WEST BASIN

Municipal Water District

West Basin Recycled Water Distribution System Review

WateReuse Los Angeles Chapter Meeting

West Basin MWD, Carson

June 9, 2026

www.westbasin.org

West Basin Background

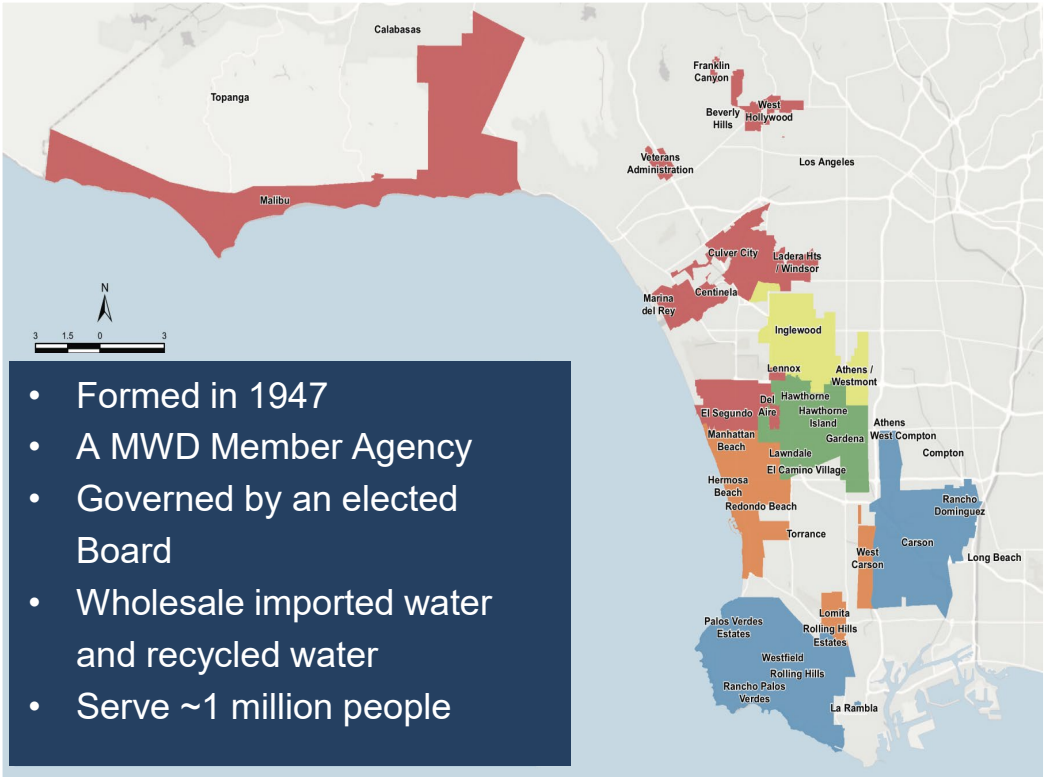
Division I
Tommy Faavae
Secretary

Division II
Gloria D. Gray
Past President

Division III
Desi Alvarez
Treasurer

Division IV
Scott Houston
Vice President

Division V
Donald L. Dear
President



- Formed in 1947
- A MWD Member Agency
- Governed by an elected Board
- Wholesale imported water and recycled water
- Serve ~1 million people

West Basin Background

- Wholesale Potable Water – Metropolitan Water District
  - West Basin doesn't have potable water distribution system
  - Wholesale to purveyors

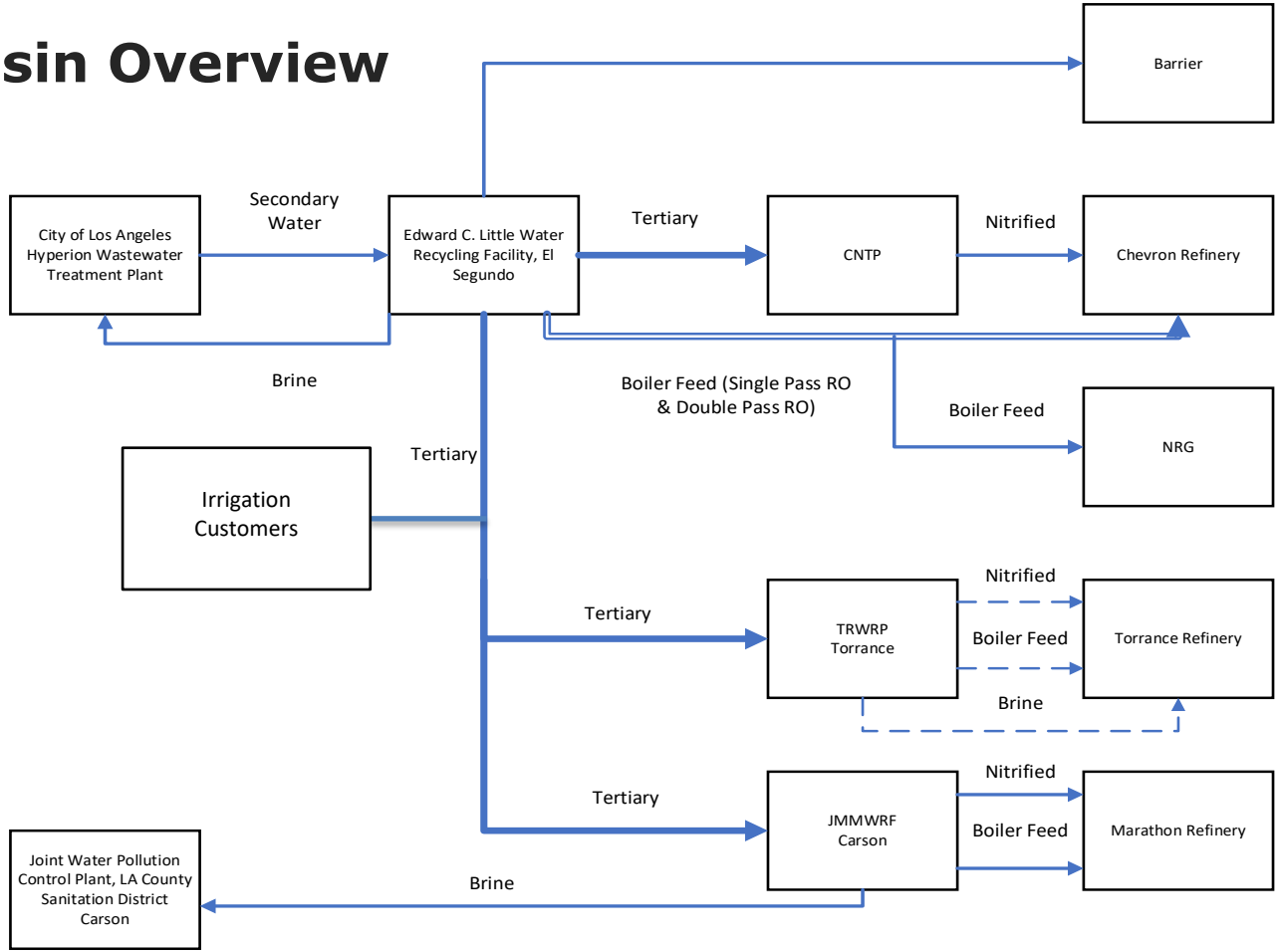
- Produce and wholesale Recycled Water
  - West Basin owns pipelines
  - Wholesale to purveyors. Refinery, LADWP, and WRD agreements
    - California Water Service
    - City of El Segundo
    - City of Inglewood
    - City of Manhattan Beach
    - City of Torrance
    - Golden State Water Company
    - LADWP – We do not own/maintain LADWP pipelines
    - WRD/LA County
    - Refineries

West Basin – Recycled Water Qualities

- West Basin produces 5 recycled water qualities ~ 30 MGD
    1. Tertiary Disinfected RW – Irrigation/Industrial (WB- 370 meter services, LADWP 226 meter services)
    2. Nitrified – Refinery Cooling (3 refineries)
    3. RO Single Pass – Refinery Boiler Feed (3 refineries)
    4. RO Double Pass – Refinery Boiler Feed (1 refinery)
    5. Barrier – WRD

