



# SAFE SCHOOL WATER: COVID & BEYOND

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# Webinar Hosts





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**TheJoyceFoundation**





# Restoring Water Quality for Schools and Childcare Facilities During COVID-19

ELIN BETANZO, SAFE WATER ENGINEERING LLC

# What water quality risks can develop over an extended school shutdown?

Stagnant  
Water/Loss of  
Disinfectant

Disinfection  
Byproducts

Microbial  
Growth/Biofilms

Legionella

Lead, Copper  
and Other  
Corrosion

Mold

# Why is water quality in schools different this time around?

- ▶ This is an unprecedented pandemic
- ▶ Extended Shutdown
- ▶ Water use this summer was not normal
- ▶ New information daily, lack of standard protocol, lack of resources
- ▶ Vulnerable populations





Keep the water moving to minimize health risks.

The longer the water shutdown, the longer it takes to restore water quality.

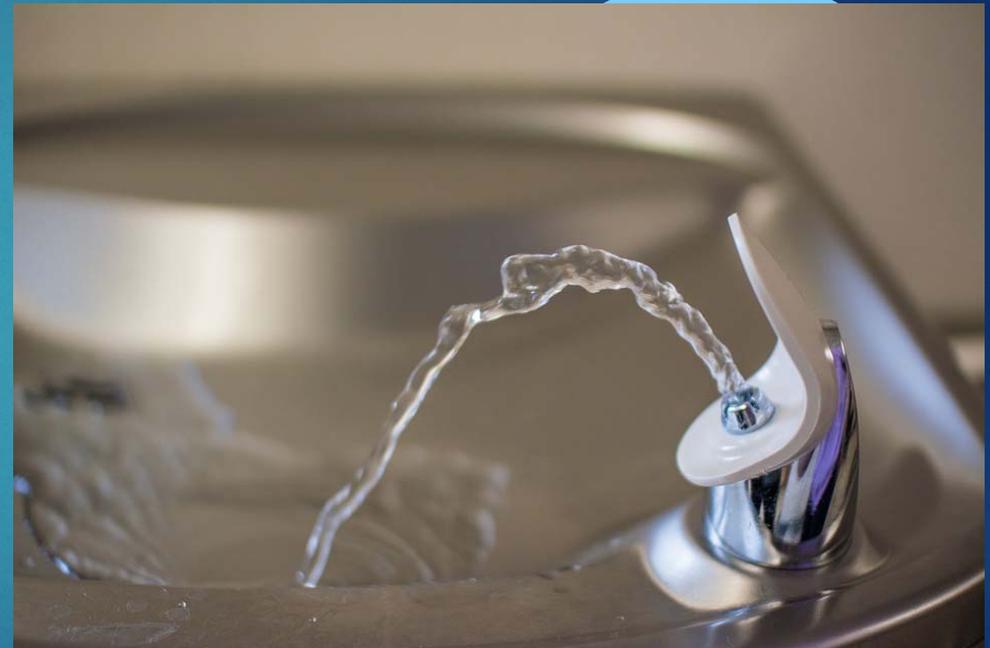
# Consider Who is Using the Water and Where They Are Using the Water



- ▶ Restricted building use:
  - ▶ Food preparation
  - ▶ Child care
  - ▶ Athletics
  - ▶ Phased or staggered opening
- ▶ Building users need to know about water quality now.

# Flushing can be used to meet a range of different goals and steps vary in intensity

- ▶ High Velocity Flushing
  - ▶ Requires the most planning and attention, 2x per year
- ▶ Refresh water in the entire building
  - ▶ Requires planning but less accuracy, weekly
- ▶ Simulate typical use
  - ▶ Requires the most repetition - daily, can use auto-flushers



# Water Quality Restoration for Different School Re-Opening Plans

## Return to School

- High Velocity flushing
- Weekly/Daily flushing prior to student arrival
- Keep the water moving
  - Ongoing use may be enough
- Consider water quality before drinking

## Hybrid Program

- High Velocity flushing
- Weekly/Daily flushing prior to student arrival
- Keep the water moving
  - May need to simulate daily water use
- Consider water quality before drinking

