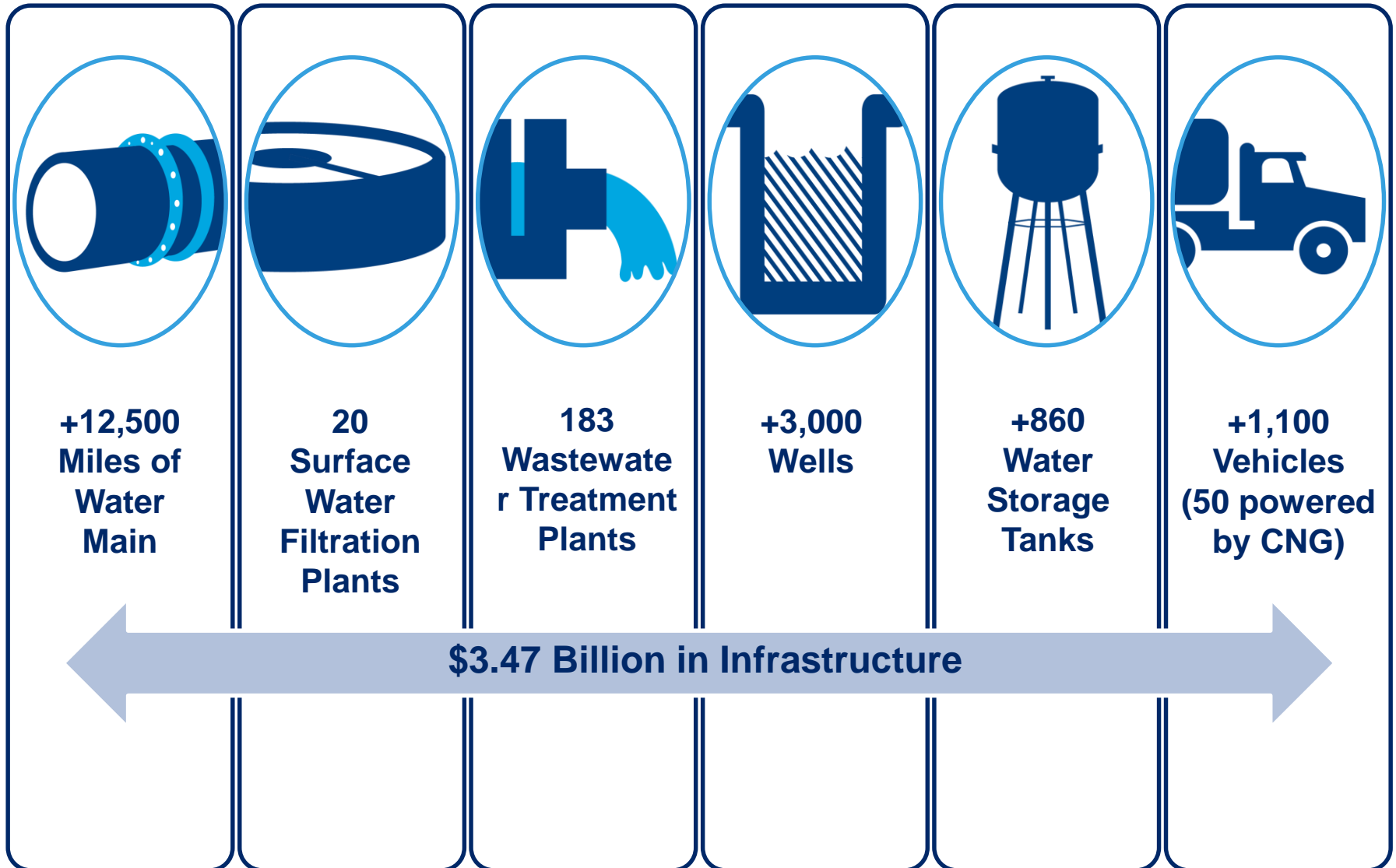
AQUASM

*The Institute for Regulatory
Policy Studies
Department of Economics,
Illinois State University*

Aqua America



Aqua Infrastructure Footprint



How Did The Industry Get Here?

- Background
 - History of Lead Use
 - Health Effects of Lead
 - Lead and Copper Rule
 - Where is the Lead?



