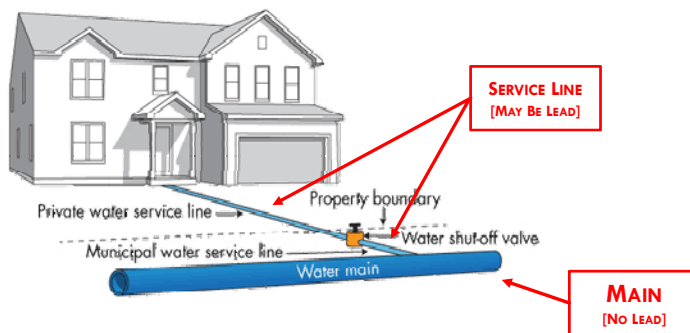
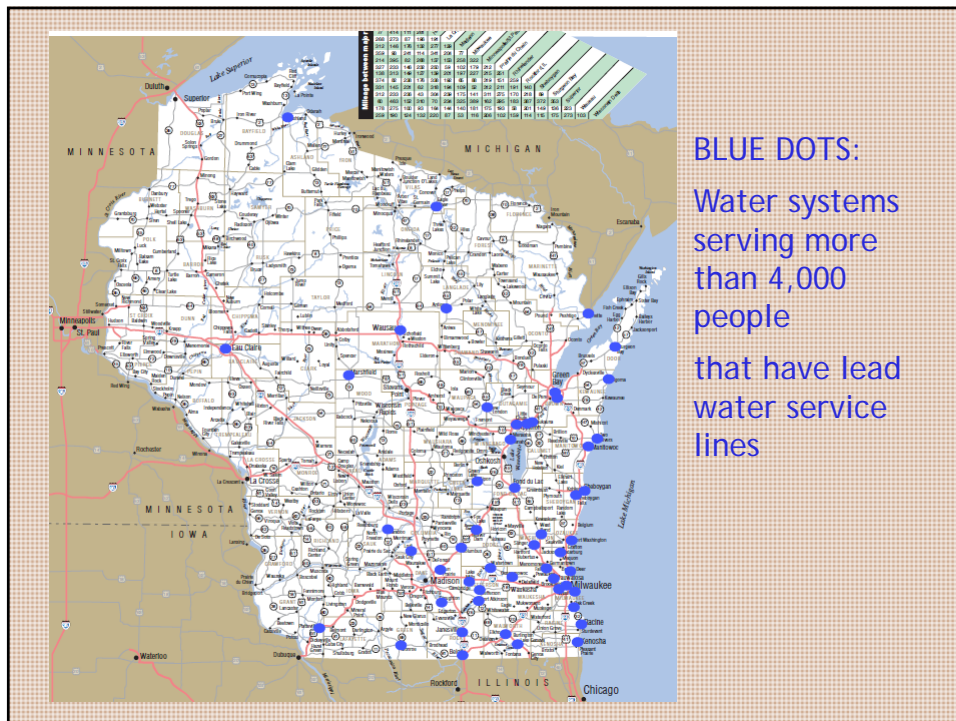


Lead Water Service Lines: Protecting Public Health

May 2016

Service Line Diagram





Lead Service Lines

- ▶ Pre-1951 housing stock throughout the city has lead service lines
- ▶ City owns line from main to curb, property owner owns line from curb to house
- ▶ Not isolated to any one Milwaukee neighborhood
- ▶ Other communities surveyed have significant numbers of lead service lines