## All Virtual Instruction

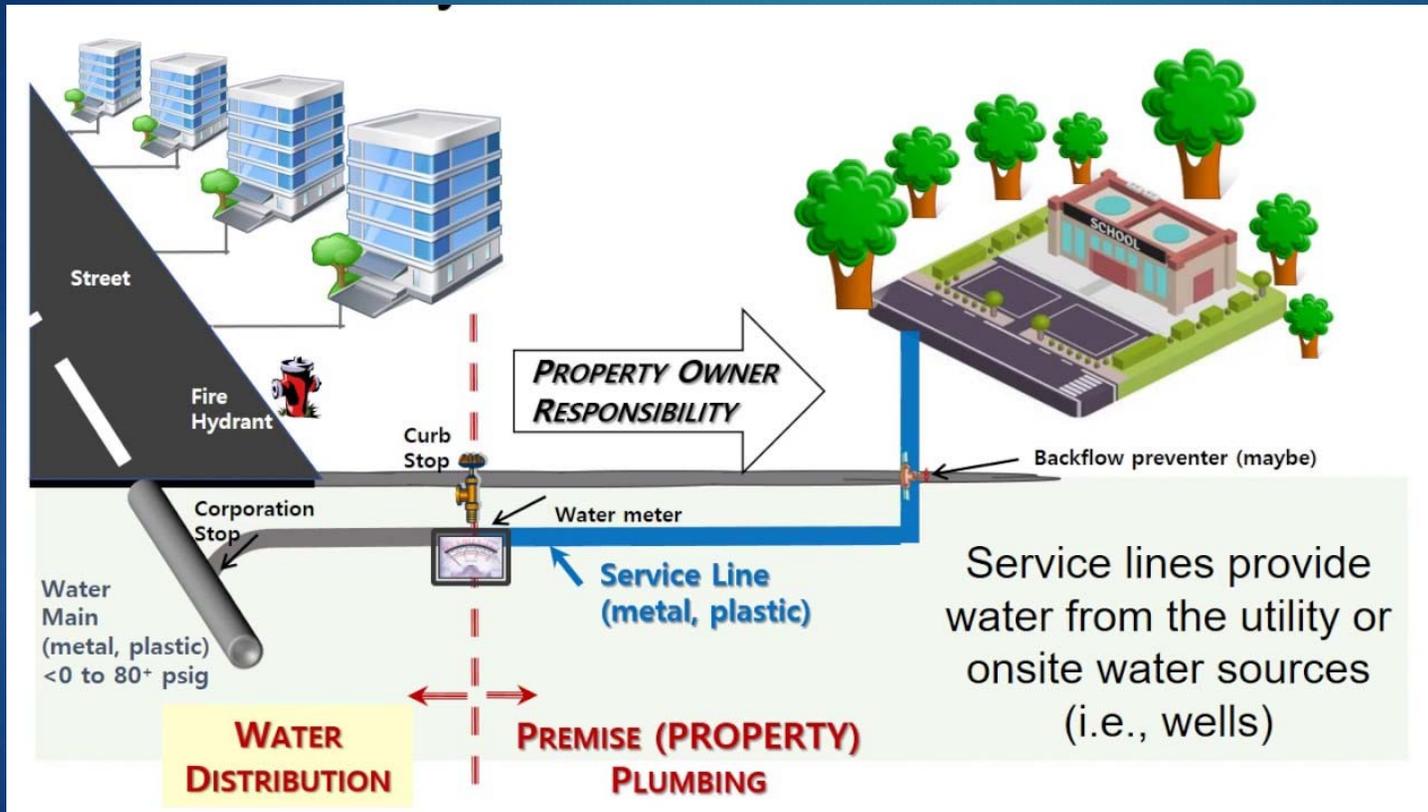
- High Velocity flushing
- Keep the water moving
  - Maintain weekly turnover
- Repeat Uni-direction flushing prior to return to school

# Overview of Water Restoration Steps



1. Map or sketch the plumbing layout. Identify and label taps for drinking water and hand washing.
2. Check plumbing integrity.
3. Fill all drain traps with water if they have dried out.
4. Bring fresh water to the building by flushing the service line.
5. Remove aerators and flush the cold water plumbing with fresh water by zone. Run every cold water tap.
6. Drain and/or maintain hot water tanks and flush hot water plumbing.
7. Run all water using appliances (e.g., water softeners, dishwashers, refrigerator water dispensers, ice makers).
8. Replace all drinking water filters.
9. Maintain all non-drinking water systems according to manufacturer's specifications (e.g., sprinkler systems, eye-wash stations, water features, cooling towers).
10. Communicate with staff and families about water safety.