- Flint, MI Debacle
 - More Than Just Lead
 - Assessing/Permitting System Changes

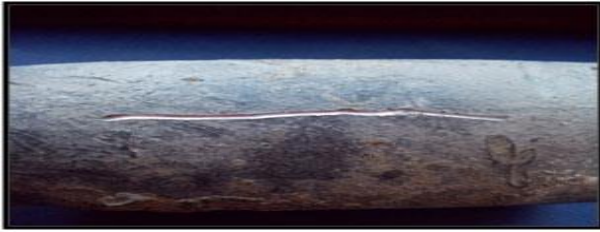
History of Lead Use

- Plumbing derived from “plumbum” which is Latin for “lead”
- Used 1800’s and early 1900’s
- Health effects started to be observed in late 1800s



- Malleable and easy to bend
- Characterized by “bulb” shape
- Goosenecks use near water mains – also called pigtails

Identifying Lead Service Lines



- Lead service lines are generally a dull gray color and are very soft. You can identify them easily by carefully scratching with a key.
- **If the pipe is made of lead, the area you've scratched will turn a bright silver color.**
- Do not use a knife or other sharp instrument and take care not to puncture a hole in the pipe.
- A magnet will not stick to a lead pipe.



Lead service lines often end just inside the front or side wall of the home, but may extend further into the building as shown, where the lead service line comes out of the basement floor to the water meter and then back into the floor, continuing further into the building.



Lead service lines can be connected to the residential plumbing using solder and have a characteristic solder "bulb" at the end, a compression fitting, or other connector made of galvanized iron or brass/bronze.

Health Effects of Lead

- Children Most Susceptible
 - Damage to brain, red blood cells and kidneys
 - Low IQ, hearing impairment, reduced attention span
 - Poor classroom performance



- Adults Can Be Impacted
 - Increased blood pressure
 - Pregnant women – lower birth weight and slowing of child development

