

# Greater Cincinnati Water Works Project Updates

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Climate, Environment, & Infrastructure Committee  
*February 11, 2025*



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**WATER WORKS**



## Today's Agenda:

- Lead Replacement Program
- Mount Airy Tanks Rehabilitation
- Greater Cincinnati Water University
- Q&A





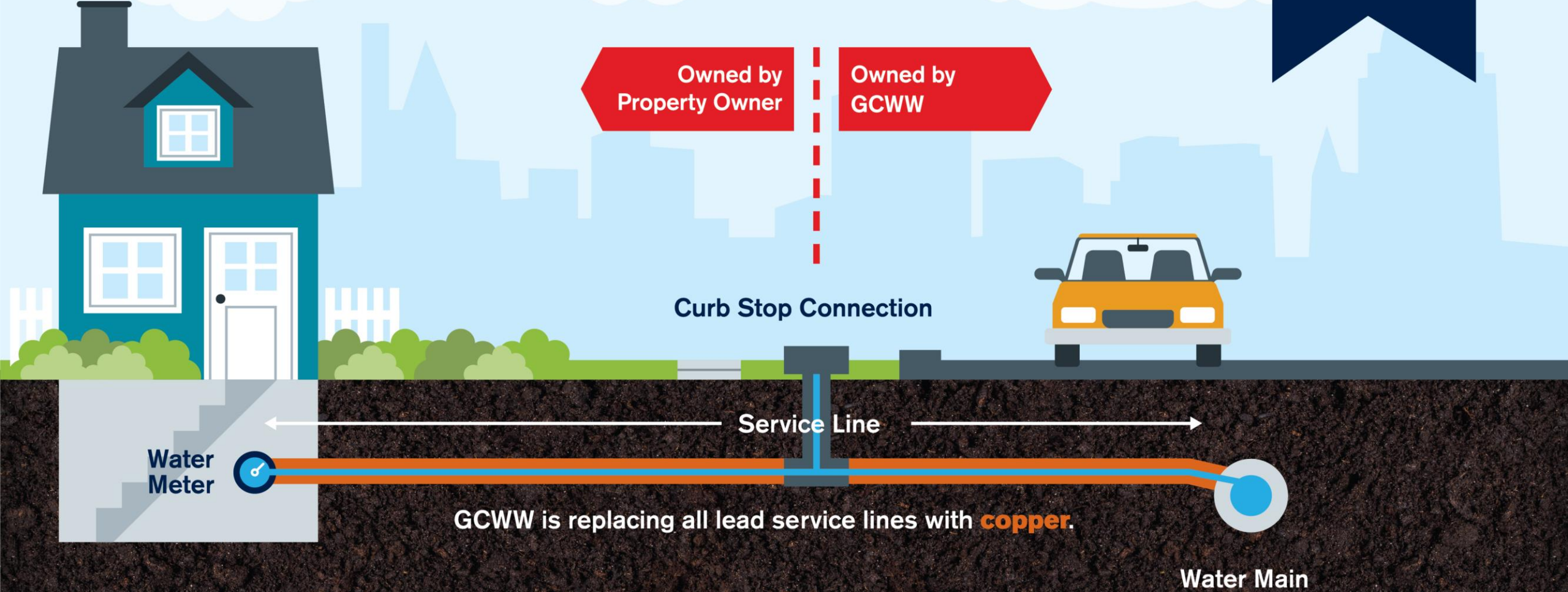


# Lead Replacement Program



# Greater Cincinnati Water Works (GCWW) Lead Service Line Replacement Program

GCWW is committed to providing **clean, safe drinking water** to all customers.



GCWW is replacing all lead service lines with **copper**.



## Use of Lead for Service Lines

- Lead was commonly used for plumbing throughout the nation in pipes and fixtures
- Potential to enter drinking water as plumbing material corrodes
- Primary risk of lead exposure in drinking water is from the service line if made of lead







# Dangers of Lead Exposure



## Symptoms in Newborns

- Born prematurely
- Low birth weight
- Slowed growth
- Lead exposure via breastmilk



## Symptoms in Children

- Development delays
- Irritability
- Loss of appetite
- Weight loss
- Fatigue
- Nausea
- Hearing loss
- Seizures



## Symptoms in Adults

- High blood pressure
- Joint and muscle pain
- Headaches
- Abdominal pain
- Mood disorder
- Reduced sperm count