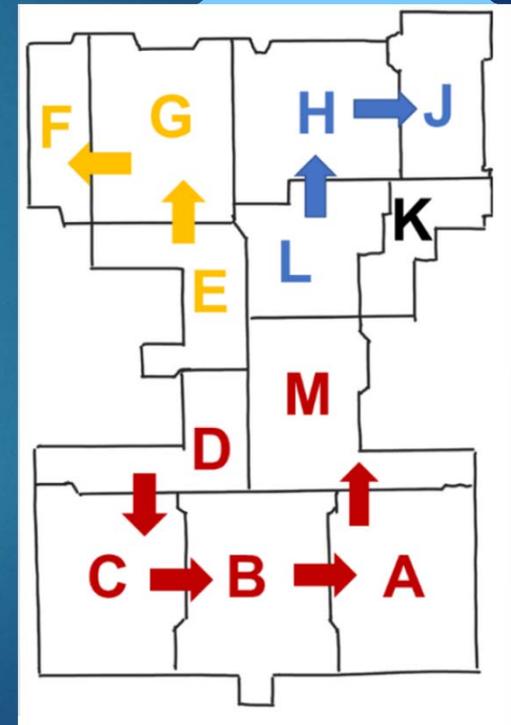
# Bring Fresh Water to the Building



Source: Purdue University Center for Plumbing Safety

# Bring in Fresh Water By Zone

- ▶ Plumbing layouts will vary widely – mapping your building is important
- ▶ Use fresh water to push out the old water
- ▶ Remove aerators
- ▶ Flush cold water first then hot water



Source: [Purdue University Center for Plumbing Safety](#)

# Legionella and Hot Water Tanks

- ▶ Drain and fill hot water tanks. Bring temperature to 140 degrees Fahrenheit.
  - ▶ Be prepared to deal with sediment buildup in the tank
- ▶ Temperature at the tap should be 120 degrees to kill Legionella.
- ▶ Consider scalding risk and temperature maintenance after hot water lines are flushed. Check with health department for requirements.
- ▶ In high risk situations with vulnerable communities consider
  - ▶ Testing
  - ▶ Chlorination with a building plumbing expert



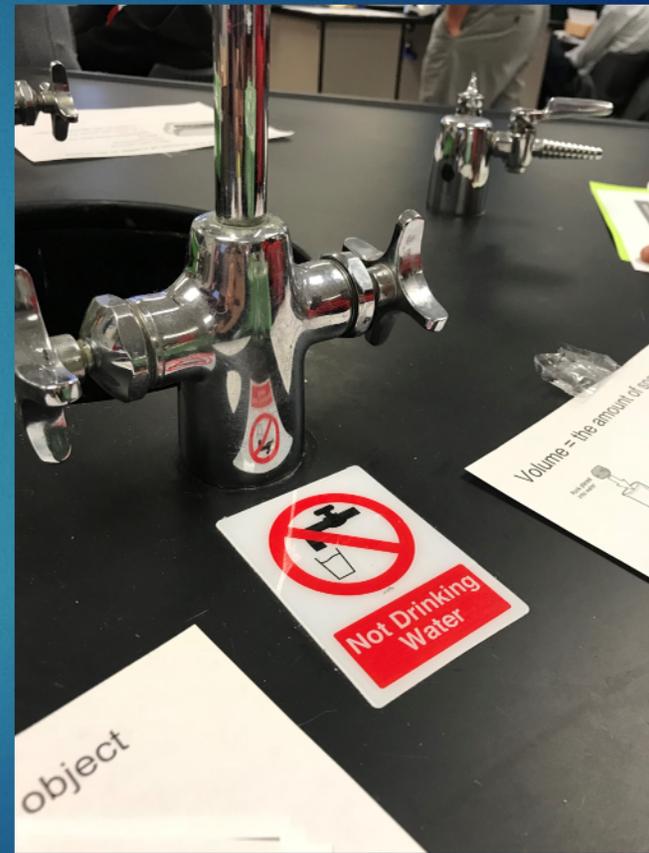
# Bottle Fillers, Filters, and Hands-Free Water

- ▶ Bubblers are not being used to avoid coronavirus transmission; Hands free taps are preferred for all water uses.
- ▶ Filter stations with automatic bottle fillers provide hands-free drinking water and lead reduction.
- ▶ Must replace and maintain all filter cartridges upon return to use.
- ▶ Some hands-free faucets do not meet lead-free requirements for drinking water.
- ▶ Children need to know what water is safe to drink.