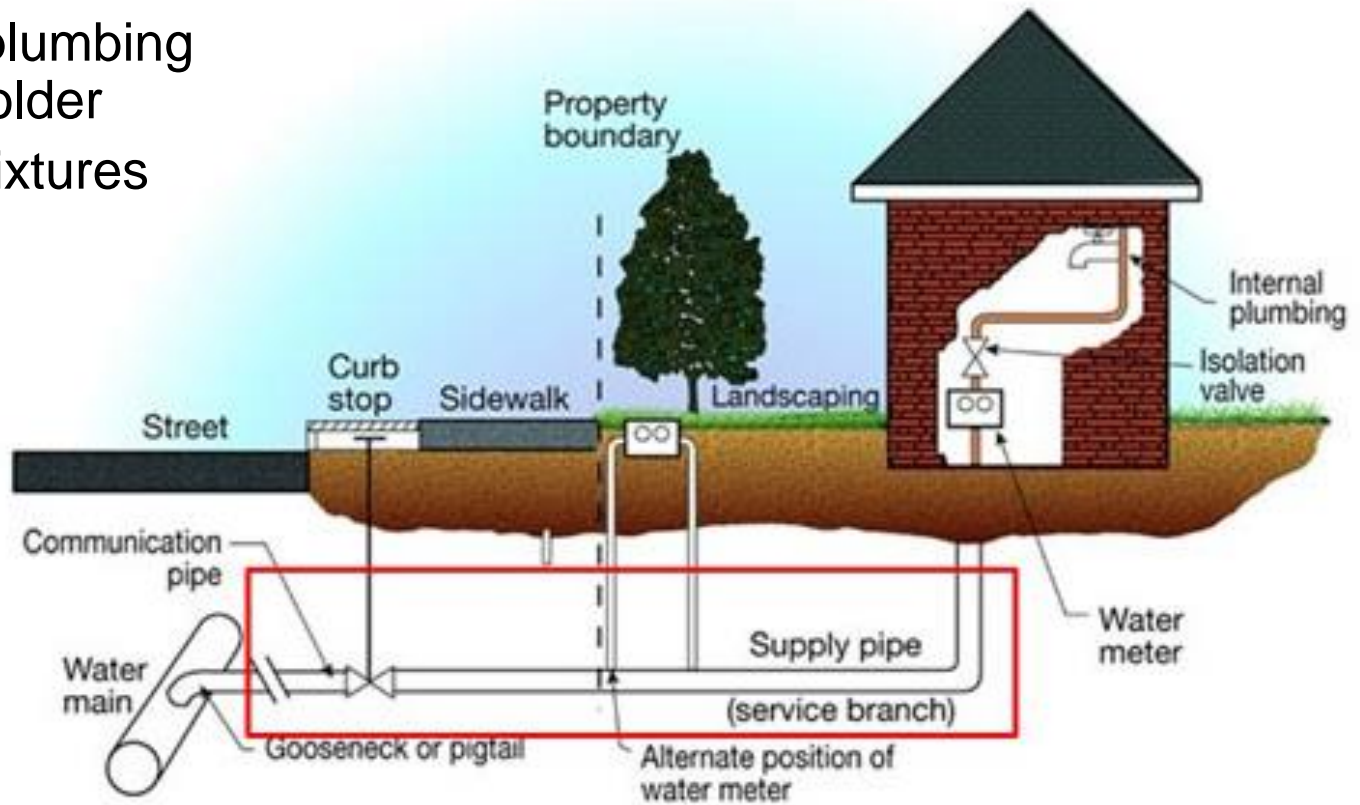
Lead and Copper Rule

- Overview of LCR
 - Purpose to protect public health by reducing water corrosivity
 - Established an action level (AL) of 15 ug/L for lead
 - Based on 90th percentile of home samples
 - Number of homes sampled based on size of water system
- Sampling Plan:
 - 100% must be Tier 1 sampling sites if available (built after 1982 but before the effective date of State's lead ban or contain lead pipes)
 - 50% must have lead service lines if possible
 - Samples must be collected after a 6-hr minimum stagnation period
 - Home cannot have Point of Entry treatment



Where Is The Lead?

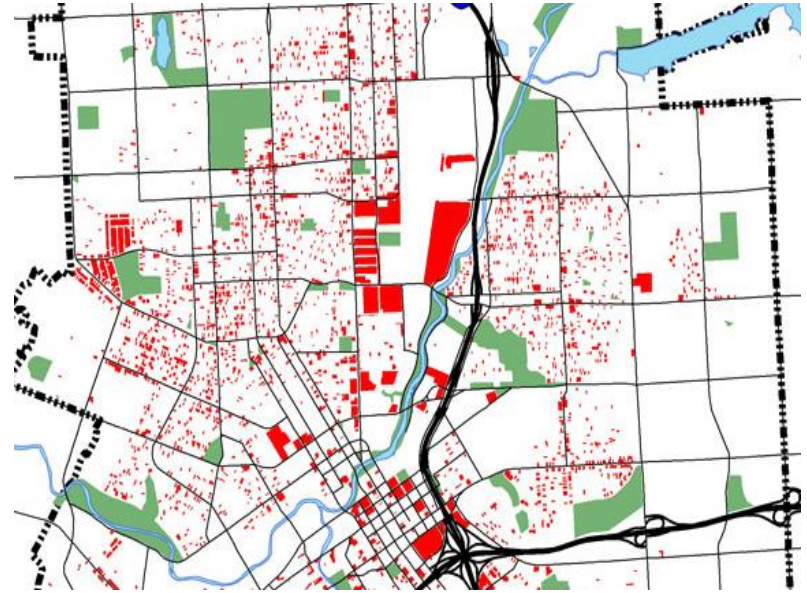
- Goosenecks
- Company service line
- Customer service line
- Customer plumbing including solder
- Customer fixtures



Timothy Phillips 2008

What Have We Been Doing To Protect Our Customers?