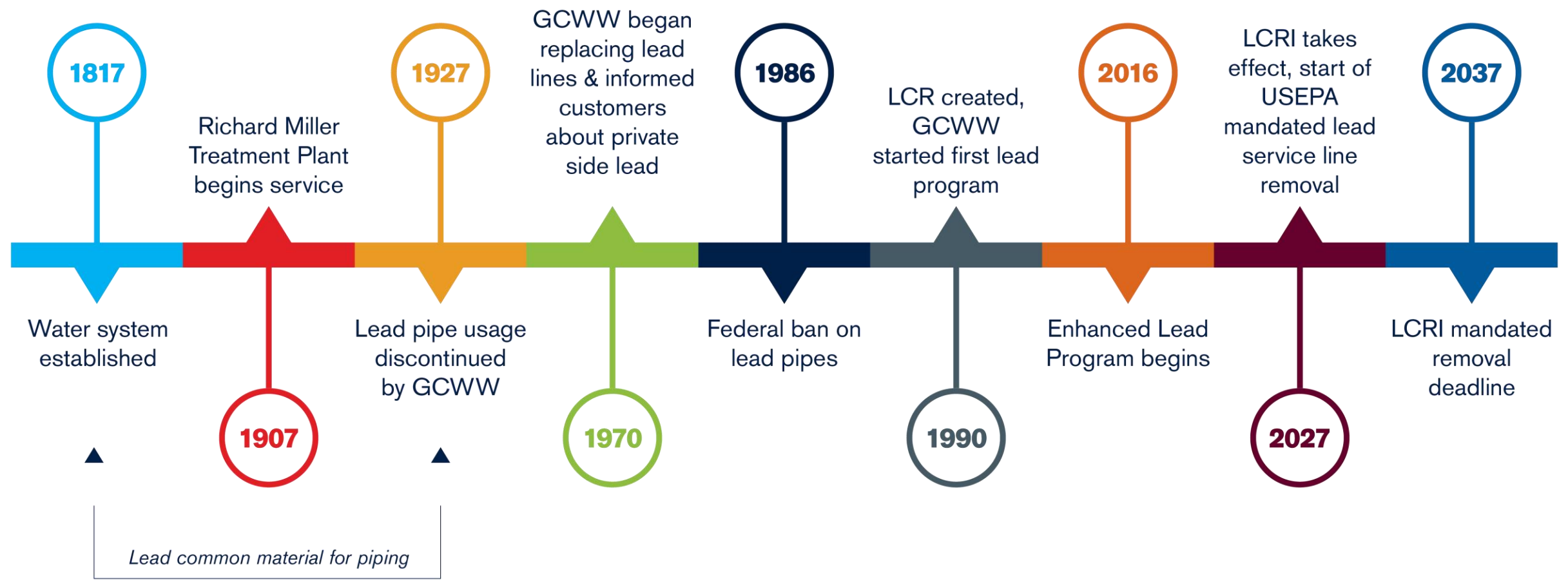


## Symptoms in Pregnant Women

- Miscarriage or premature birth
- Mood swings
- Anemia



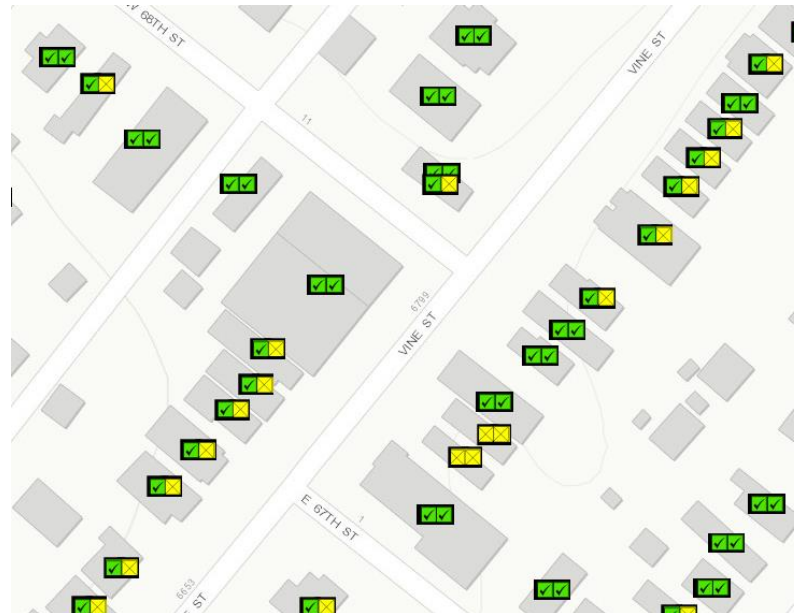
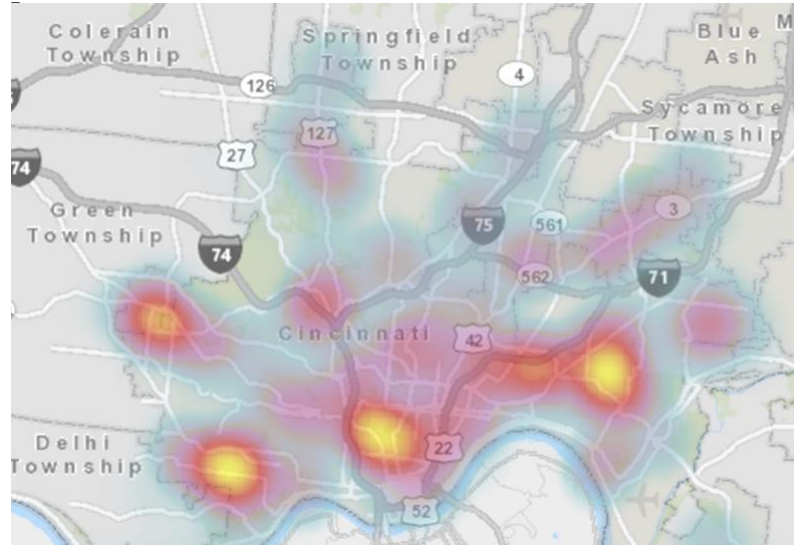
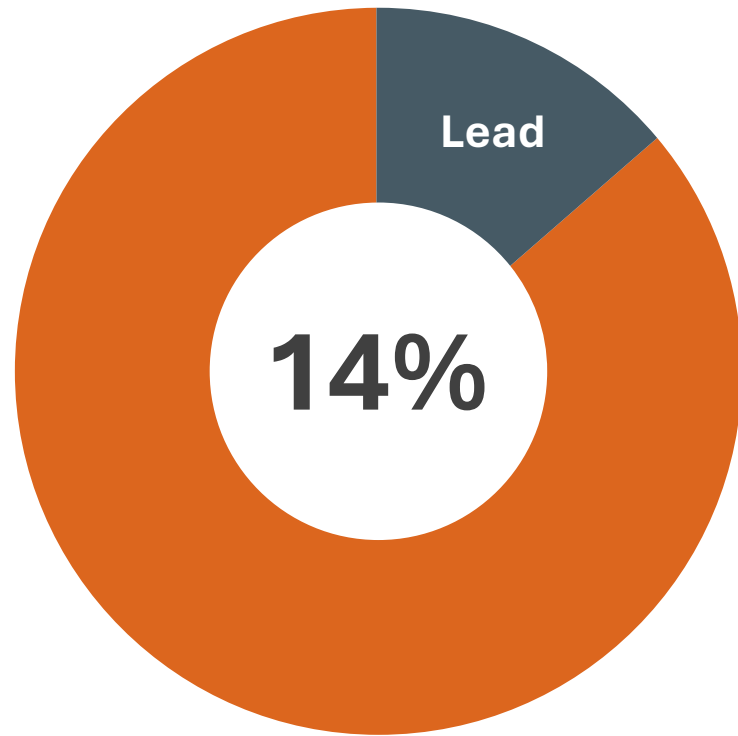
# History of Lead in Cincinnati





# Lead Inventory

- 34,500 lead service lines
- 14% of total service lines



Customer Online  
Look-up Map:  
[Lead.myGCWW.org](https://Lead.myGCWW.org)





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## Lead Service Line Replacements

- Replacing the lead pipe is the only way to totally remove risk
- GCWW has been replacing customer-owned lead service lines since 2018
- **No additional cost to customer,** just requires signature of an agreement





# Lead Line Replacement Process

## Water Main Replacement Projects

- Proactive replacement
- Includes all lead service lines in project area

## One-Offs

- Individual or small bundle of reactive replacements
- Reasons include leaks and high lead tests

## Service Line-Only Projects

- Large bundle of service line replacement work in a geographic area
- Scheduled based on prioritization scoring, including equity



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# Communications/Customer Contracts

- Water main replacements
- One-offs
  - ✓ Send contract via Docusign, mail, or email  
*(minimal outreach needed)*
- Targeted areas for service line-only work



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**leading the way**

**GCWW will replace your private lead water service line AT NO COST TO YOU**

Dear Property Owner,

Greater Cincinnati Water Works (GCWW) is contacting you about an important opportunity to remove the private lead service line at your property at no cost to you.

Cincinnati City Council has authorized GCWW to pay the full cost of private lead service line replacements performed by our contractors. This effort is designed to maintain public health and comply with anticipated changes in federal regulations.

Our records indicate the privately-owned water service line – the section that connects the water main to the plumbing system on your property – may be made of lead. By law, the property owner is responsible for maintenance of the private portion. Ownership and maintenance responsibilities will not change due to your participation in the program.

**PLEASE SIGN THE ATTACHED AGREEMENT TO AUTHORIZE GCWW TO REPLACE YOUR PRIVATE LEAD WATER SERVICE LINE WITH COPPER PIPE AT NO COST TO YOU.**

Exposure to lead is a health hazard, causing irreversible damage to the brain and kidney, and interfering with the cognitive development of young children and increases the risk of high blood pressure. There is no safe level of lead.

Funding is limited and may affect the timing of replacement work. For questions, call 513.651.LEAD (5323) or visit our website at [Lead.myGCWW.org](http://Lead.myGCWW.org).

We strongly encourage you to take advantage of this opportunity while it's available.

Sincerely,

*Cathy B. Bailey*

Cathy B. Bailey, Director  
Greater Cincinnati Water Works

**10 or more attempts by end of project**

**Greater Cincinnati Water Works (GCWW) Lead Service Line Replacement Program**

GCWW is committed to providing clean, safe drinking water to all customers.

Owned by Property Owner | Owned by GCWW

Curb Stop Connection

Water Meter | Service Line | Water Main

GCWW is replacing all lead service lines with copper.