- Tertiary RW - West Basin owns pipelines up to meter service
    - West Basin ownership ends at meter supply (including angle valve)
    - Purveyor owns meter and box
    - Tertiary RW end users are billed by purveyors

West Basin Overview



West Basin Distribution System

Pipeline Description	# Valves	# Air Vacuum Valves	# Blow Offs	Length (miles)
Recycled Water - Tertiary	349	375	348	90.6
Brine - JMMWRF to JWPCP	0	31	5	5.3
Brine - ECLWRF to Hyperion	0	6	5	2.9
Force Main - Secondary Effluent	1	10	4	2.8
Recycled Water - Single Pass Reverse Osmosis (NRG)	7	14	10	1.4
Recycled Water - Single Pass Reverse Osmosis (Chevron)	1	8	6	1.8
Recycled Water - Double Pass Reverse Osmosis (Chevron)	1	7	6	1.7
Recycled Water - Nitrified (Marathon)	0	6	2	1.1
Recycled Water - Single Pass Reverse Osmosis (Marathon)	0	6	2	1.1
Recycled Water - Barrier	0	5	2	0.8
Recycled Water - Nitrified (Chevron)	0	1	0	0.5
Total	**359**	**469**	**390**	**110**

ECLWRF - Edward C. Little Water Recycling Facility

JMMCRWRP - Juanita Millender-McDonald Carson Regional Water Recycling Plant

JWPCP - Sanitation Districts of Los Angeles County - Joint Water Pollution Control Plant

West Basin Pump and Disinfection Stations

Dominguez Booster Pump & Chlorine Disinfection Station

- 2-40 hp pumps
- 1-7.5 hp pumps
- Disinfection Station operating

Torrance Booster Pump & Chlorine Disinfection Station

- 3 – 40 hp pumps
- 2 – 10 hp pumps
- Disinfection Station operating

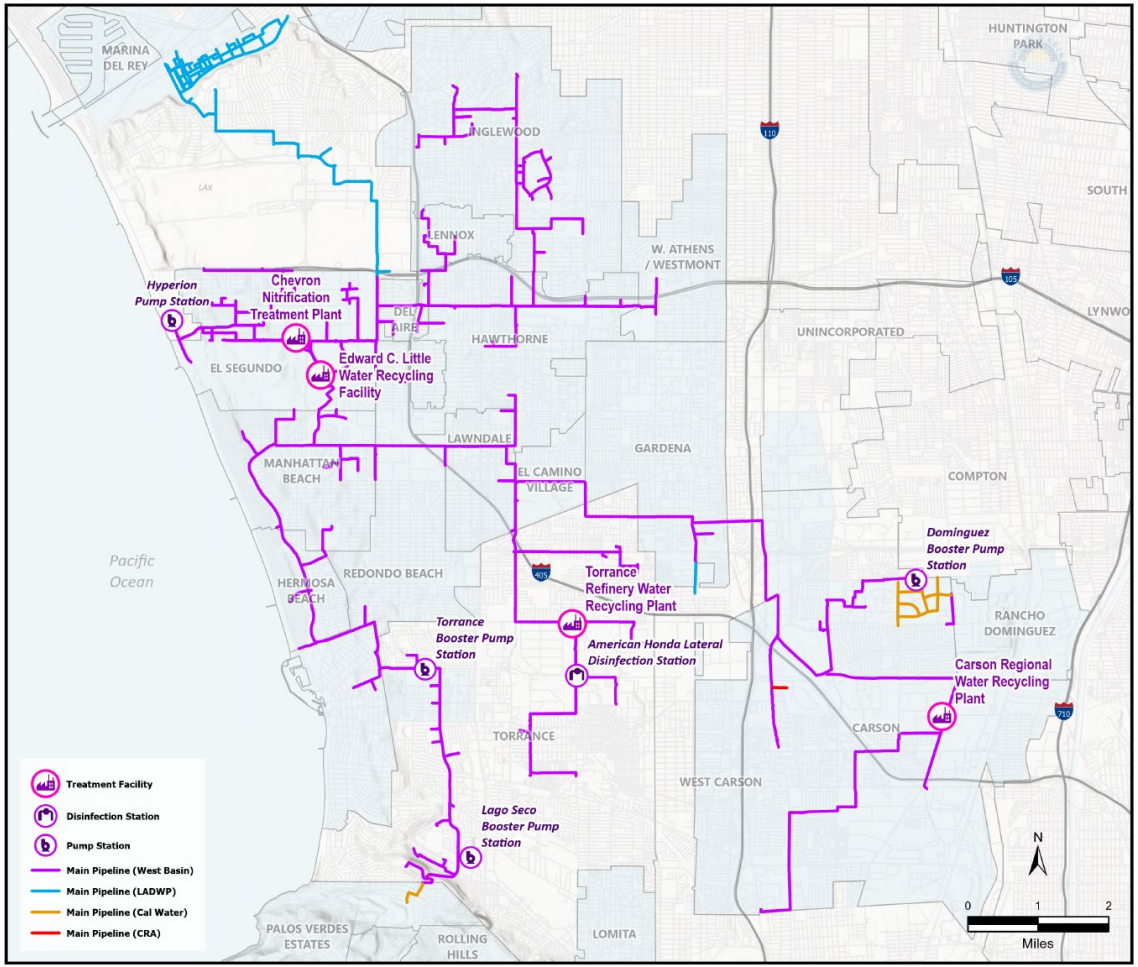
Lago Seco Pump Station

- 3 – 40 hp pumps
- 2 – 10 hp pumps

Honda Lateral Disinfection Station

- Stand alone chlorine disinfection station

Recycled Water Distribution System



West Basin – Distribution System Challenges

- Oversized pipelines – sized for potential expansions
  - Increased water age, reduced chlorine residual
- Tertiary disinfected recycled water not nitrified – ammonia ~ 50mg/l
- Distribution system not looped
- No permit to flush water to storm drain
- LA County Sanitation Districts Permit
  - Flush to sewer where manhole is accessible, local city permit
  - 50,000 gallons per day, 200 GPM
- Demand decreasing in some pipelines
- Biofilm growth - further decays chlorine residual
- Distribution system not designed for pigging
- Pressure variations
- Limited isolation valves
  - Cost saving measure

West Basin – What would help?

- Additional disinfection stations
- Remove ammonia from tertiary disinfected recycled water
- Permit for flushing to storm drain for maintenance
- Construct flushing stations
  - Sewer flushing station at Sofi and Carson Reclamation Authority development.
- Construct distribution system loops
- Distribution system allow for pigging
- Storage tanks at satellite plants
- Increased demand

Questions?