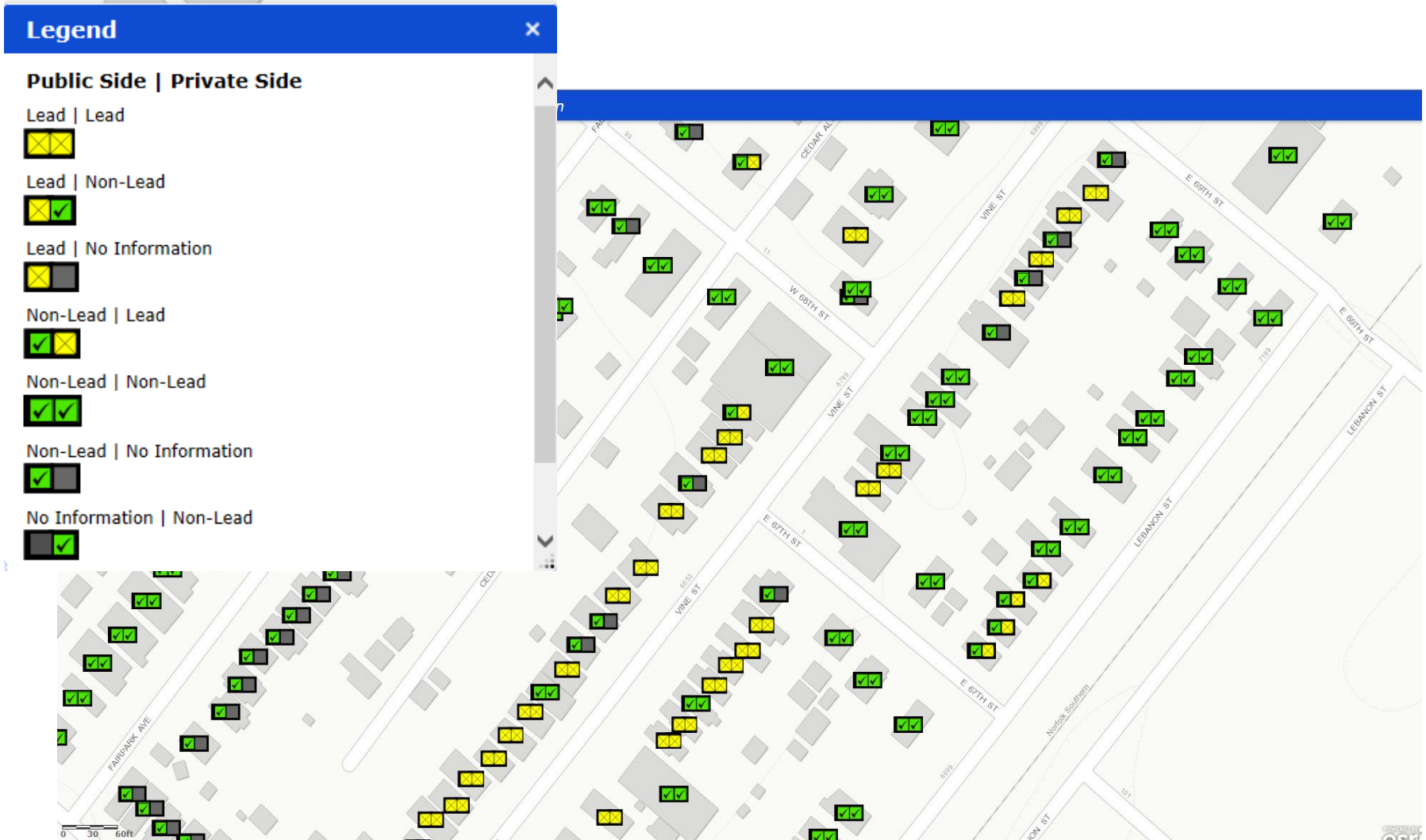
- Special Water Sampling
- Lead Service Line Inventories
- Lead Service Line Replacements
- Customer Notifications