<p><b>Why is replacing service lines from lead to copper necessary?</b></p> <p>Service lines deliver drinking water from the main under the street to your home</p> <p>There are about <b>37,000</b> active residential lead service lines in the GCWW service area</p> <p>Lead service lines are a very common cause of leaking water</p>	<p><b>Full replacement is recommended for everyone, but especially...</b></p> <p><b>A B C</b> For all <b>child care facilities</b></p> <p>When <b>high lead levels</b> are detected through testing</p> <p>When there is a <b>leak</b></p> <p>When a water main is replaced</p>	<p><b>Who pays for a lead service line replacement?</b></p> <p>Greater Cincinnati Water Works pays</p> <p><b>100%</b> of all replacement costs with participation in program</p>
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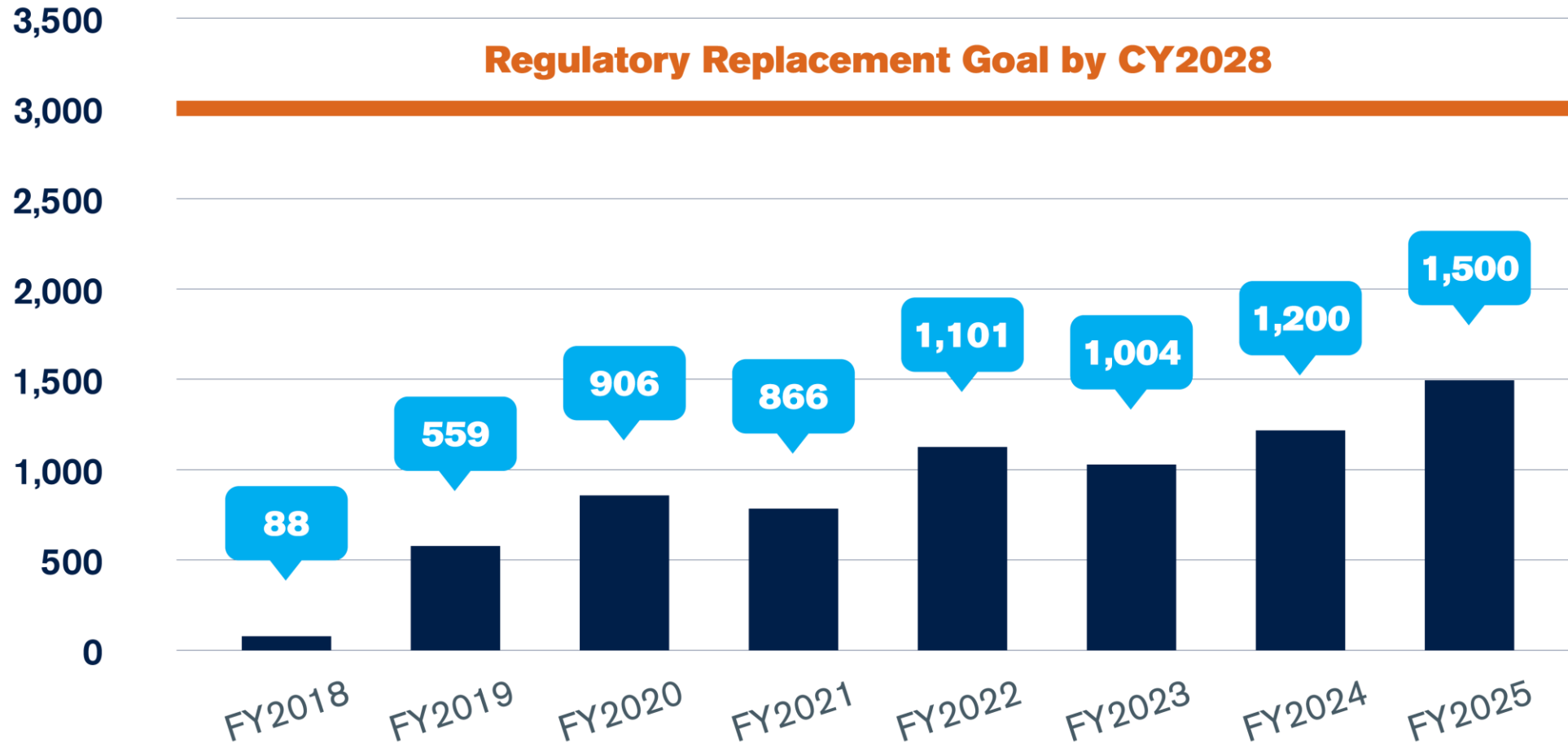
Service Line Replacement Program: 513.651.LEAD (5323) | [Lead.myGCWW.org](http://Lead.myGCWW.org)

08.24



# Replacement Progress

## LSL Replaced Annually





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## Replacing with Equity

- UC-DAAP School of Planning Urban Planning Program
- Consider disadvantaged consumers and population most sensitive to lead

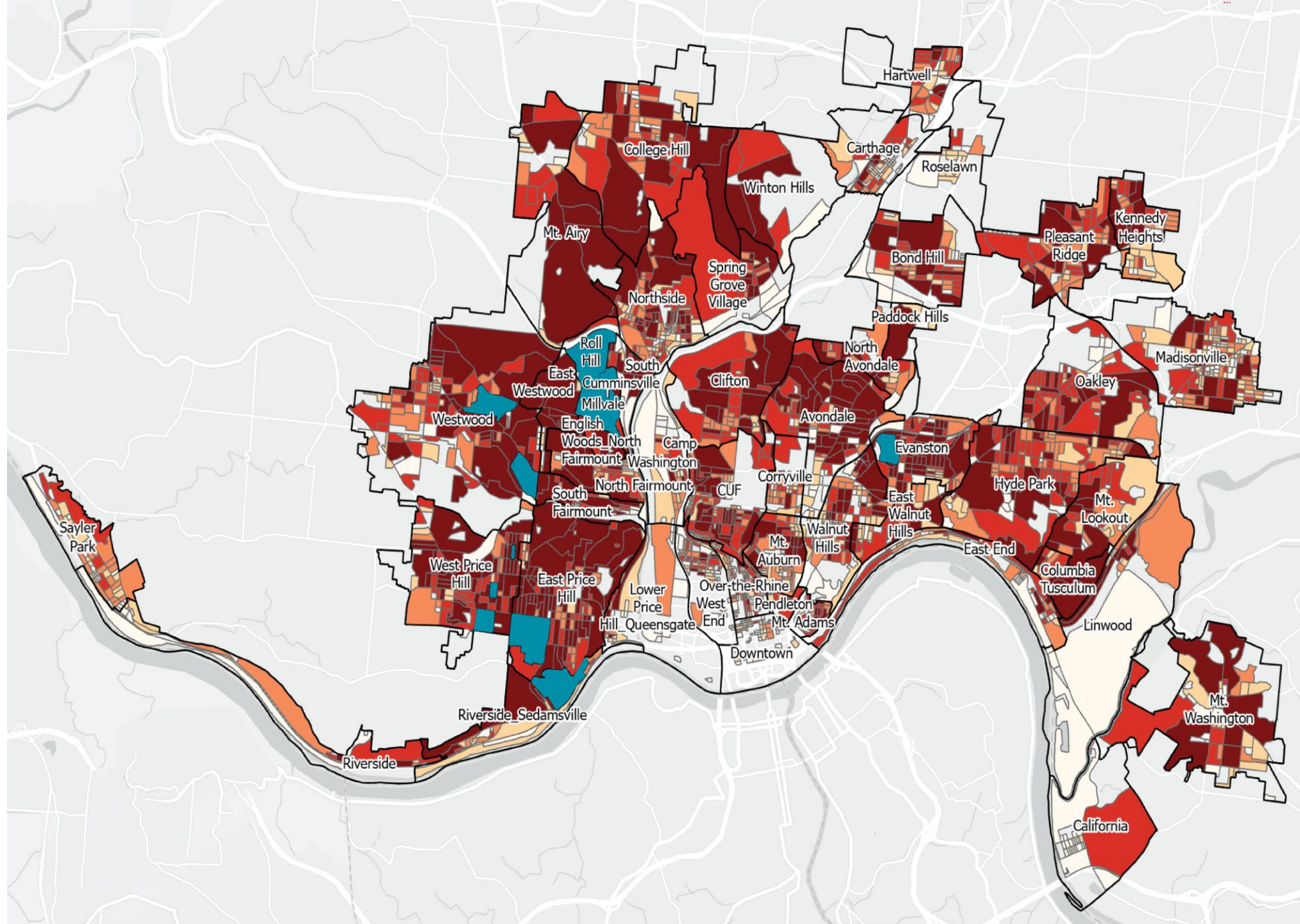
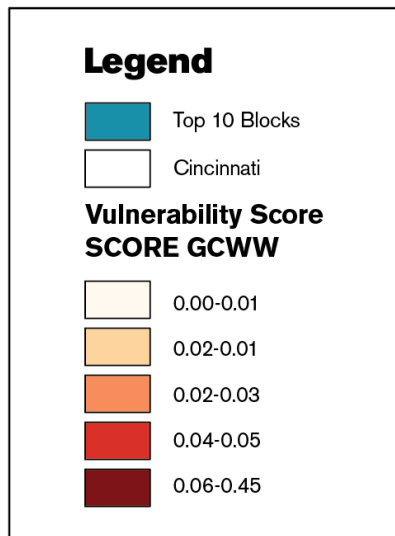
- **Income/poverty**
- **Health insurance coverage**
- **Renter-occupied housing**
- **Race**
- **Educational attainment**
- **Limited English-speaking**