# A Water Quality Management Plan will be used year after year

- ▶ Plumbing inventory and maps
- ▶ Taps identified for drinking water, hand washing, and other uses
- ▶ Flushing plans and protocols
- ▶ School-wide plumbing maintenance plans
- ▶ Communications templates and protocols
- ▶ Filter maintenance plans



# Questions to Ask Your School or School District

- ▶ Does the school district have a water quality management plan or program? Who is implementing it? Please provide a copy.
- ▶ Has the school building been in use since the shutdown (e.g., food preparation, child care, access during athletic practice)? What water quality maintenance procedures have been used during this time?
- ▶ What water use and/or flushing procedures has the school implemented since schools were shut down?

# Questions to ask about water testing

- ▶ *Note: Testing for disinfectant levels, legionella, and total coliforms can provide important information about drinking water quality. Lead release is sporadic; one time lead tests do not provide conclusive information about exposure risk. If a school tests the water, they should make the information available.*
- ▶ Has the school done any water quality testing in preparation for returning to school?
- ▶ If so, what protocols were used, what contaminants were analyzed?
- ▶ Where have results and testing protocols been posted?

# Questions to ask about how kids are using water at school

- ▶ Does the school offer touch free drinking water e.g., water bottle filling stations? Have all filters been replaced?
- ▶ What is the school telling staff and families about drinking water quality upon return to school?
- ▶ If the school has not been able to maintain water quality, how is the school telling staff and students to bring their own drinking water and/or providing water for those who cannot bring their own?
- ▶ Is the school relying on students to flush their own water prior to drinking?
- ▶ Is the school labeling untested/unflushed faucets for handwashing only?

# Clear communication about water is essential no matter what practices have been used at school.

- ▶ Not all schools have the resources to take all these steps. Staff and students at these schools need clear information about water in school.
- ▶ If water maintenance has not been happening, communicate to staff and families:
  - ▶ Bring your own drinking water or the school will provide bottled water
  - ▶ Don't drink the water in the school until the school says its okay
  - ▶ Wash your hands
- ▶ If water maintenance has been ongoing during the shutdown, communicate to staff and families:
  - ▶ Describe what the school has been doing to maintain water quality
  - ▶ Use the flushed designated outlets/filter stations for drinking water at school
  - ▶ Wash your hands

# Resources

- ▶ Michigan Department of Environment, Great Lakes, and Energy. [School Drinking Water Program](#).
  - ▶ [High-Velocity Flushing Guidance](#)
  - ▶ [Fresh Tap Flushing Guidance](#)
- ▶ Environmental Science Policy Research Institute. [Building Water Quality and Coronavirus: Flushing Guidance for Periods of Low or No Use](#).
- ▶ Environmental Protection Agency. [Information on Maintaining or Restoring Water Quality in Buildings with Low or No Use](#).
- ▶ Because Health: [Water Quality During Coronavirus for Childcare Facilities and Schools](#).
- ▶ Canadian Water and Wastewater Association – [Safely Re-Opening Buildings a Fact Sheet for Building Owners/Operators](#)



# Lead in School Drinking Water: Michigan's Filter First Bills

Cyndi Roper  
Michigan Senior Policy Advocate  
Natural Resources Defense Council



# Why regulate lead in school drinking water?

- ▶ Lead is a potent irreversible neurotoxin
- ▶ Lifelong multigenerational impacts
- ▶ Young children are most vulnerable to lead exposure
- ▶ Lead has no useful purpose in the body
- ▶ Health effects from acute *and* chronic exposures





## Lead in Homes

Almost always comes from lead or galvanized service lines connecting the home to the water main and/or from plumbing and fixtures.

## Lead in Schools

Almost always comes from plumbing and fixtures. However, schools should check the service line composition connecting the building to the water main.



# Lead is present in school plumbing, especially in buildings built before 2014

- ▶ Plumbing materials (pipes, fittings, and fixtures)
  - ▶ “Lead-free” means up to 8% lead through 2013
  - ▶ “Lead-free” means up to 0.25% lead beginning in 2014
- ▶ Lead solder (banned in 1986)
- ▶ Lead service lines
- ▶ Plumbing materials not intended for drinking water use; (e.g., lab faucets, hoses, spigots, some hand washing sinks, certain fittings and fixtures)
- ▶ Pre-1988 drinking water coolers with lead-lined tanks