Hazen WATEREUSE LOS ANGELES




Evaluating Distribution Network Water Quality Changes in Reuse Applications

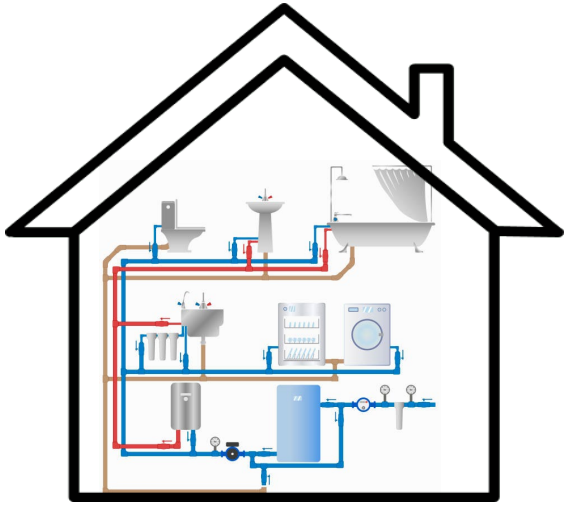
June 9, 2026

Nicole Blute, PhD, PE
Aliya Ehde, PhD

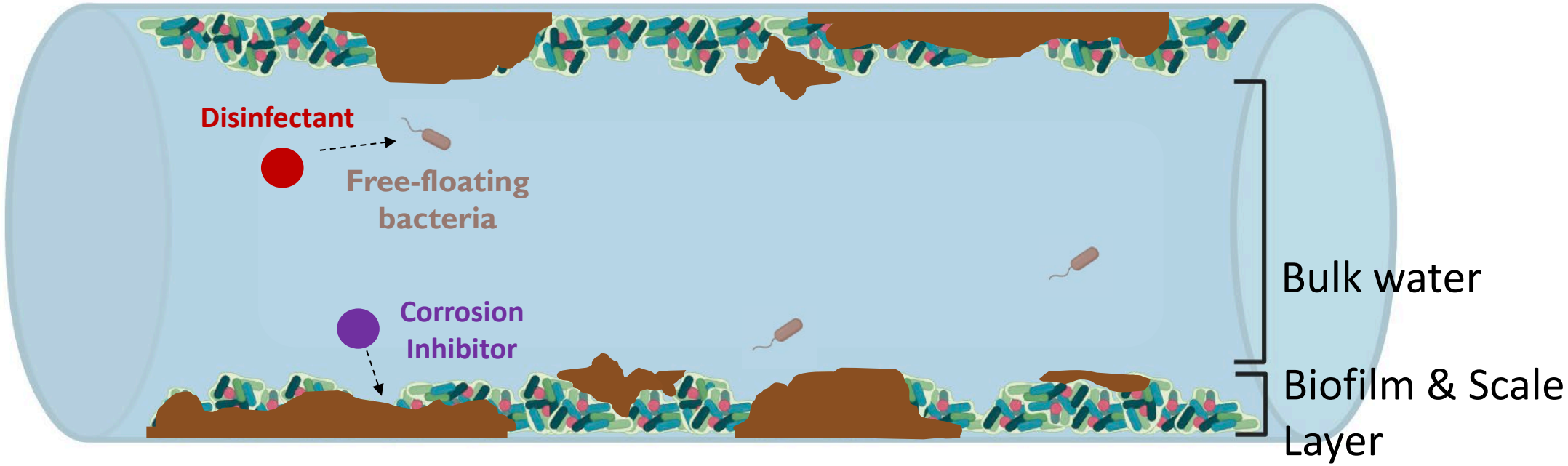
The Distribution Network

- The quality of water can change throughout distribution – both chemically and microbially
  - *Disinfectant decay*
  - *Temperature change*
  - *Microbial growth*
  - *Biofilm formation*
  - *DBP formation*
  - *Corrosion*
  - *etc.*

- These changes can also be further exacerbated within the plumbing of buildings and homes
  - *A wider variety of plumbing materials*
  - *Variations in surface area-to-volume ratios*
  - *Additional plumbing components: water heaters, water softeners, POU-filters*
  - *Variable water residence times (i.e., water age / stagnation)*

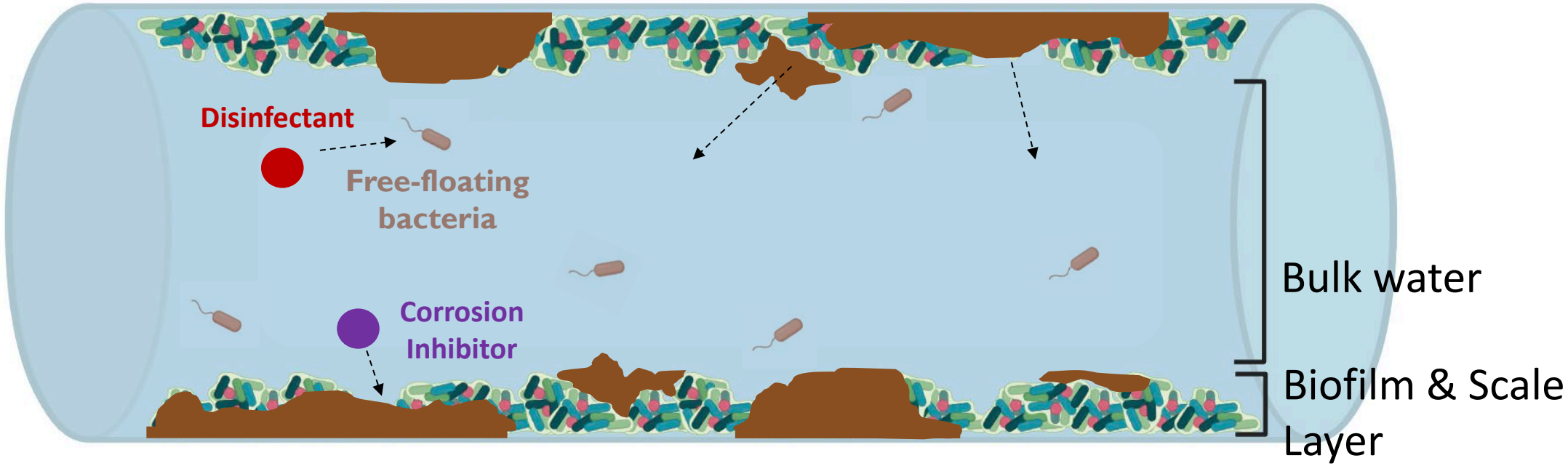


Biofilm and Scale in Distribution Systems



Biofilm and Scale in Distribution Systems

Changes in source water or water quality composition can disrupt existing ecological and chemical balances within the distribution network – even when transitioning to more “pure” water



Therefore, it is critical to account for distribution system dynamics when transitioning to recycled water.

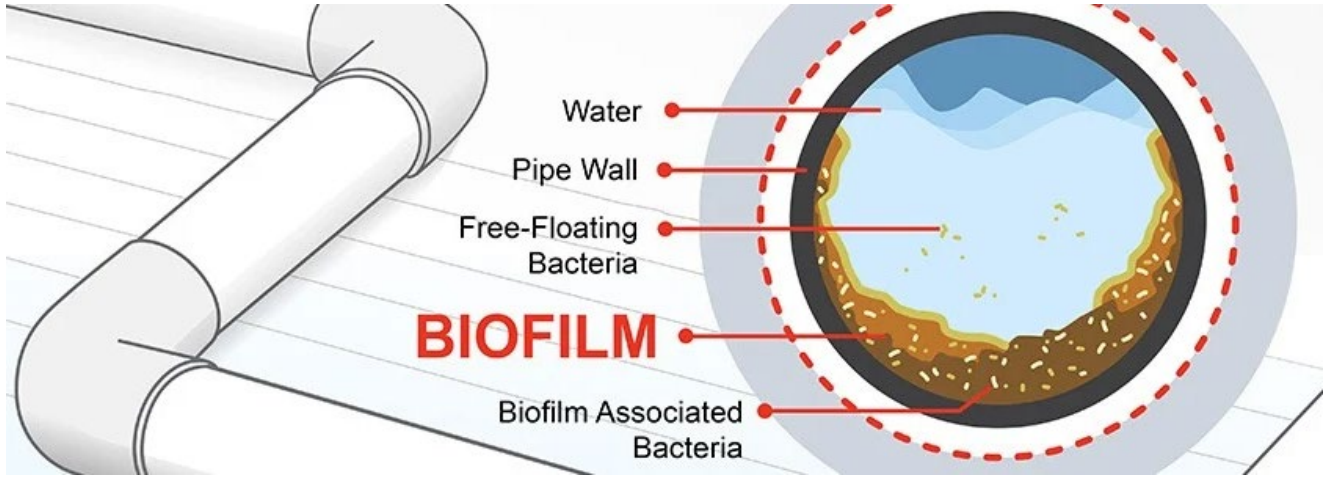
Understanding Biofilms

Biofilms are accumulations of microorganisms and organic/inorganic material that **attach to the inner surfaces** of drinking water distribution systems (e.g., pipes and tanks)

Not all microorganisms are harmful to human health → **Biofilm presence ≠ poor water quality**

HOWEVER, biofilms…

- Create a **protected environment** where bacteria can grow and can **shield microorganisms** from disinfectants
- Growth of certain microorganisms can compromise water quality. For example….
  - **Nitrifying bacteria** → Cause nitrification → disinfectant loss
  - **Sulfur-reducing bacteria** → Produce **hydrogen sulfide** → rotten egg odor
  - **Opportunistic pathogens** → infect immunocompromised individuals



Factors Influencing Biofilm Growth

- Low disinfectant residual
- High assimilable organic carbon (AOC)
- Water age / stagnation /dead ends
- Pipe material
- Temperature