- **Lead service line presence**
- **Elevated blood levels**
- **Childcare facilities**
- **Housing age**
- **Healthy food access**
- **Planned maintenance**



# Overall Scoring of Areas

- 2,740 blocks with LSLs
- Regulatory goal: All lead removed by 2037



## What Customers Can Do Now

### Test, Filter, Flush...

### ...and Replace When We're in Your Area!

- Learn if you have a lead service line
- Sign up for FREE testing
- Flush your tap if it has been unused for 6 or more hours
- As an extra precaution for children or pregnant persons, may use NSF 53 certified filter
- Use cold water for cooking and drinking
- Sign up for lead service line replacement when offered





# Mount Airy Tanks Rehabilitation





## Background

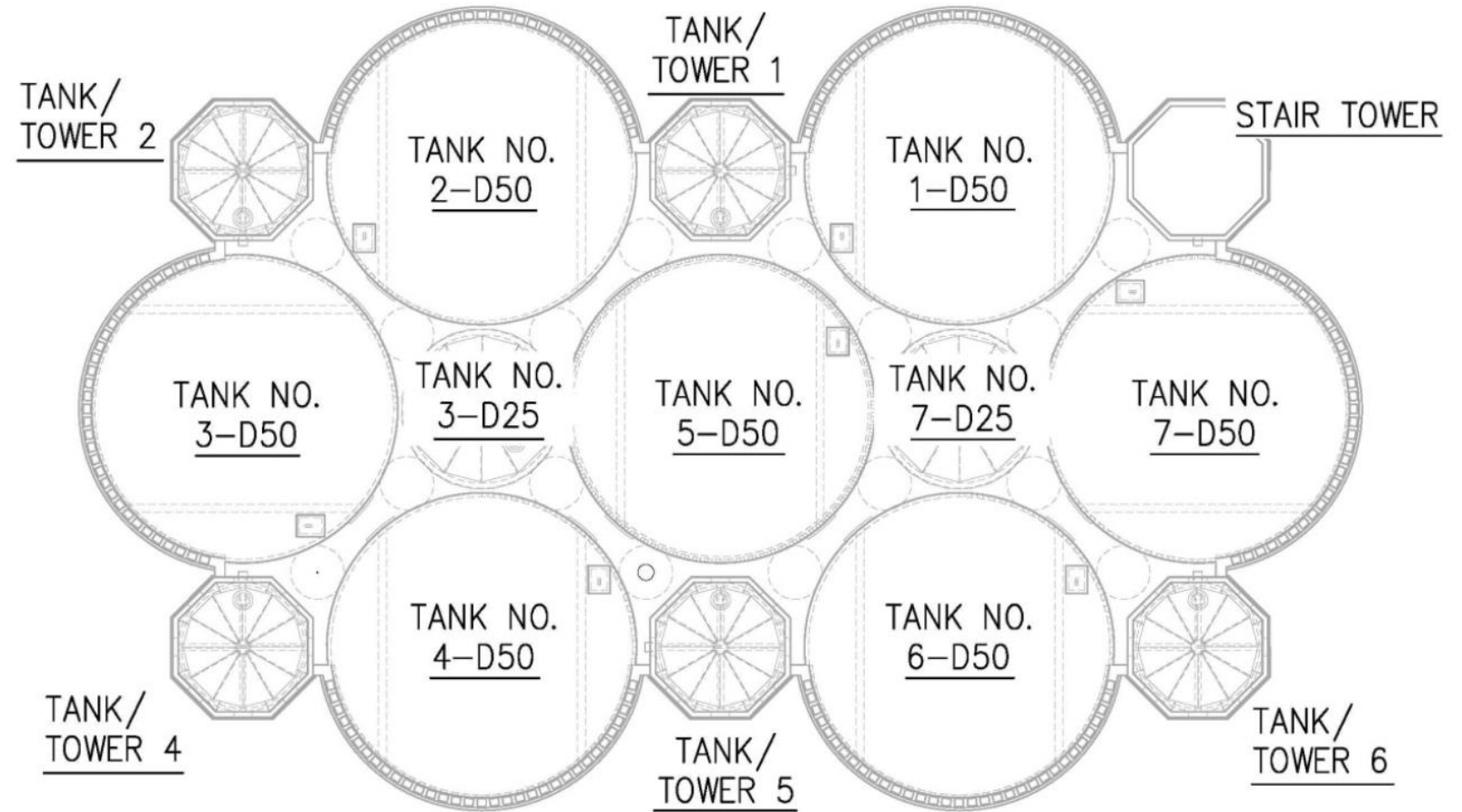
- Constructed 1926-1927
- Historic landmark
- Community icon





## Tanks

- 7 large
- 7 small
- 8.4 MG





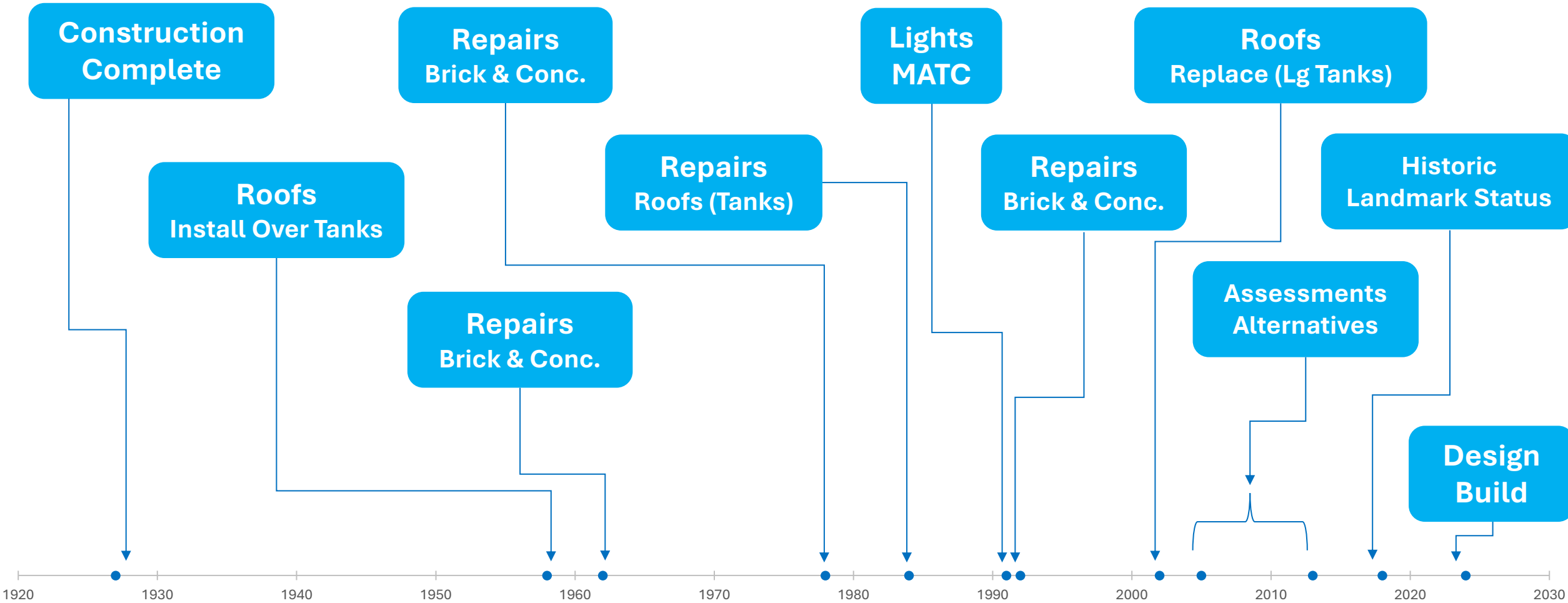
## Concerns

- Physical condition
- Water quality/operations
- Historic landmark  
*new to GCWW*
- Neighborhood interest