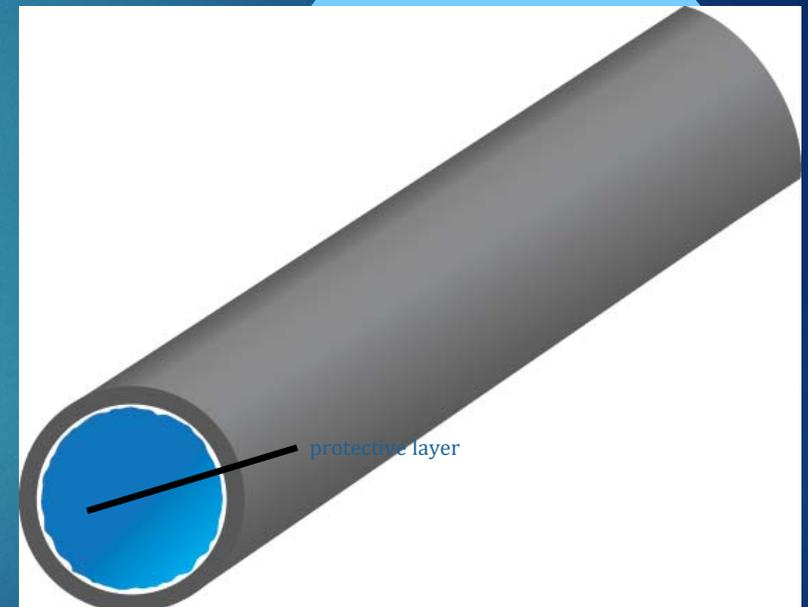


Photo: Birmingham Public Schools

# Corrosion Control treatment reduces lead leaching but irregular water use in schools means it doesn't work as intended

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- Corrosion control treatment forms a protective layer inside plumbing materials to reduce lead and other metals from dissolving into the water
- Corrosion control reduces lead in drinking water but does not eliminate risk
- Corrosion control is most effective when the water keeps moving
- Weekends, school breaks, and summers off means corrosion control does not build up consistently on school plumbing, leading to sporadic lead results in school tap water testing
- Students can and do drink water out of the tap after weekends and vacations



Source: Great Lakes Water Authority

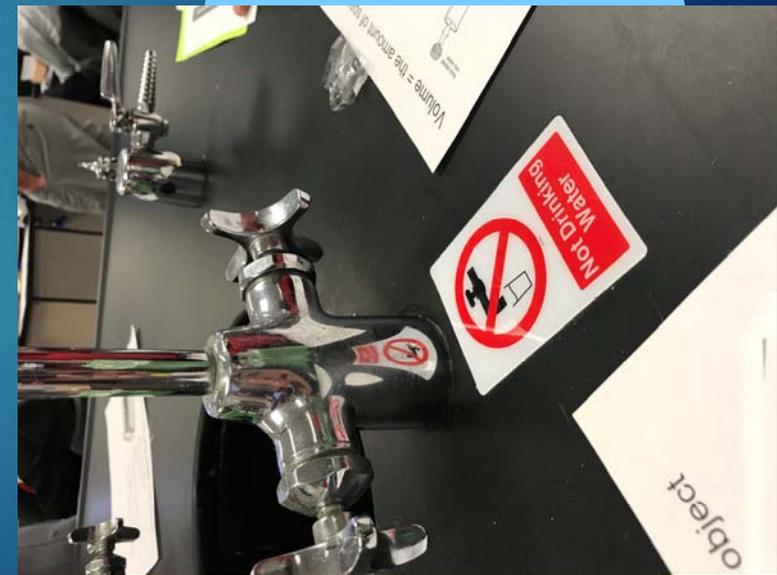
# Michigan's Filter First bills aim to provide safe drinking water first, then tests to verify filters are working.

- ▶ The bills require:
  - ▶ Schools and childcare facilities to install and maintain filters on designated drinking water sources
  - ▶ Filters certified to meet ANSI/NSF Standards 53 (lead removal) and 42 for particulate removal
  - ▶ Testing once per year after filters are installed
  - ▶ Remediation if filtered water still contains lead