Biofilm Management Strategies

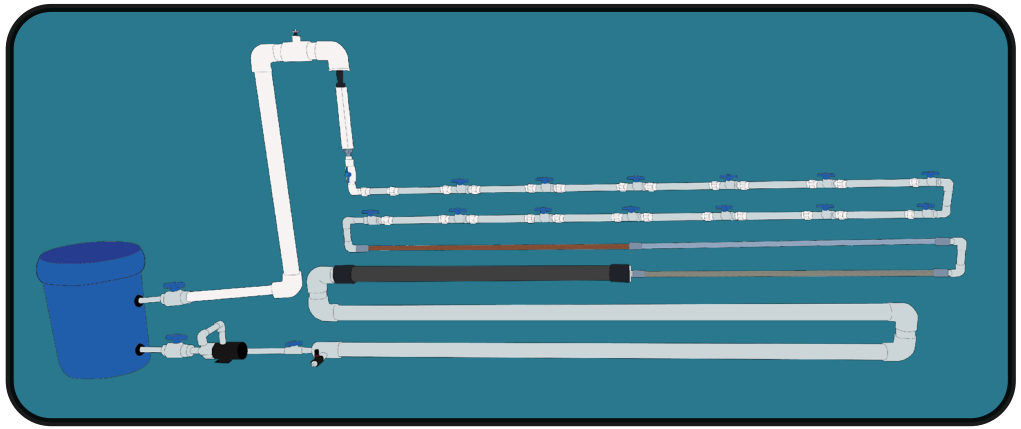
- Maintain disinfectant residual
- Routine flushing

Stay in the loop: lessons learned about the microbial water quality in pipe loops transitioned from conventional to direct potable reuse water

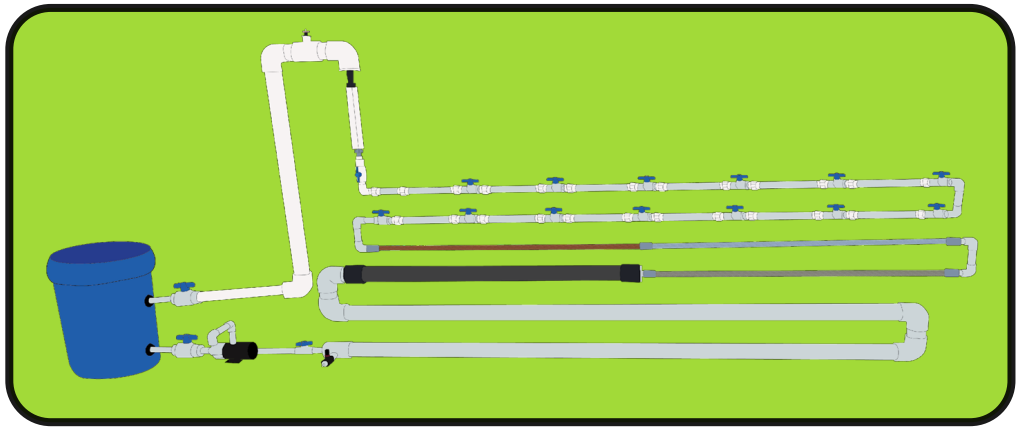
Lauren C. Kennedy, Scott E. Miller, Rose S. Kantor, Hannah D. Greenwald, Michael J. Adelman, Hari Seshan, Paige Russell, Kara L. Nelson, **Environ Sci Water Res Technology.** (2023)

One of the first studies to investigate the microbial impacts of a transition to direct potable reuse

Conventional Feedwater



Advanced Blend
(90% ATW, 10% Conventional)



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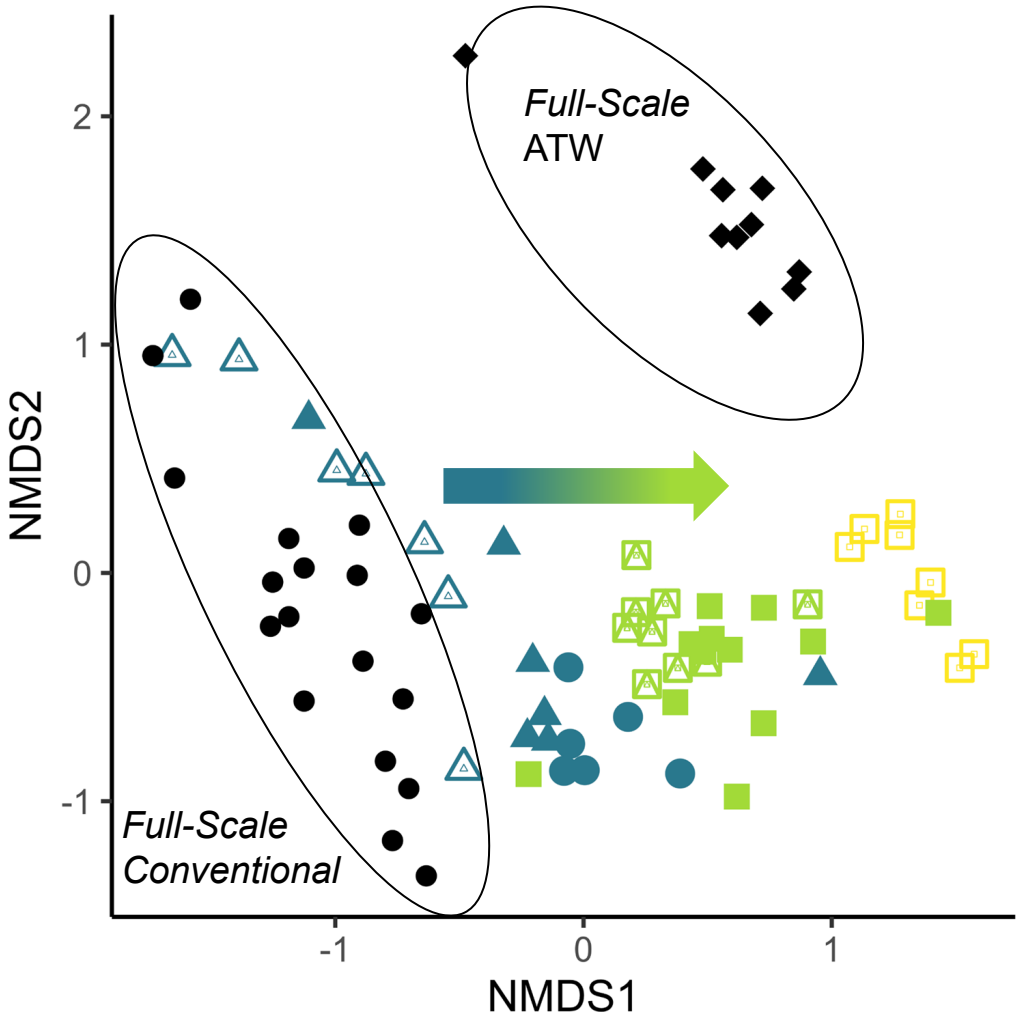
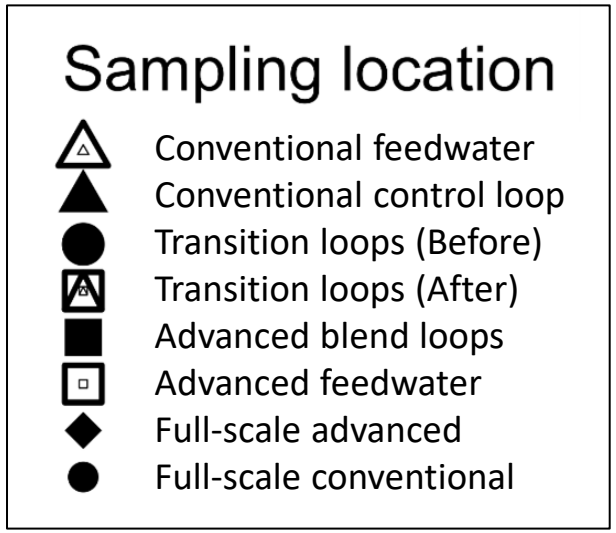
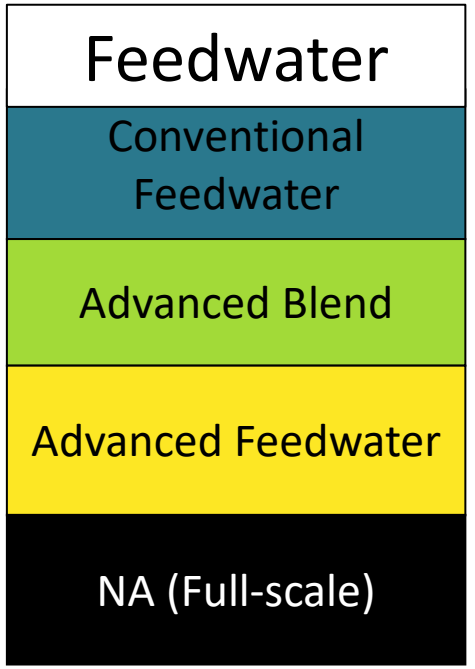