# Timeline



## Recent History

- Preliminary Engineering study (2013)
  - *Several possible solutions*
- Decision for design-build approach
- Community engagement
- Historical landmark status (City 2018; AWWA 2020)
  - *Preserve the architecture*
- Decision to rehabilitate entire footprint of facility





## Design-Build

- Progressive design-build
  - Phase 1. Design
  - Phase 2. Build
- Contract executed (Phase 1)
- Kick-off: July 2024



## Design Team



**Hazen and Sawyer**  
 (EOR, sub to D&M)  
 Cincinnati, OH

- Design Team Management
- Structural
- Electrical
- Permitting
- BIM Modeling
- Design QA/QC
- Instrumentation
- Modeling

**Elevar Design Group**

(sub to EOR)

Cincinnati, OH

- Architectural
- Historic Restoration
- Public Relations
- BIM Modeling

**Shrewsberry and Associates**

(sub to EOR/MBE)

Cincinnati, OH

- Civil
- Landscaping

**Resource International, Inc.**

(sub to EOR/WBE)

Cincinnati, OH

- Geotech
- Survey
- 3D Scanning
- Materials Testing

**Clear Consulting, Inc.**

(sub to EOR/WBE)

Cincinnati, OH

- Water Supply

**Dmytryka Jacobs Engineers**

(sub to EOR/SBE)

Toledo, OH

- SCADA System Integration

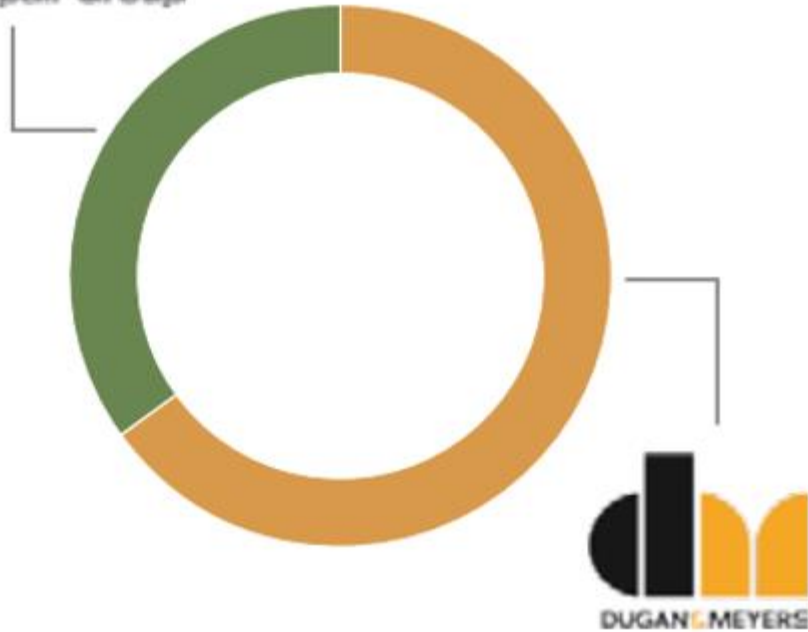




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## Construction Team



**Dugan & Meyers**  
*(Design-Builder)*  
Cincinnati, OH

- Design-Build Management
- Cost Estimating
- Scheduling
- Safety
- Superintendent - General
- Construction QA/QC
- SBE/MBE/WBE Management
- Project Administration

**Structural Systems  
Repair Group (SSRG)**  
*(sub to D&M)*  
Cincinnati, OH

- Historic Restoration
- Cost Estimating
- Superintendent - Restoration
- Field Investigation

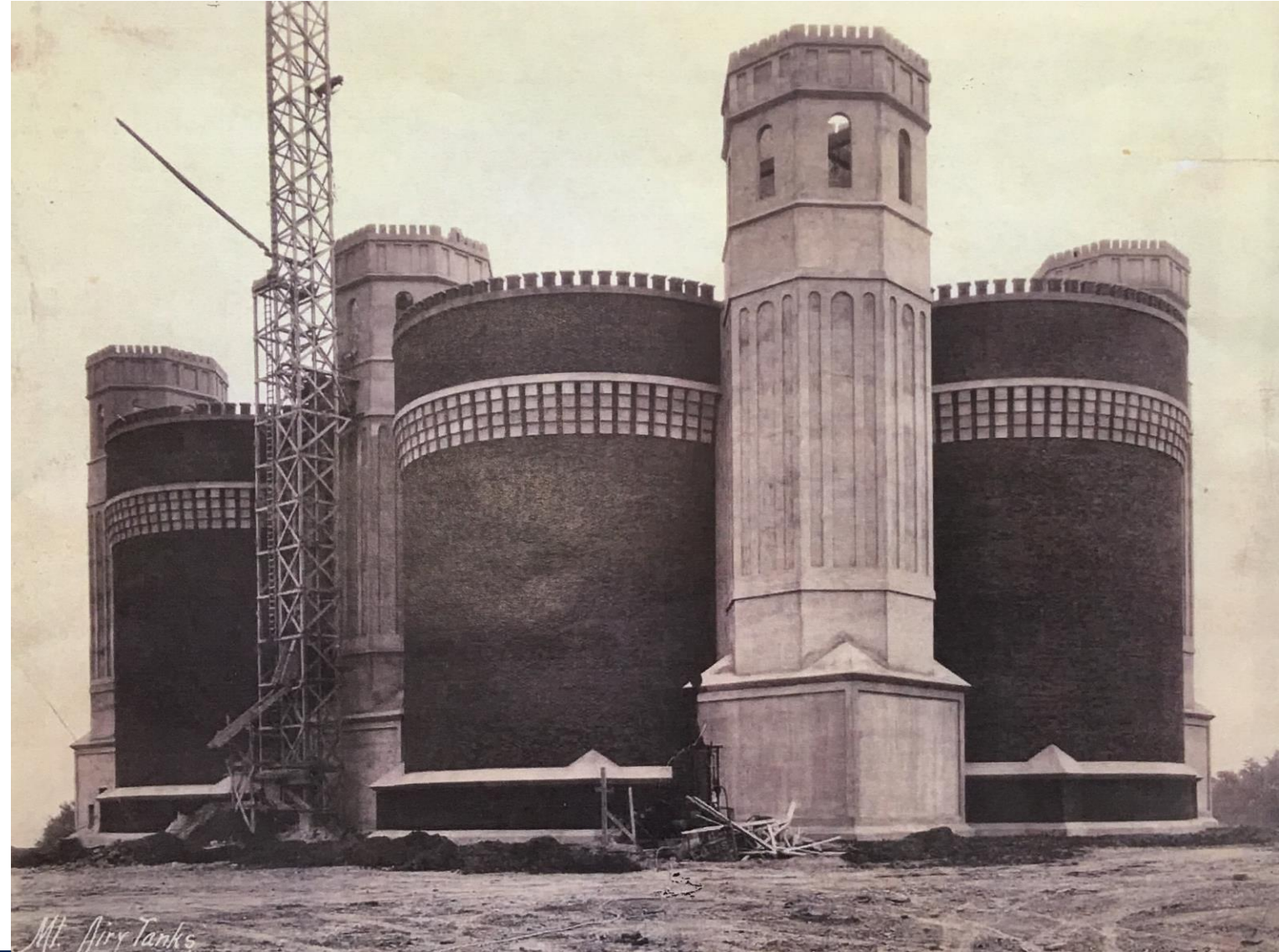


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## Historic Conservation

- Maintain existing footprint and architectural features
- Coordinate with the Historic Conservation Board