Communities with Lead Services

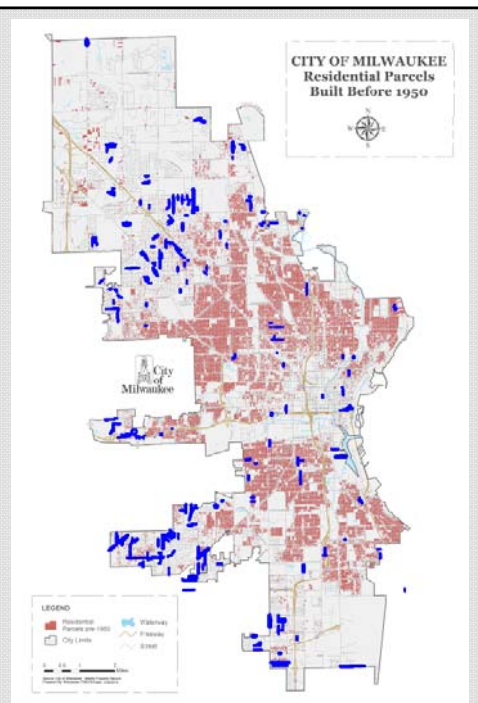
Municipality	Lead Services	% Lead	Total Services
Milwaukee	70,000	43.1%	162,405
Racine	11,603	33.9%	34,237
Kenosha	9,052	30.5%	29,642
Wauwatosa	8,655	51.7%	16,728
Wausau	7,178	45.0%	15,957
West Allis	6,689	34.2%	19,581
Manitowoc	6,570	43.8%	15,002
Beloit	3,210	18.6%	17,296
Whitefish Bay	3,000	61.7%	4,865
Green Bay	2,337	6.6%	35,624
Two Rivers	2,326	44.3%	5,253
South Milwaukee	1,905	32.1%	5,935
Janesville	1,834	9.1%	20,262
Eau Claire	1,431	5.7%	25,087
Neenah	1,364	14.1%	9,658
Cudahy	1,244	22.8%	5,457
Watertown	1,114	14.5%	7,701
Beaver Dam	1,017	17.4%	5,846
Ashland	720	21.5%	3,348
Platteville	645	19.9%	3,238
Monroe	603	12.6%	4,786
Fort Atkinson	307	6.9%	4,435
Appleton	252	0.9%	29,152
Sun Prairie	145	1.7%	8,668
Marshfield	86	1.1%	7,757

RED:
Residential Parcels
Built Before 1950

BLUE:
Water Main
Replacement
Projects
2010-2015

Water mains with highest number of breaks have been priority for replacement.

Those were installed 1945 - 1965.



Understanding Lead Risk

- ▶ The scientific research is unanimous that full service line replacement has the most long-term benefit
- ▶ Many local utilities are proactively replacing their half of the service with copper during main replacements
- ▶ Disrupting lead lines does create short-term hazards
- ▶ Milwaukee has done pilot programs to understand impacts of disruptions

Disturbing of Lead Services Can Release Lead Particles

- ▶ Planned projects (water main replacements)
- ▶ Unplanned events
 - ▶ Lines severed during construction projects
 - ▶ Leaking service lines
 - ▶ Internal plumbing repairs
 - ▶ Water main breaks
- ▶ MWW did a pilot to get better information on these common practice for all utilities

Pilot & Results

- ▶ MWW designed pilot in 2015 to answer the question: **do existing mains practices affect lead levels at the tap in Milwaukee?**
- ▶ Pilot designed and reviewed with:
 - ▶ Milwaukee Health Department
 - ▶ US EPA
 - ▶ WI DHS
- ▶ For 2015, 21 single-family properties with lead service lines were invited to participate:
 - ▶ 6 chose to participate
 - ▶ **All 36 properties with lead services received advisories, regardless of participation**