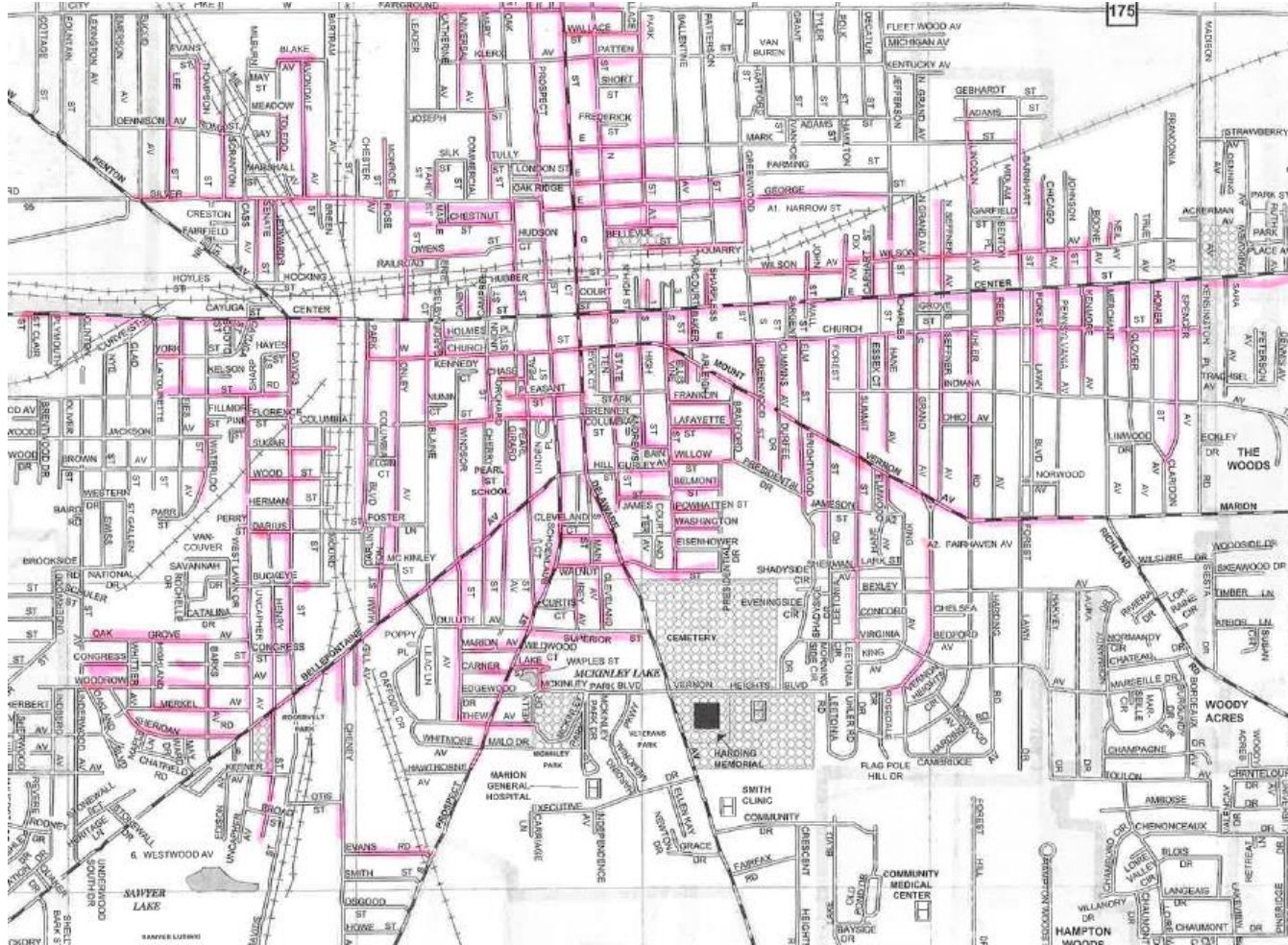
Special Water Sampling

- Customer Service and Education
 - Is there lead in premise water?
 - What precautionary measures are needed?
 - Visual assessment of plumbing issues

LSL Inventories – Robust Historic Files



LSL Inventories – Acquisitions/Limited Data



LSL Replacements

- Planned Project – “Ideal World”
 - Identification of LSLs if possible
 - Pre-notifications to customer
 - Coordination of replacement if both sides
 - Follow-up water testing
- Leak Repair – “Non-Ideal World”
 - Same day communication upon discovery/removal of LSL
 - Instruction for protective measures
 - Proactive follow-up (testing, education, routine letters)
- Avoid Partial Replacements if Possible - could increase Pb levels!





Aqua Wants Our Customers to Be Informed.


Here's what you should know about lead and drinking water.

Lead is not typically found in the streams, reservoirs or wells that serve as water supplies or in the main water lines that carry water from treatment plants to homes. Yet, the chemical properties of water can cause lead and other metals to leach into drinking water. The main source of lead in drinking water is from lead service lines (the pipes that deliver water from water mains in the street and into homes) and from typical household plumbing (lead solder and brass fixtures) that contains lead. Households that have, or suspect having, lead service lines or lead in their household plumbing are strongly encouraged to replace them. The use of lead in solder was prohibited after 1986, so buildings constructed after then should not have contained lead in the solder.