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## Preliminary Design

- Repairs
- Replacements
- Reconfigure/optimize
- Preserve historical architecture





## Repairs

- Foundation
- Brick masonry



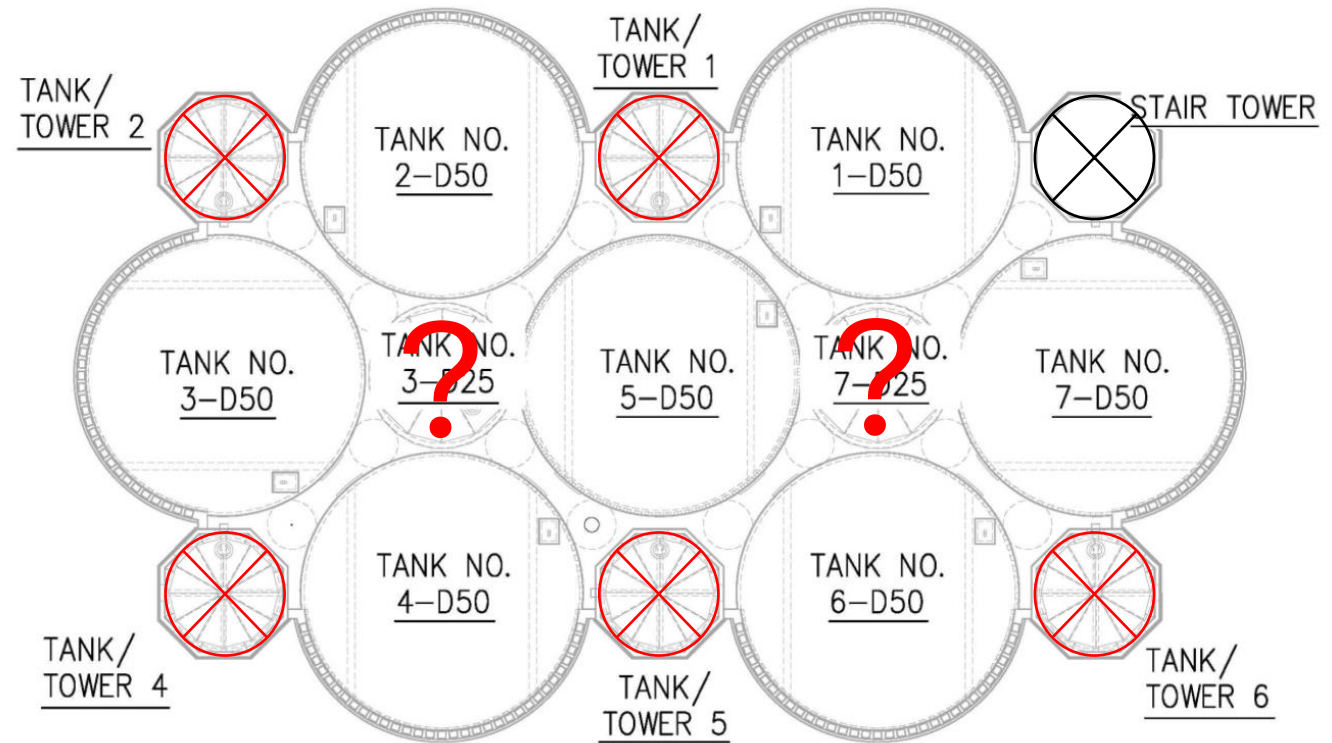


# Replace Towers



## Decommission Tanks

- Remove/abandon small tanks and towers





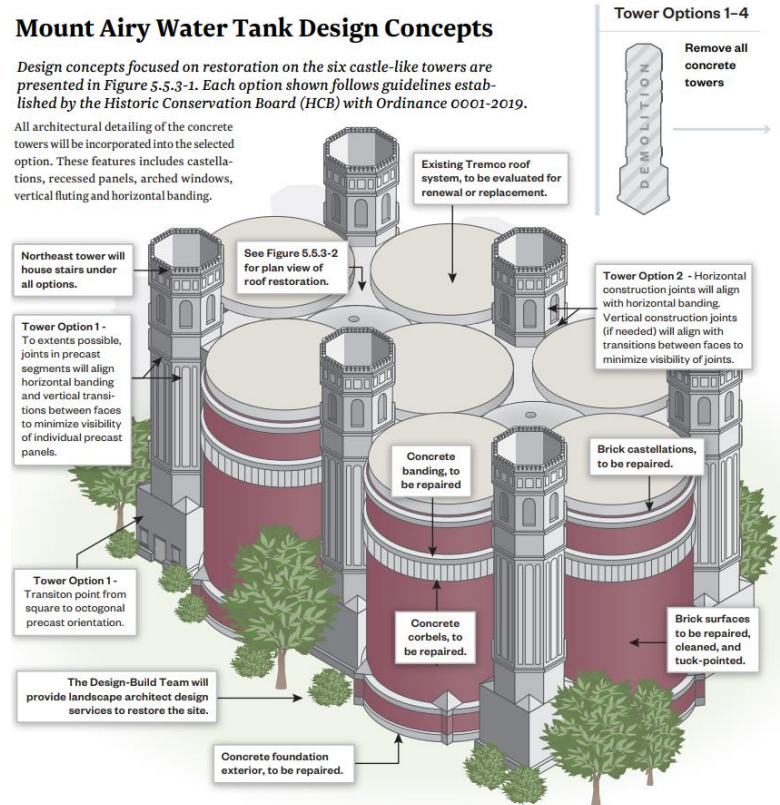


# Tower Replacement Options

## Mount Airy Water Tank Design Concepts

Design concepts focused on restoration on the six castle-like towers are presented in Figure 5.5.3-1. Each option shown follows guidelines established by the Historic Conservation Board (HCB) with Ordinance 0001-2019.

All architectural detailing of the concrete towers will be incorporated into the selected option. These features includes castellations, recessed panels, arched windows, vertical fluting and horizontal banding.



### Tower Option 1

Remove all concrete towers and restore with precast concrete panels supported from steel frames



Upper Segment - at the main roof elevation and above, 8 identical precast concrete panels will be installed to rebuild each tower.

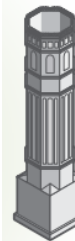


Middle Segment - towers will be restored with 5 identical precast concrete panels at each corner location (middle interior towers will be 3 panels).



Bottom Segment - upper portion will be restored with 5 identical precast concrete panels at each corner location (middle interior towers will be 3 panels). Lower portion will be panels in a square orientation.

### Tower Option 2



Rebuild towers with cast-in-place concrete, replicating all architectural features.

### Tower Option - 5

Repair existing concrete towers in place with traditional surface spall materials. **There are significant concerns with this approach** as outlined in Section 4.2.3.1 of the 2013 Preliminary Engineering Report, but the field investigation will allow GCWW and the D-B Team to fully vet this option.

### Tower Option 3

Rebuild towers with a hybrid approach.



Upper Segment - At roof level the towers would transition to precast concrete panels.