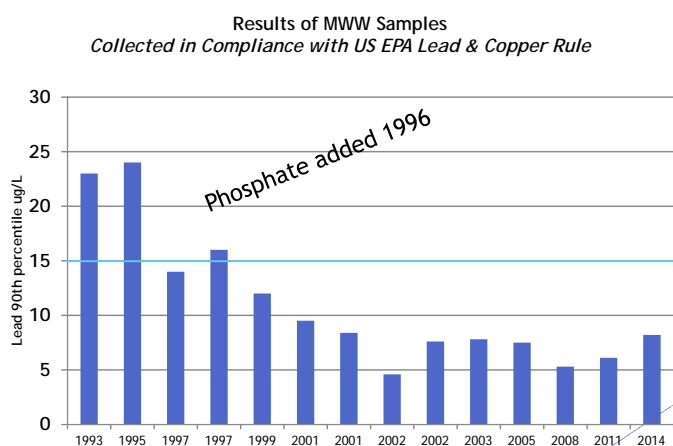
Pilot & Results

- ▶ Participants captured 12 consecutive 1-liter samples of tap water, plus a well-flushed sample, on 3 occasions:
 - ▶ Pre-project
 - ▶ After re-connection to the main
 - ▶ 4 weeks after re-connection
- ▶ In most homes there was an increase in lead levels after re-connection of service to the main
- ▶ Lead returned to previous levels after 4-6 weeks
- ▶ Lead not detected in well-flushed samples

Current EPA Regulations

- ▶ Community-wide approach to lead based on single sample per residence
 - ▶ 90% of samples from 50 targeted properties must be below 15 ppb
- ▶ If lead exceeds 15 ppb, either
 - ▶ Add phosphate corrosion control treatment (Milwaukee), or
 - ▶ Remove lead service lines (Madison)
- ▶ Milwaukee has treated water with phosphate since 1996
- ▶ Phosphate “lines” pipes to prevent lead from dissolving into water

Milwaukee's EPA Tap Sample Results

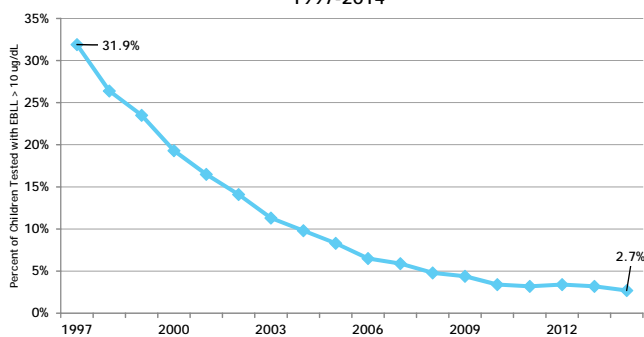


Milwaukee's Lead Risk Reduction Strategy

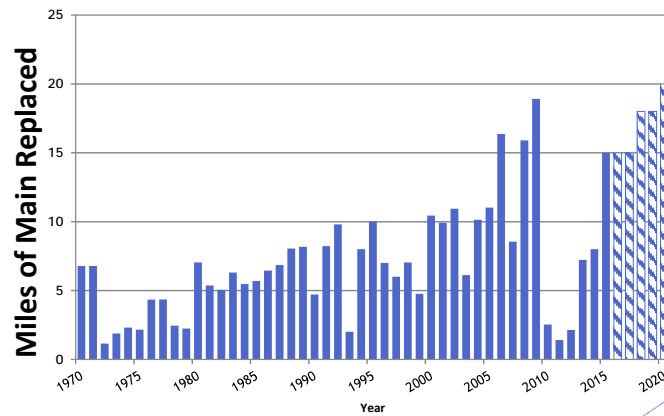
- ▶ Primary source of lead exposure is paint in older housing stock
 - ▶ Critical populations: children <6, nursing and pregnant mothers
- ▶ Milwaukee Health Dept. has abated 17,000+ units in high-risk areas since 1998
- ▶ Children tested w/ elevated blood lead levels:
 - ▶ Down from 31.9% in 1997 to 2.7% in 2014

Blood Lead Prevalence

City of Milwaukee Health Department
Prevalence of Elevated Blood Lead Levels for Children
Under 6 Years Old
1997-2014



Water Main Replacement



Milwaukee's Challenge

- ▶ Continue DECREASE in lead prevalence for critical populations
- ▶ INCREASE education and blood testing for critical populations
- ▶ INCREASE water main replacements and
- ▶ PRESERVE public health while doing so

Milwaukee's Challenge

- ▶ PSC requirement to replace 15 miles of mains per year
- ▶ Private service line replacement cannot be funded by water rates under state law.
- ▶ Levy limits constrain tax levy funded support for private lateral replacement.
- ▶ Average cost of private side replacement is \$3,600 with a range of \$2,000 to \$7,200.
- ▶ Many of the people residing in properties with lead water services are low income.
- ▶ Low property values/ high project cost.