How Aqua protects its customers:

Water utilities, including Aqua, treat drinking water to reduce the chance for metals to leach into the water. Aqua conducts required testing for drinking water contaminants, including lead and copper, to ensure compliance with state and federal drinking water standards. Aqua tests the water at our treatment plants, and also schedules customer tap sampling and tests for lead in potential high-risk areas, to comply with the EPA's lead and copper rule.

You can always view your community's test results. They are summarized in our annual water quality reports, which are produced for every water system we own and operate.

 Call us at 877.987.2782 for more information.

 You can find your community's water quality report at www.AquaAmerica.com.

More helpful information on the back 

762 W. Lancaster Avenue, Bryn Mawr, PA 19010 • 800.292.1910 • AquaAmerica.com



If you are a: Residential customer

You should know that – there are parts of the service line bringing water to your home that are Aqua's property (the pipe that goes from our water main in the street to your curb) and parts of the service line that are your property (the pipe that goes from your curb to your home). When we encounter lead service lines during our maintenance and construction activities, we will replace Aqua's portion and notify the customer of our actions. We will also let you know if we observe lead in your service line. If you have concerns regarding your portion of the service line, or your plumbing, we recommend that you have a licensed plumber check the pipes that are your property. This is important to know, because lead service lines can be a source of lead in tap water. See the section below on "what you can do" for minimizing your risk if this happens.

Aqua suggests that you – call us at 877.987.2782 for more information. We'll quickly put you in touch with one of our water quality experts.



If you are a: School or day care center

You should know that - the U.S. Environmental Protection Agency has established more stringent sampling procedures for schools and day care centers. Because children often drink from fountains and faucets at school without flushing the water first, and because they are at higher risk of health effects due to exposure, for their protection, sampling is done differently at schools and day care centers.

Aqua suggests that you - call the EPA's safe drinking water hotline at 1-800-426-4791 or email them using this URL: <https://safewater.zendesk.com/hc/en-us/requests/new>.

It's important for any testing you do to be conducted using EPA protocols, so that the results are meaningful.

The health effects of lead:

Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys and can interfere with the production of red blood cells that carry oxygen to all parts of the body. The greatest risk of lead exposure is to infants, young children and pregnant women.

If you are concerned about lead exposure:

- Contact your local health department or healthcare provider to find out how you can get your child tested for lead.
- Visit the EPA at EPA.gov/lead for more information on the health effects of lead or reducing lead exposure in your home.
- Call Aqua at 877.987.2782 for information about testing your water.

What you can do:

If your home's water shows elevated levels of lead, or if you are concerned about the potential of lead in your water, below are ways you can minimize your exposure.

- **Run your tap to flush out lead.** If your water hasn't been used for several hours, run your water for a few minutes or until it becomes cold or reaches a steady temperature before drinking or cooking.
- **Use cold water to cook or prepare baby formula. Don't boil water to reduce lead.** Lead dissolves more easily into hot water and boiling will concentrate the lead. Boiling water won't reduce lead.
- If you buy a water filter for lead removal, make sure it's approved to reduce lead. Contact NSF International, www.NSF.org.





Premises No.: _____ Serial No.: _____ Date: _____
 Address: _____
 Your Aqua representative: _____ Employee No.: _____

¡Favor de no consumir el agua sin antes comunicarse con nuestro Departament de Servicio al Cliente al 877.987.2782!

An Important Health Notice From Aqua.

PLEASE READ THIS BEFORE USING YOUR WATER!


During our maintenance/construction activities today, Aqua encountered:

- An Aqua-owned lead service line that provides water to your premise
- A customer-owned lead service line that provides water to your premise

Further inspection is required  Please call Aqua during normal business hours at _____ to schedule an appointment.

As standard practice, Aqua replaces the portion of the lead service lines we own when found during maintenance and construction activities. If an Aqua-owned lead service line was found, it was replaced. If we encounter lead in the portion of the service line you own, we strongly encourage you to replace it. Please call a licensed plumber for more information.


Please review and follow these very important **Instructions*** to minimize your exposure to metals, such as lead, which may have been stirred up due to the service-line replacement work. Please flush all your faucets using these steps:

- 1**  If possible, remove faucet aerators from all water faucets in the home.
- 2** Beginning in the lowest level of the home, fully open the cold water faucets throughout the home.
- 3** Let the water run for at least 30 minutes at the last faucet you opened (which was on your top floor).
- 4** Turn off each faucet starting with the faucets in the highest level of the home. Be sure to run water in bathtubs and showers as well as faucets.
- 5** Clean and reinstall any aerators you may have removed in Step 1.
- 6** Do not consume tap water, open hot water faucets, or use icemaker or filtered water dispenser until after flushing is complete.