Lower Segment - the towers from grade to the roof would be cast-in-place concrete.

Under this option, precast panels can be directly supported by the structure without a steel frame.

### Tower Option 4



Rebuild towers with architectural fiberglass.

Fiberglass reinforced polymer (FRP) can be molded to mimic the profiles and finish of the towers. It is anticipated FRP panels would be supported from steel framing similar to precast concrete.

It is anticipated that lightweight FRP panels will require less structural steel for support than precast concrete.

## Cost

- **Phase 1 – Design**
  - \$3.8 million (not to exceed)
- **Phase 2 – Construction**
  - Based on design/GMP
  - Preliminary 2020 opinion of cost was \$13 million





## Schedule

- **Phase 1 – Design**
  - 16 months
  - Kick-off: July 2024
  - 90% design: December 2025
  - Guaranteed Maximum Price: Early 2026
  - Finalize design and permits
- **Phase 2 – Construction**
  - Contract amendment
  - Construction est. 24 months (2026-2028)



## Communications

- Open communication
- Community notice of site activities
- Meetings and progress updates





## More?

**Given the time, effort, and funding to rehabilitate the facility...**

- Consider additional uses
  - Additional uses being explored
- Feasibility study begins soon by DCED



# Greater Cincinnati Water University





# Greater Cincinnati Water University

*Inaugural event this spring; will be held annually*

- **Thursday, March 20, 2025**
- **9 a.m. to 1 p.m.**
- **Tangeman University Center at UC**
  
- **Who:** 300 fourth-grade students from CPS
- **What:** Presentations and activities about water resources, conservation, and sustainability



## Greater Cincinnati Water University

- GCWW partnering with Cincinnati Public Schools and the University of Cincinnati
- Presenters include Millcreek Alliance, Procter & Gamble, Ohio EPA, ORSANCO, The STEM Lab, and others
- Scheduled to appear are Mayor Aftab Pureval, Vice Mayor Jan-Michele Lemon Kearney, City Manager Sheryl Long, Interim Assistant City Manager Cathy Bailey





# Any Questions?

**Thank you for allowing us to present!**



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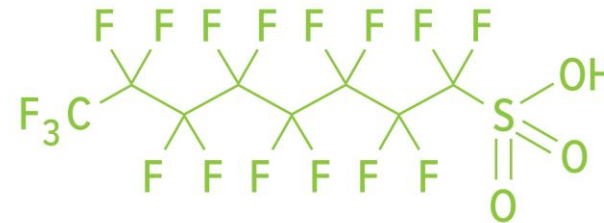
# PFAS Treatment



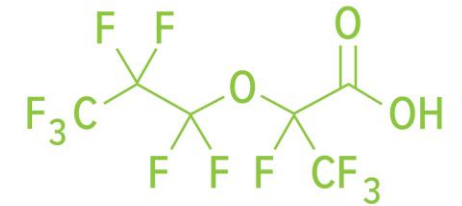


## PFAS

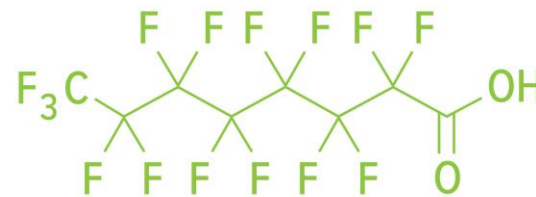
- Man-made group of compounds with carbon and fluorine
- Uses include non-stick/stain repellent coatings, water repellents, fire retardant coatings, fire fighting foam, electroplating and others
- Does not break down in natural environment – very widespread
- Thousands of different types (14,000+)
- Some common and best known – PFOA, PFOS, GenX, PFBS
- Potential health issues not fully known
- Now regulated in drinking water