Milwaukee Action Plan: 1: Outreach, Education, Communication

- ▶ Letters to 70,000+
 - ▶ Likely have lead service line
 - ▶ Flush your plumbing
 - ▶ Drink and cook with water from COLD tap only
 - ▶ Remove screen and aerator and clean regularly
- ▶ Call to find out if house was built before 1950 (soon will be able to look up on web site)
- ▶ Community-wide "lead-safe" outreach program being developed
 - ▶ Focus on getting blood tested
 - ▶ Reminder that paint and housing continues to be a risk
- ▶ Provide representatives at neighborhood meetings, etc.
- ▶ Transparency - results to be published on city website

Milwaukee Action Plan: 2: Protect Public Health

- ▶ Suspend water main replacement projects with lead service lines to incorporate new best practices
- ▶ Identified all schools and day cares with lead service lines
 - ▶ Informed via letter
 - ▶ MHD providing guidance re: testing protocols
- ▶ Work w/ new DNR funds to prioritize day cares

Milwaukee Action Plan: 2: Protect Public Health (cont)

- ▶ When lead services leak, MWW will replace “city” side
 - ▶ Employees have script to provide consistent information
 - ▶ Encourage owner to replace their side
 - ▶ Identify vulnerable populations
 - ▶ Provide filter certified to remove lead
 - ▶ Offer to collect water samples
 - ▶ MWW shares results with MHD for one-on-one outreach
 - ▶ Provide “whole house” flushing instructions for after work is complete

Milwaukee Action Plan: 3: Long Term Solutions Needed

- ▶ Full replacement is the ideal outcome
- ▶ New Federal rules likely to target 100% replacement w/in 40 years
- ▶ Find common ground w/ State utility regulators on replacement and financing
- ▶ Increase education and blood testing
- ▶ Find funding partnerships to focus on:
 - ▶ Low-income owners
 - ▶ Rental properties w/ at-risk populations
 - ▶ Day cares

Milwaukee Action Plan: 3: Long Term Solutions Needed

- ▶ Federal Partnership Ideas
 - ▶ Federal funds for service line replacement
 - ▶ Tax credits for private side replacement
 - ▶ Income tax deduction for special assessments
- ▶ State Partnership Ideas
 - ▶ Allow water rates to be used for private lateral replacement
 - ▶ Tax credit for private side replacement
 - ▶ State funds for service line replacement
 - ▶ New DNR program through the Safe Drinking Water Revolving Loan Fund for principal forgiveness

Federal - EPA Review

- ▶ US EPA is reviewing current national rules on lead water service lines
- ▶ Likely revisions to existing Lead & Copper Rule by 2018
- ▶ MWW Superintendent participated in US EPA Drinking Water Advisory Group since 2014
- ▶ Key policy questions for Milwaukee and other major cities:
 - ▶ Will EPA mandate *full* lead service line replacement?
 - ▶ Will owners be required to remove their portion when the city replaces its "side" of the service, e.g. during main replacements and to repair leaks?
 - ▶ How do utilities finance replacements?
 - ▶ How do owners finance replacements?

Federal - Legislation

- ▶ Water Resources Development Act Bill - S. 2848
 - ▶ Approved by committee, 5 year program
 - ▶ \$300m in grants for full lead service line replacement
 - ▶ \$100m in assistance to Flint
 - ▶ \$30m to childhood health programs including lead poisoning grant program
 - ▶ \$100m for lead testing in schools
- ▶ Protecting Families from Lead Act - H.R. 5110
 - ▶ Lowers federal action level from 15 parts per billion (ppb) to 10 ppb by 2020, and to 5 ppb by 2026.