*Based on the American Water Works Association-recommended safety procedures (awwa.org).

You may also wish to use a NSF-approved home filter for water to be used for drinking and cooking, particularly if you are pregnant or have children under age six. Go to NSF.org for more information.

Please see the other side of this notice for more information on lead. Thank you for letting Aqua serve you! For questions or concerns, please contact Aqua customer service at 877.987.2782.

More helpful information on the back 



Information About Lead and Drinking Water



How does lead get into drinking water?

Lead is not typically found in the streams, reservoirs or wells that serve as our water supplies. The main water lines that carry water from treatment plants to customers don't contribute to lead. The main source of lead in drinking water is from lead service lines (the pipelines that deliver water from the water mains in the street to homes) and from household plumbing that contains lead.

Before the use of copper for water pipes, lead was once a material of choice. Before 1986, lead was also a key component of the solder used by plumbers when installing home plumbing. Lead is even found in brass and bronze plumbing fixtures. The chemical properties of water can cause lead and other metals to leach into the water. Water utilities, including Aqua, treat drinking water to reduce the chance for metals to leach into the water.

Customers who have, or think they might have, lead service lines are strongly encouraged to replace their service lines. If customers choose to replace their household plumbing, they should use certified lead-free solder and fixtures.

How Aqua protects its customers:

Aqua conducts required testing for drinking water contaminants, including lead and copper, to ensure compliance with state and federal drinking water standards. Aqua tests the water at our treatment plants. Aqua also tests for lead in high-risk sample homes to comply with the U.S. Environmental Protection Agency's (EPA) lead and copper rule. According to the EPA, sampling locations must be selected based on priority tied to possible lead exposure. Aqua also works with individual customers who request lead information for their home. Test results, including those for lead and copper, are summarized in our annual water quality reports, which are produced for every water system we own and operate. You can find your community's water quality report on AquaAmerica.com.

Changes in water sources are not common. However, if we ever need to use a new water source, Aqua works with state environmental regulators to perform an early evaluation of the new source to anticipate water quality concerns and identify potential treatment needs.

Once a new water source is approved, Aqua further verifies the acceptability of water quality by conducting testing at approved high-risk homes for a sustained period of time to ensure water quality.

Health effects of lead:

Lead can cause serious health problems if too much enters your body from drinking water or other sources. It can cause damage to the brain and kidneys and can interfere with the production of red blood cells that carry oxygen to all parts of your body. **The greatest risk of lead exposure is to infants, young children and pregnant women.** Scientists have linked the effects of lead on the brain with lowered IQ in children. Adults with kidney problems and high blood pressure can be affected by low levels of lead more than healthy adults. Lead is stored in the bones, and it can be released later in life. During pregnancy, the child receives lead from the mother's bones, which may affect brain development.

If your home's water shows elevated levels of lead, or if you are concerned about the potential of lead in your water, here are ways you can minimize exposure.

- **Run your tap to flush out lead.** If your water hasn't been used for several hours, run water for at least 15 to 30 seconds or until it becomes cold or reaches a steady temperature before using it for drinking or cooking.
- **Use cold water to cook and prepare baby formula.** Don't boil water to reduce lead. Lead dissolves more easily into hot water. Boiling water won't reduce lead.
- If you buy a water filter, make sure it's approved to reduce lead. You can contact NSF International at 800.NSF.8010 or NSF.org.
- If you are concerned about exposure, contact your local health department or healthcare provider to find out how you can get your child tested for lead. Call Aqua at 877.987.2782 for information about testing your water for lead.
- Brass faucets, fittings and valves – even those advertised as lead free – might contribute lead to drinking water. The law allows end-use fixtures, such as faucets, with wetted surfaces containing a maximum weighted average of 0.25 percent lead to be labeled as lead free. Visit NSF International at NSF.org to learn more.

For more information on reducing lead exposure in your home and the health effects of lead, visit the EPA at EPA.gov/lead or contact your healthcare provider.

Our Number One Priority:

Protection of Our Customers



Thank You

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