- The full-scale ATW and full-scale conventional distribution system had distinct microbial communities.
- Transitioning to ATW resulted in microbial community shifts

POTENTIAL MICROBIAL CONTAMINANTS

Opportunistic Pathogens (OPs):

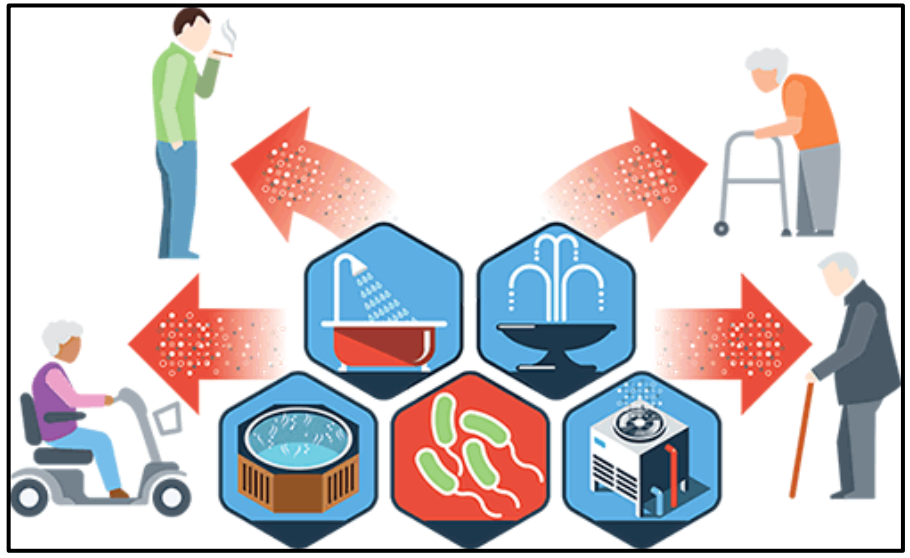
Nontuberculous mycobacteria
- *Mycobacterium avium*

Pseudomonas
- *P. aeurignosa*

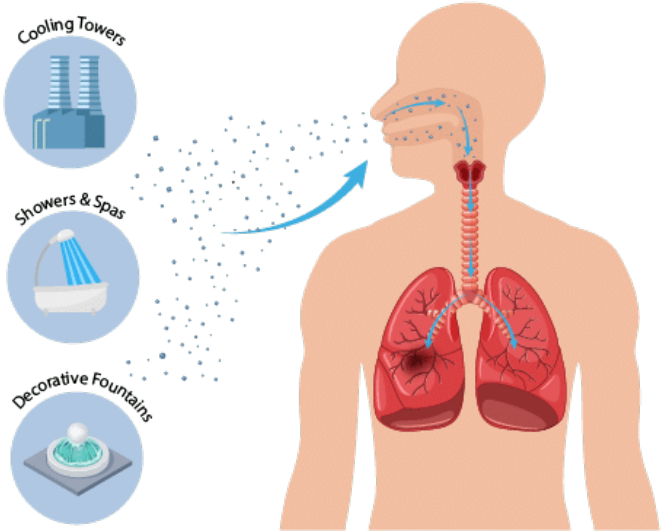
Legionella
- *L. Pneumophila*

Most U.S. waterborne hospitalizations and deaths

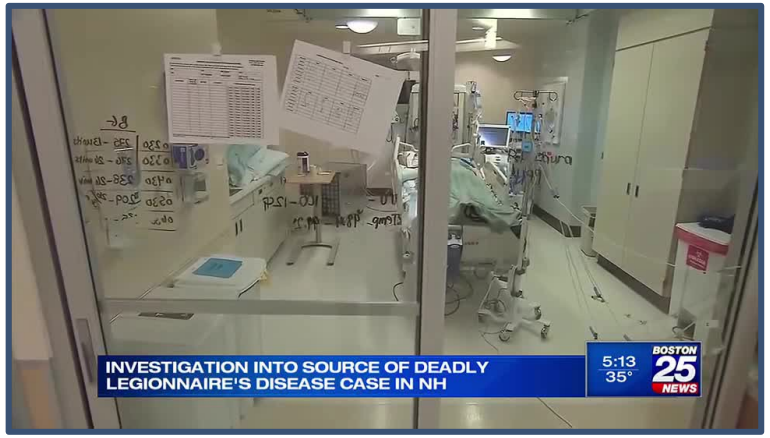
Costing $2.39 billion annually



Legionella Growth and Spread: For Healthcare Facilities | CDC. (2022, March 24). https://www.cdc.gov/legionella/wmp/overview/growth-and-spread.html



Kurita Europe. (2022). *Common source of Legionella transmission.* Legionella Control. Retrieved November 30, 2025, from https://www.kurita.eu/legionella/



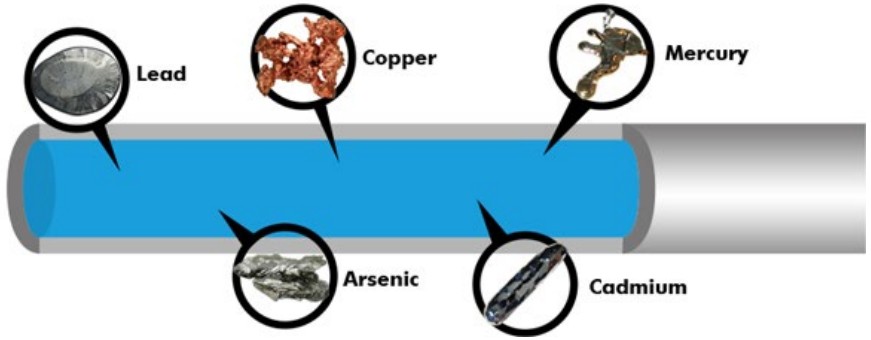
Morelli, J., & News, B. 25. (2024, January 2). *NH officials investigating source of Legionnaires cases*. Boston 25 News. https://www.boston25news.com/news/local/hillsborough-county/nh-officials-investigating-source-legionnaires-cases/WRGO2BFRQBENNOPESA465YCQCU/

POTENTIAL CHEMICAL CONTAMINANTS

Potential metal leaching from scale & plumbing materials

Common scale metals: Fe, Mn, Al, As, Cd, Cr, Pb, Cu

Contributing factors: water chemistry, plumbing material, etc.