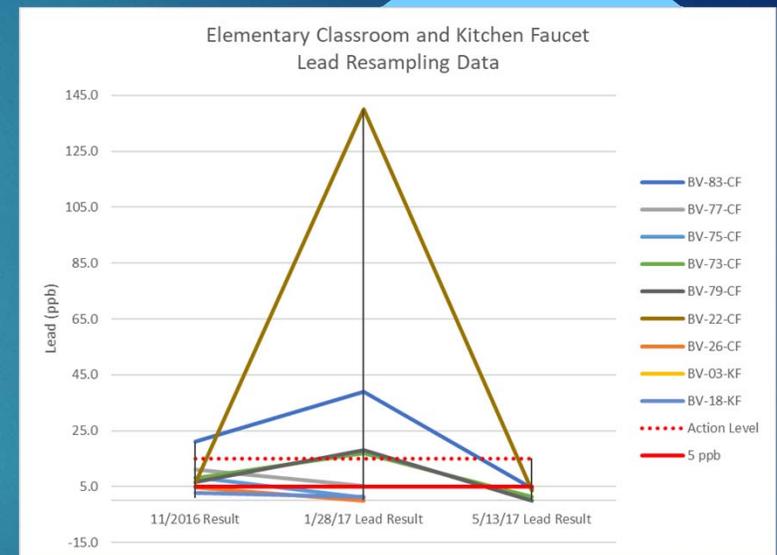
## Michigan's Filter First bill requires a drinking water safety plan that ensures filter stations are properly located and maintained

- ▶ Identify all water outlets that will be: 1) filtered; 2) maintained for non-potable use; or 3) turned off
- ▶ Water sampling plan for all filtered outlets
- ▶ If sample  $> 1$  ppb, filter replaced and follow-up samples required
- ▶ Fixtures shutoff if  $> 5$  ppb
- ▶ Filter cartridge replacement plan for all designated filtered outlets
- ▶ Signage indicating whether the outlet is for drinking water or other uses



# In contrast, Test and Tell approach does not provide safe water

- ▶ As long as lead remains in the plumbing, sampling will continue to reveal lead
- ▶ Single lead samples do not indicate lead exposure risk at a tap.
- ▶ Over the last decade, Los Angeles Unified School District has spent over \$30 million on lead testing and repairs and is still detecting lead in drinking water.
- ▶ Lead in brand new “lead-free” materials make it hard to meet the American Academy of Pediatrics action level of 1 ppb for lead.
- ▶ State mandated school sampling programs typically use 15 ppb as their lead action level, which does not protect children.



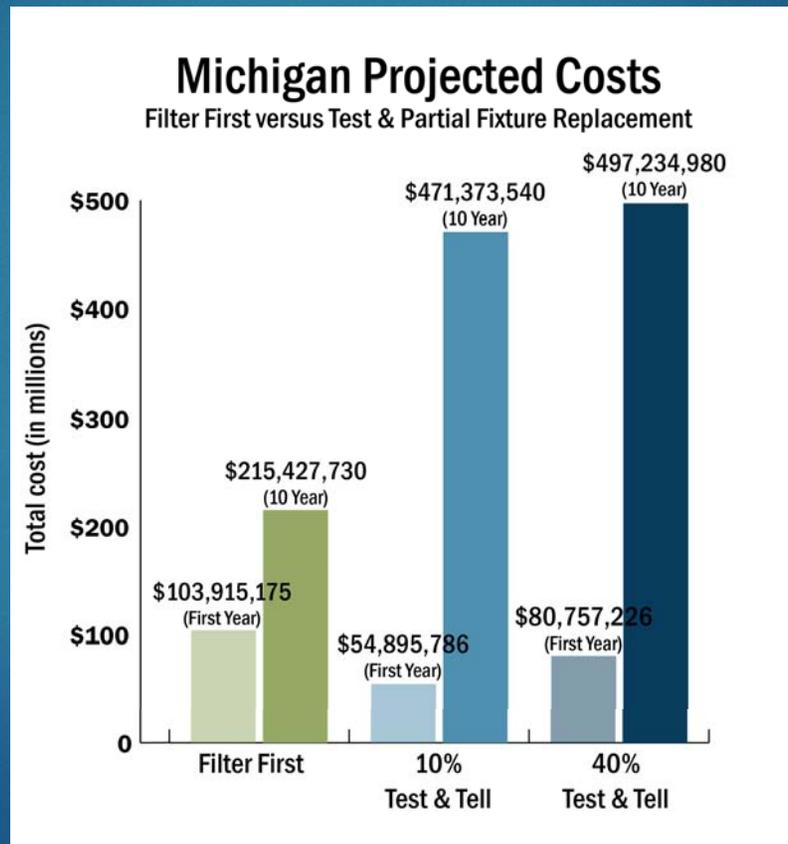
Birmingham Public Schools, 2016-2017

# Requirements and best practices are needed to ensure filter stations are properly installed and maintained



Photos: Safe Water Engineering, 2019-2020 school year

Filter First provides a safe water immediately and costs less than the “test and tell” approach



# Webinar Hosts