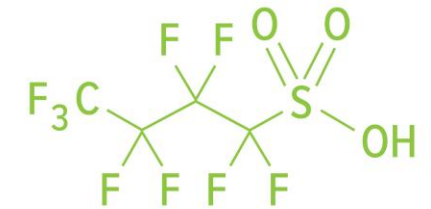
**PFOS**



**HFPO-DA**



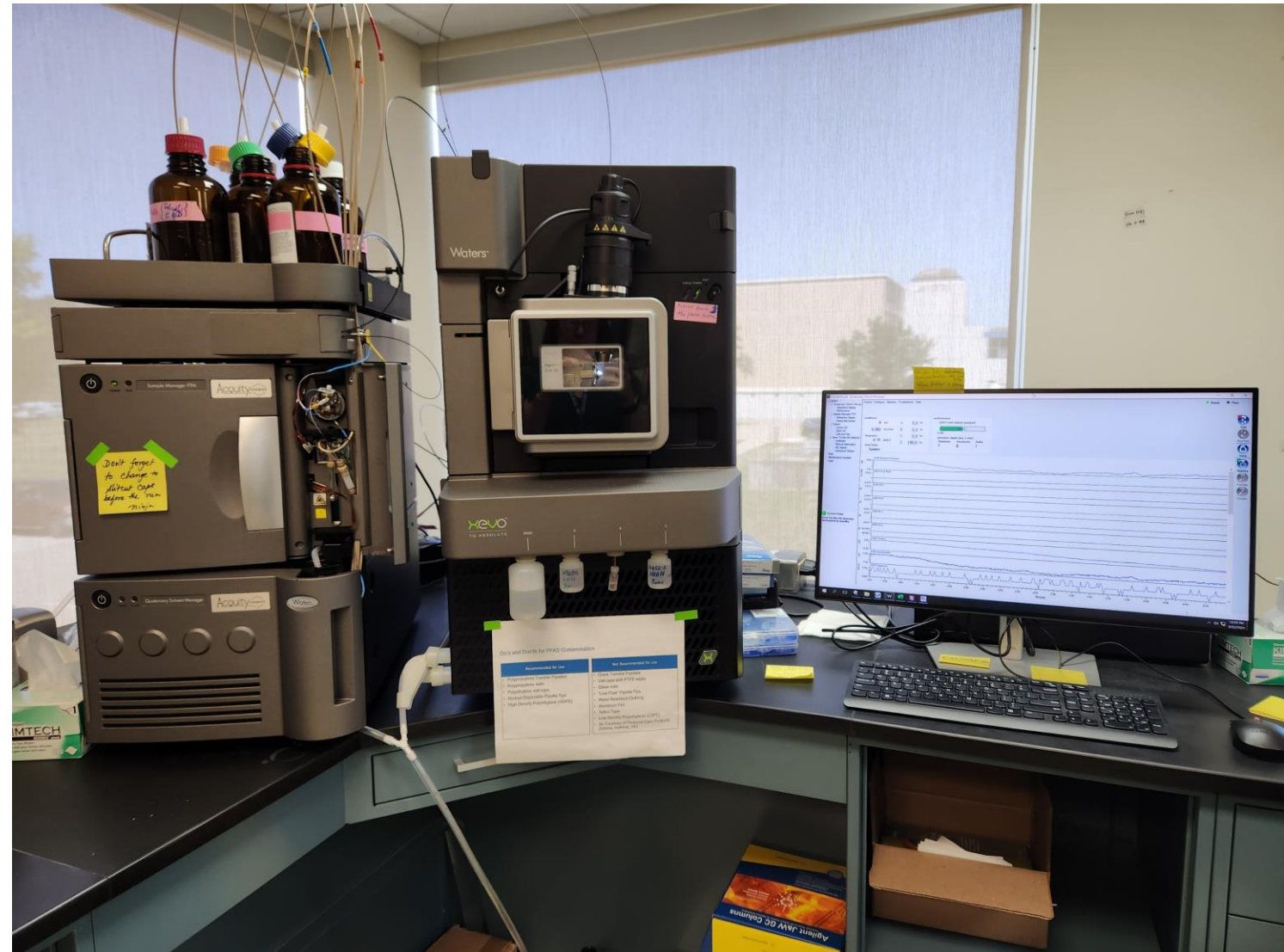
**PFOA**



**PFBS**

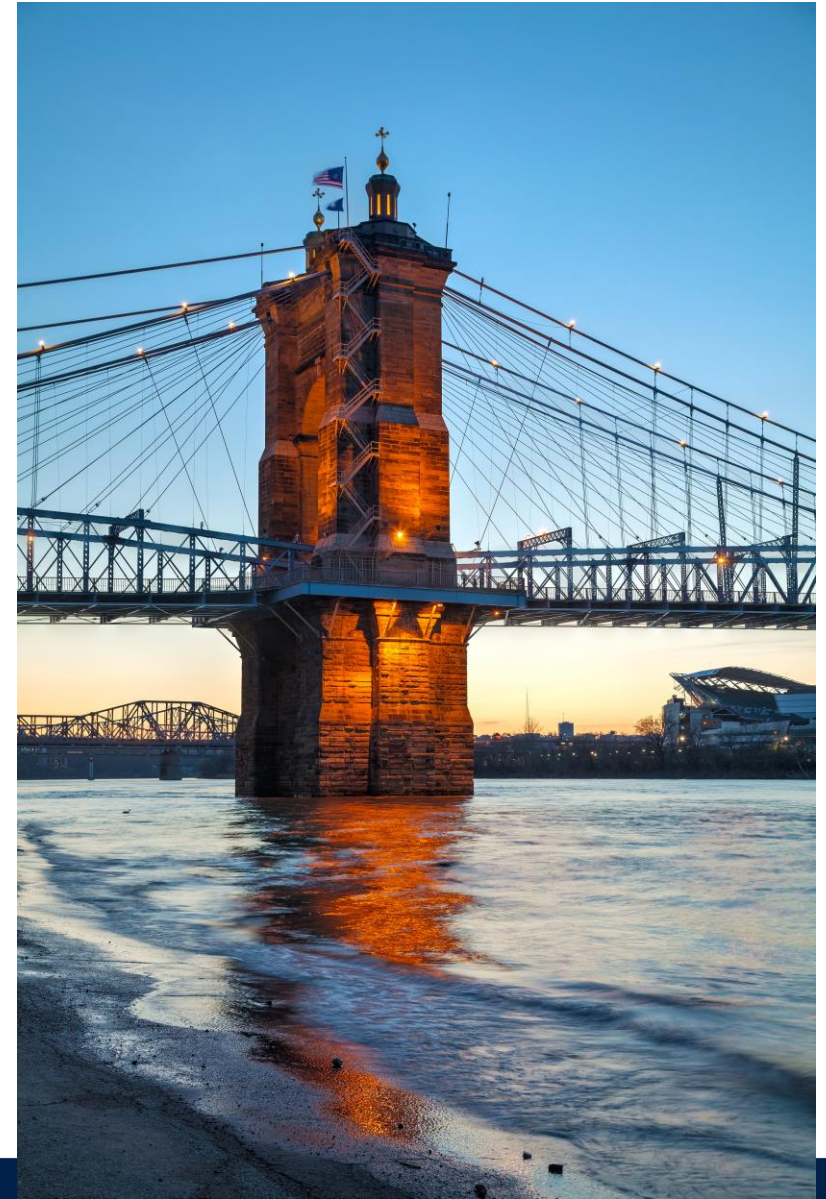
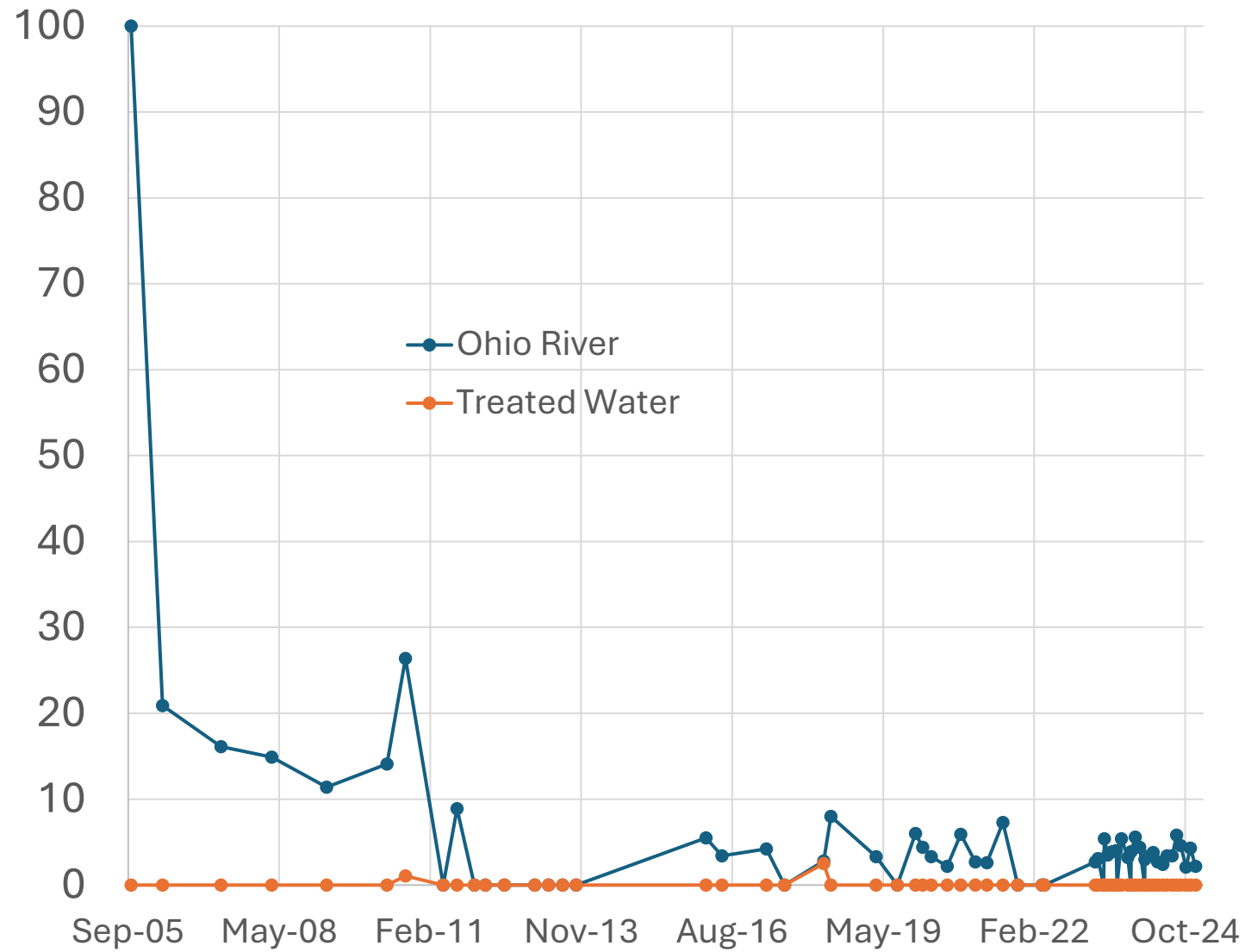
## Drinking Water Regulation

- US EPA finalized drinking water regulation in April 2024
- Maximum contaminant level set for 9 compounds
- If found in water, systems have until 2029 to implement solutions that reduce PFAS levels
- Richard Miller Treatment Plant has GAC which is a “Best Available Technology”





# Ohio River and Miller Plant PFOA



## Charles M. Bolton Plant

- Very low levels found in groundwater
- Treatment will be needed
- Obtained grants from OEPA to examine treatment options and begin design
- GAC at Bolton Plant, similar to Miller Plant, is best treatment option
- Cost: About \$100M
- Also examining other non-treatment options
- Need to have solution in place by 2029