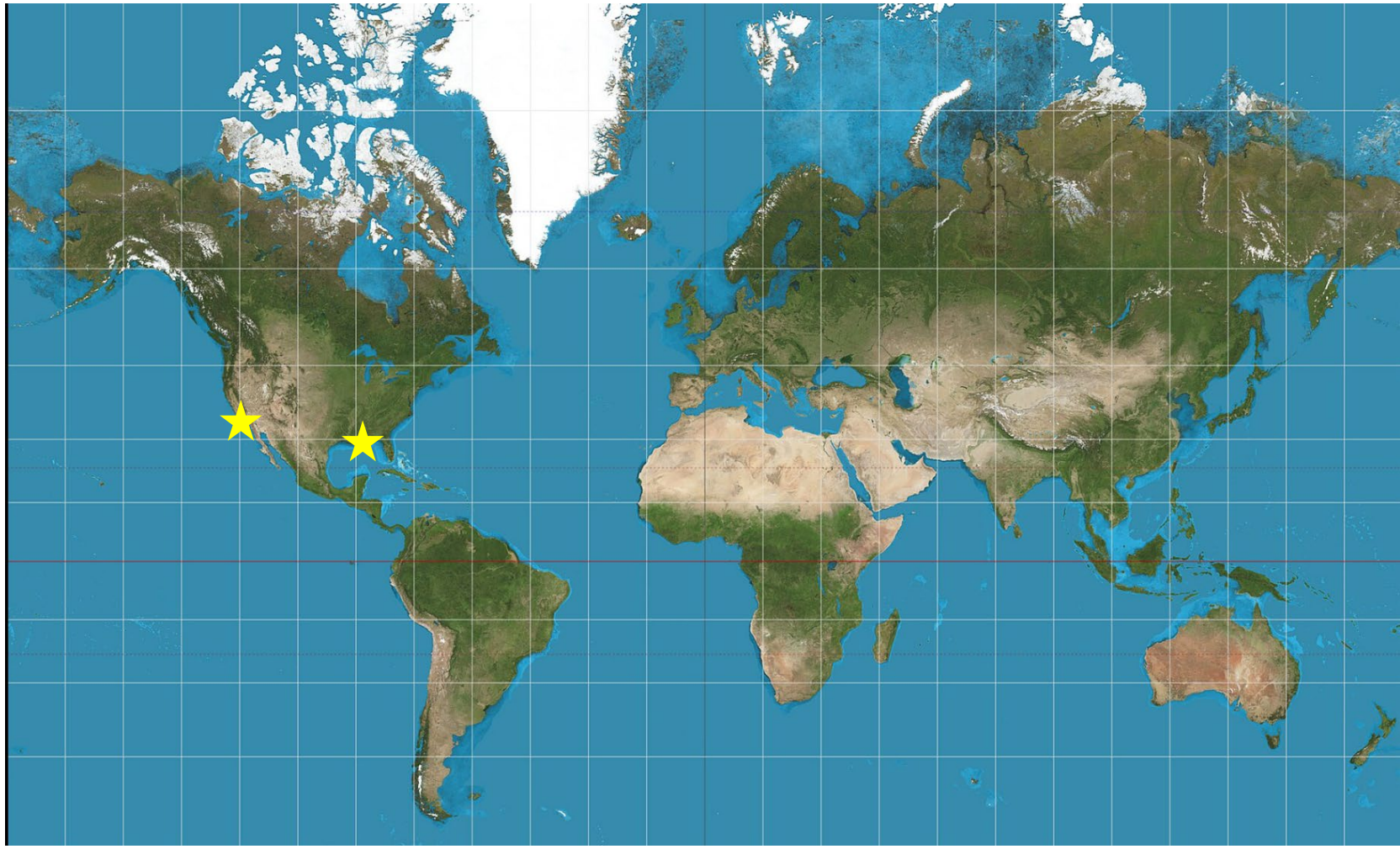


(" Basic Information about Lead in Drinking Water| EPA" 2024)

Reverse Osmosis Water Usually Blends Before the Distribution System

Extensive outreach confirmed that most RO systems blend product water before serving

- Water quality changes with RO – lower chloride, sulfate
- Even with post-treatment like lime or calcite filters, water quality often has lower alkalinity and calcium
- Only 2 examples of direct-to-distribution RO without blending and with lead analysis at customer taps was identified



Pipe Loop Studies for Evaluating Microbial and Corrosion Changes

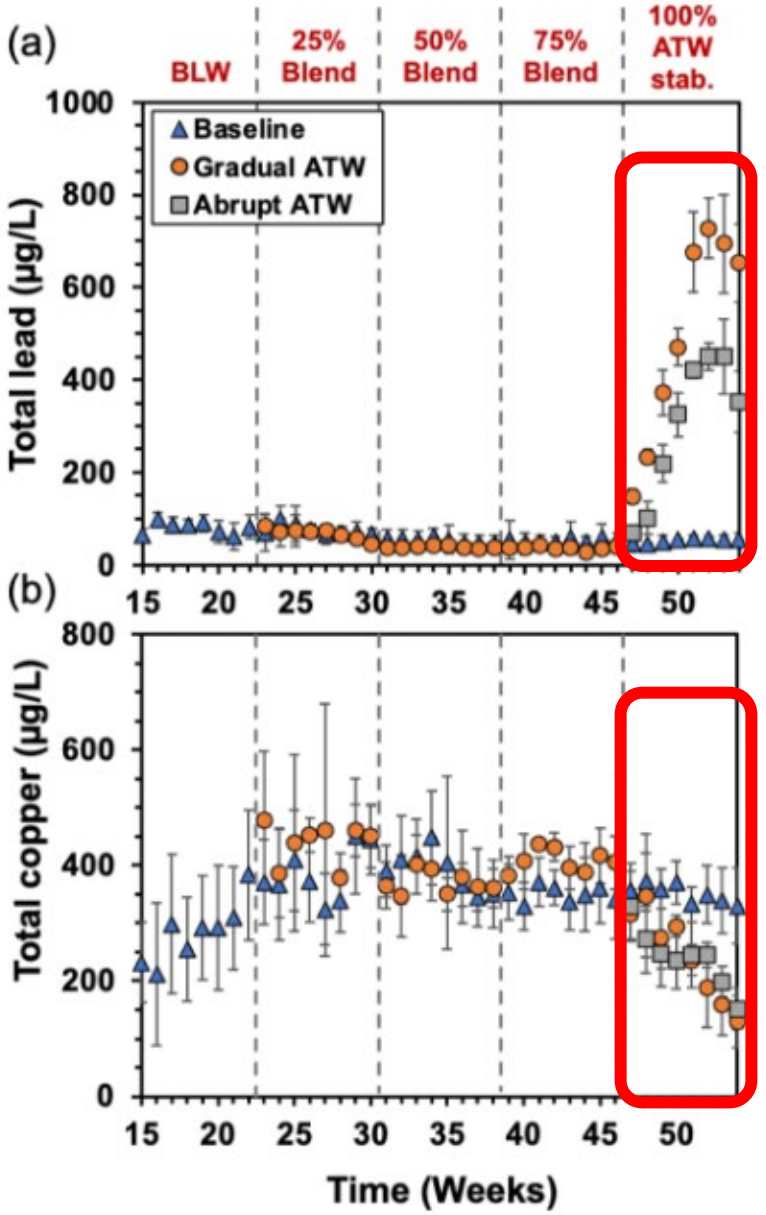
How will source water changes impact the microbial and chemical conditions in the distribution system?

- **Switching to recycled water can disrupt established ecological conditions and corrosion processes in distribution systems due to changes in source water quality**
- **Important to test materials of interest in your distribution system**

Pipe Loop Testing in WRF 4953 Indicated a Mechanism of Lead Release with 100% ATW

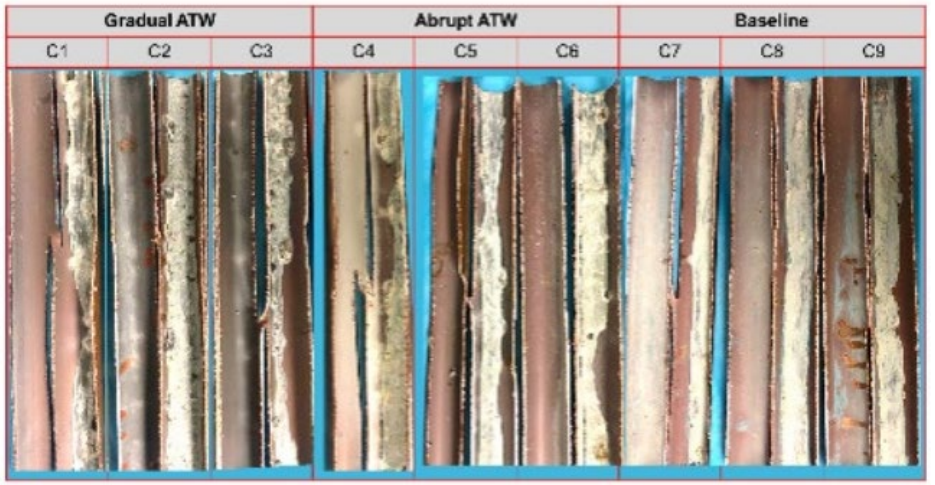
WRF 4953: Considerations and Blending Strategies for Drinking Water System Integration with Alternative Water Supplies

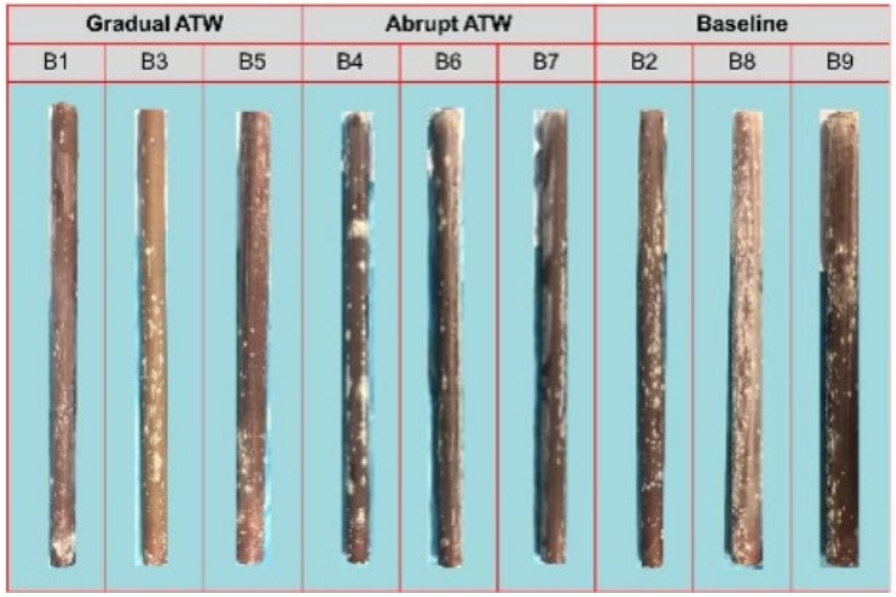
- Lead concentrations increased significantly when 100% Advanced Treated Water (ATW) was added to the copper pipes with lead solder, even for ATW stabilized with calcite
- Hypothesized that dissolution of scale on pipes (especially sulfate compounds) increased galvanic corrosion and released lead



Final Thoughts

- Integration of reuse water into distribution systems can have microbial and corrosion-related impacts due to changing water quality – even if purer!
- Pipe loop testing can provide site-specific evaluation of potential issues and mitigation strategies – both corrosion and microbial





Hazen

Thank you!

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LOS ANGELES COUNTY
SANITATION DISTRICTS
Converting Waste Into Resources

WateReuse Legislative Update, LA Chapter

Phillip Vander Klay

Legislative Liaison, LACSD

June 9, 2026

Federal Update

FY 2027 Budget

- Working through appropriations bills
- President's Budget cut SRF and WIFIA
- Congress pushed back, results pending

Congress Reasserting Some Power

- Disagreements with Trump on Ballroom and Political Fund
- Legislation getting stalled

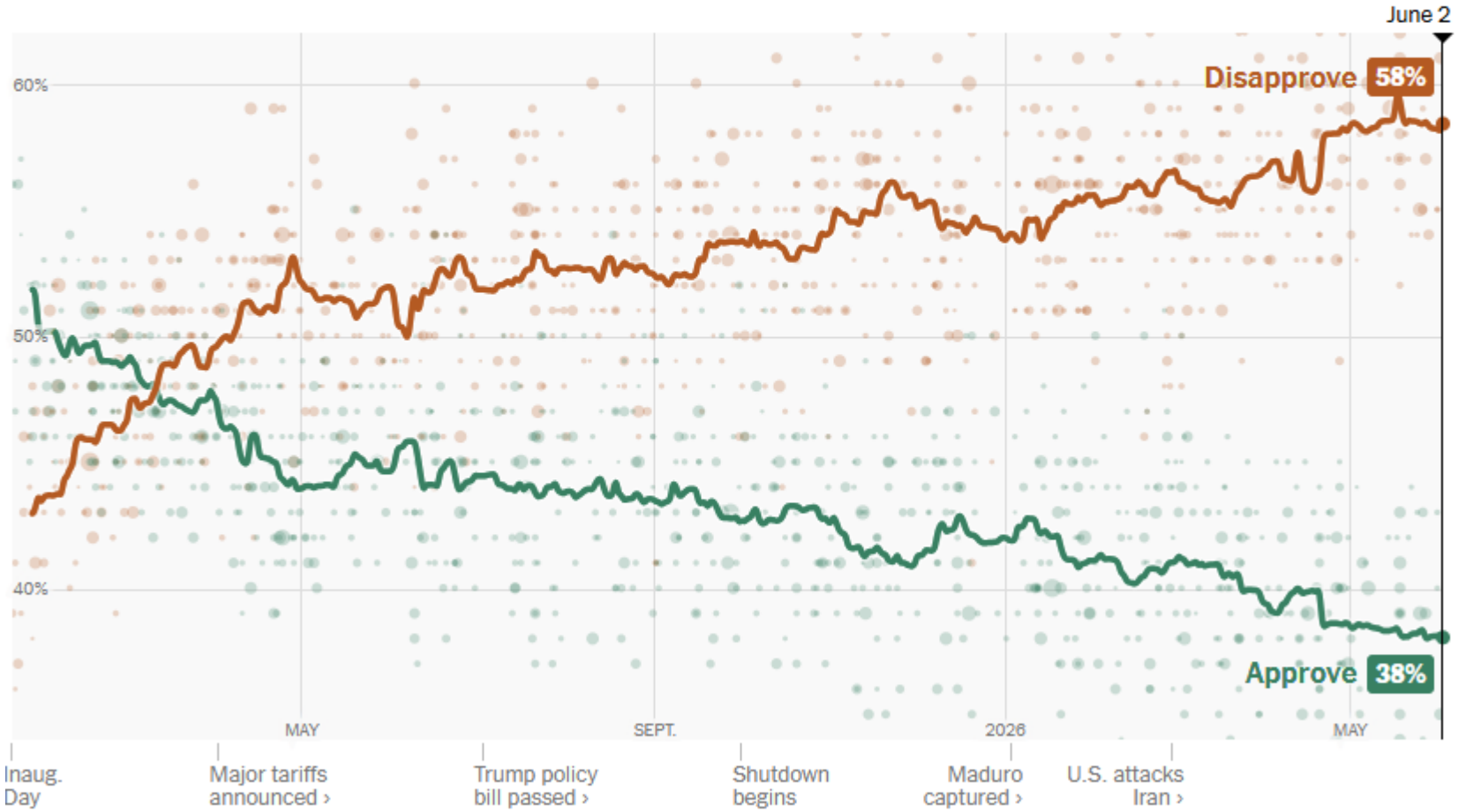
Moving Water

- Colorado River negotiations ongoing
- Increasing importance of recycled water
- MORE Water Act and Large-Scale WR bills
- But can they move?

The Midterms are Coming

Presidential approval rating

This is a daily average of polls conducted by dozens of different organizations since Inauguration Day. See the latest polls.



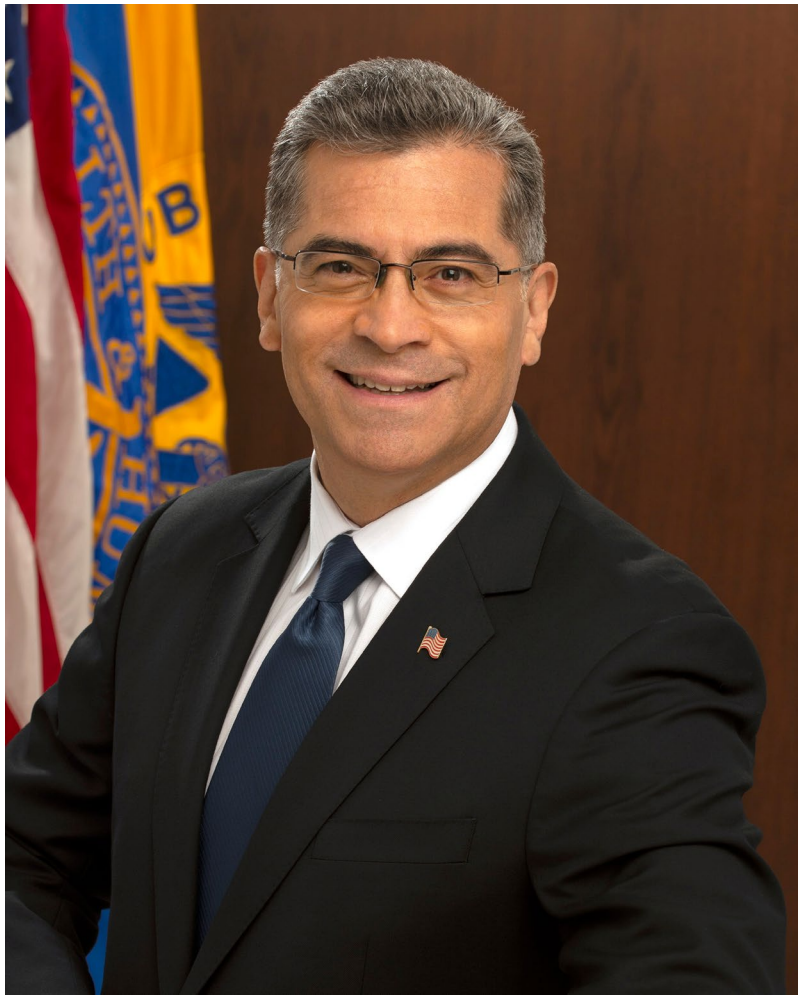
Note: Individual poll results are shown as circles. Polls with greater weight in the average have larger circles.


Lame Duck

The 2026 Legislative Session

- Budget due June 15
- AI – Water, energy, people, & products
- AB 2777 (ESTM) SRF variable loan rates
- $78 million in Recycled Water funds from Prop 4

Our Next Governor



LOS ANGELES COUNTY
SANITATION DISTRICTS
Converting Waste Into Resources

Questions?

Phillip Vander Klay

phillipvanderklay@lacsd.org

(562) 783-1965

Chapter Trustee Updates
WateReuse LA Chapter – June 9, 2026

Last Board of Trustees Meeting: April 24, 2026

WRCA Managing Director Report

Staffing Update

- RFQ issued for regulatory monitoring, policy analysis & advisory support
- Contract decision in June

Membership

- 19 New
- 177 Renewals (88%)
- New State Section Memberships at 166% of plan

Governance Projects

- AMS: MemberSuite Platform by GrowthZone selected (w/ WateReuse Association)
- Governance: Working group aligning all 7-chapter charters; Review in August

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WateReuse LA Chapter – June 9, 2026

Last Board of Trustees Meeting: April 24, 2026

Committee Updates

Conference Committee
- 2026 WRCA Annual Conference (San Francisco)
- 172 abstracts submitted

Potable Reuse Committee
- 3 subcommittees active: Permitting & Compliance, DPR Implementation, & Full Potable Reuse

Agriculture Reuse Committee
- Survey open to agricultural groups for outreach on reuse as a water supply reliability option
- Members should distribute to farmers in service area (17 responses to date; goal: 50)

CalVal Update
- Phase 2
  - Fully funded via SWRCB grant
  - 2-day workshop w/ DDW (held in January)
- Phase 3
  - WRCA actively seeking funding
  - Guidance modules in development

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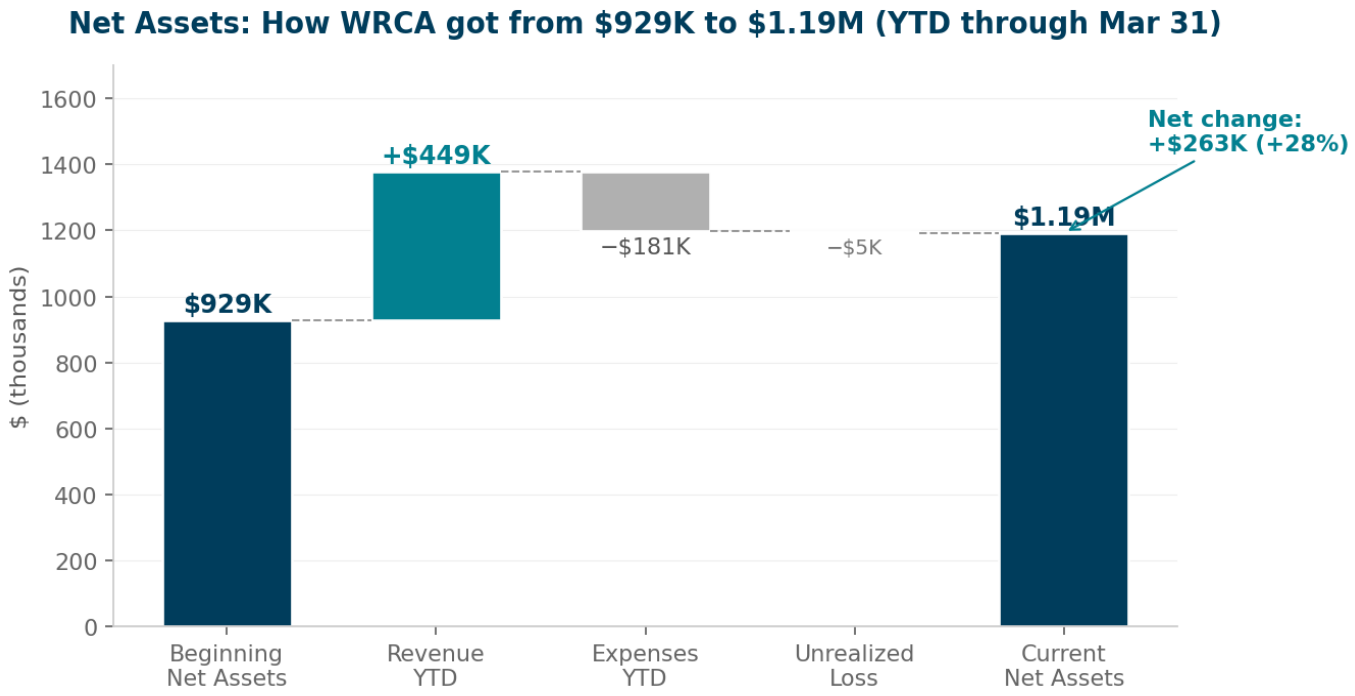
Financial Summary



- **Total Revenue:** $448.5k (not including conference rev.)
  - **Membership Revenue:** $438k (83% of budget)
- **Expenditures:** $180.9k (13% of plan)
- **Net Revenue:** $262.6k (vs. budgeted loss of $149k)

Net Assets: $1.19M ↑ $263K from beginning balance

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WateReuse LA Chapter – June 9, 2026

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What's ahead

Industrial WateReuse Conference
- June 8 – 10, 2026
- Chicago
- Focus on advancing water reuse in the industrial sector

2026 WateReuse California Conference
- August 24 – 26, 2026
- Hyatt Regency San Francisco
- 172 abstracts submitted (11+ than 2025)

How to engage this quarter

Share the WRCA Agriculture Reuse survey
(Opened February 2026)

Join a Potable Reuse subcommittee
(Permitting & Compliance, DPR Implementation, Full PR)

Submit a sponsorship for the 2026 SF Conference

LA Chapter Updates

- Communications Chair: *Oliver Slosser* *oslosser@lvmwd.com*
- Ad Hoc Urban Irrigation Manual Update Co-Chairs: *Monica Sanchez and Erika Bensch* *monicasanchez@lacsd.org*
- *Rising Professionals Committee Chair: Wen Cong* *wenc@trusselltech.com*
- Technical Topics Chair: *Dinaz Kureishy*

  Dinaz.Kureishy@santamonica.gov

WATEREUSE LOS ANGELES

Rising Professionals Committee – LADWP Hollywood Reservoir Hike on May 16, 2026

- Beautiful weather with a fantastic group
- Special thank you to Rafael Villegas for guiding the tour

- Contact Wen Cong (wenc@trusselltech.com) if you have suggestions for future events.

WateReuse Los Angeles

Smog City Brewing Tour & Happy Hour (Thursday June 18th 5:30-8 pm)

- **Where:** 1901 Del Amo Blvd, Torrance, CA 90501
- A unique membrane filtration tour
- Sponsored by Hazen and Sawyer
- Beer tasting and food truck burgers
- Great company!

- Although not required, appreciate your RSVP by June 10th for planning
- Contact Nick Lowe for RSVP or questions:
  - NDLowe@hazenandsawyer.com
  - (213) 285-1752

WateReuse Los Angeles