Anne Arundel County Clean Water Program

# Our wAAter
# Public Advisory Group Meeting

February 27, 2024

# Agenda

01 Meeting Objectives

02 Cybersecurity

03 PFAS

04 Legislative Update

05 Minor Systems

06 Septic Alternatives

07 Outreach Update

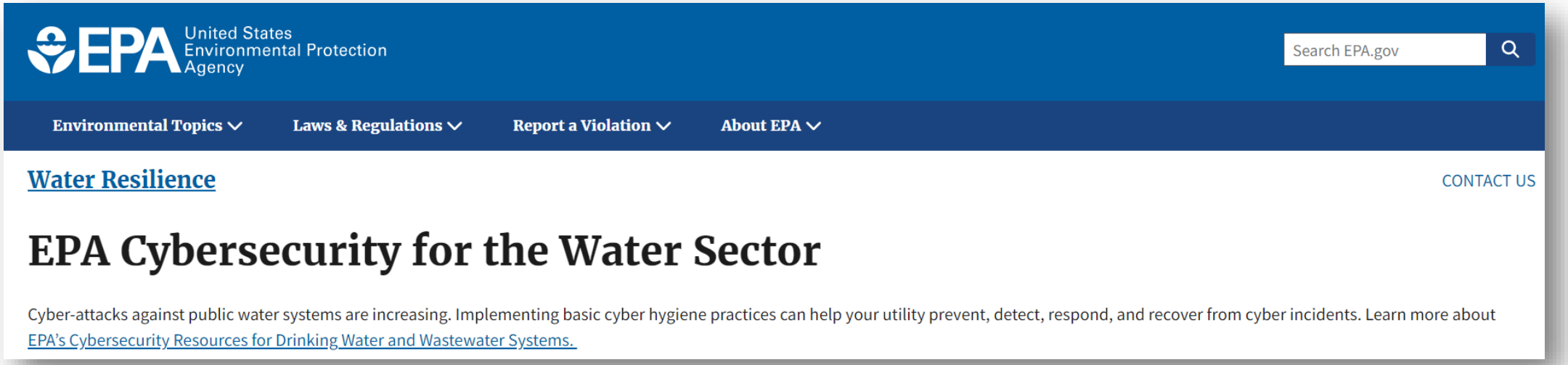
08 Meeting Schedule

# 01 Meeting Objectives

# Meeting Objectives

- Present status updates for key issues and discuss as a group
  - PFAS
  - Legislative Update
  - Minor Systems
  - Alternative Septic Conversion Delivery Concepts

- Provide update on an area of interest
  - Cybersecurity



# 02 Cybersecurity

# Know The Difference

## OT – OPERATION TECHNOLOGY

- Programmable logic controller (PLC),Human machine interface (HMI)
- They are connected by network (SCADA System)
- They control pumps, fans, motors, and just about anything. They have been classically controlled by humans staffed on site
- Focus on safety, availability, integrity, and the environment

## IT – INFORMATION TECHNOLOGY

- Means of communication with the outside world (WWW - World Wide Web)
- Screen what is allowed and what is not
- Mass communication
- Focus on integrity, availability, and confidentiality

# Operation Technology Risks

**The reliance on remote management devices throughout the water and wastewater sector increases the vulnerability and likelihood of a cyberattack.**

- More devices = bigger attack surface
- More entry points to the network decreases the likelihood of detection

**The lack of manpower to effectively manage water and wastewater systems safely without a SCADA system.**

- This dependence on automation increases the overall consequences that could result from an outage caused by a cyberattack.

**Older and outdated equipment in the County's OT network are still in use.**

- Although save enough, the airgap system prevent automatic software updates.

**Built-in fail safes can be overridden.**

- OT equipment firmware is easily exploitable, which can render pre-set controls useless.

# Current Approach

## Phase 1

Performed an OT cybersecurity assessment (completed)

## Phase 2

Implemented an OT cybersecurity program within DPW (currently ongoing)

# Phase 1: Assessment

**TO BE PROACTIVE**

- Self-protection from emerging threats
- Discover and document all OT assets
- Self-evaluation of the OT cybersecurity
- Systematic renewal of aging and outdated assets
- Increase security awareness and training of water operation employees

**GOVERNMENT REQUIREMENTS**

- Modernized Maryland Act
- EPA Safe Drinking Water Act
- American Water Infrastructure Act

# Risk Management

***Program Development***

- Policies
- Procedures
- Response Plans
- Training
- Lifecycle Management

***Cybersecurity Measures***

- Perimeter Security
- Intrusion Detection
- Access Control
- Monitoring and Detection
- Auditing
- Maintenance

# Phase 2: Implementation

*This is the ongoing Phase 2 of our OT cybersecurity project and cover the following tasks:*

# Task 1: Modernized Maryland Act Of 2022

- Maryland State specific requirement
- Report was due by December 1, 2023 in order to keep state funding
- Overlap between enterprise network (IT) and Operation Technology (OT) network
- Develop an incident response plan following appropriate standard (NIST, AWWA, EPA)

# Task 2: Detailed Implementation Plan

- Develop a mature OT cybersecurity risk management program
- Develop a 5-year OT cybersecurity improvement and performance program
- Mitigate vulnerabilities within the OT network
- Prioritization resourcing for the OT program
- Socialize the implementation of cybersecurity across water and wastewater system (training and awareness)
- Assess the current specialized workforce

# Task 3: Water And Wastewater Risk and Resiliency Assessment

- Develop a system and assets profiles worksheets to help identify characterizations and resilient measures
- Develop and standardize threat assets pairs across water and wastewater
- Using threat likelihood to standardize threat probability
- Estimate vulnerability

# Task 4: Operations Technology Program Development (Governance)

- Develop policies to establish a formalized management program
- Develop SOP (standard operating procedures) to establish standard approach to all aspect of the OT program.
- Develop an OT incident response plan
- Develop a standardized training program for all OT network users
- Establish a clear agreement between the County and third-party users/contractors

# Task 5: Funding Consultation

- Research and identify available funding sources (Federal, State).
- Research information on grant writing process
- Research cost-effective implementation options for all recommended mitigation implementations.

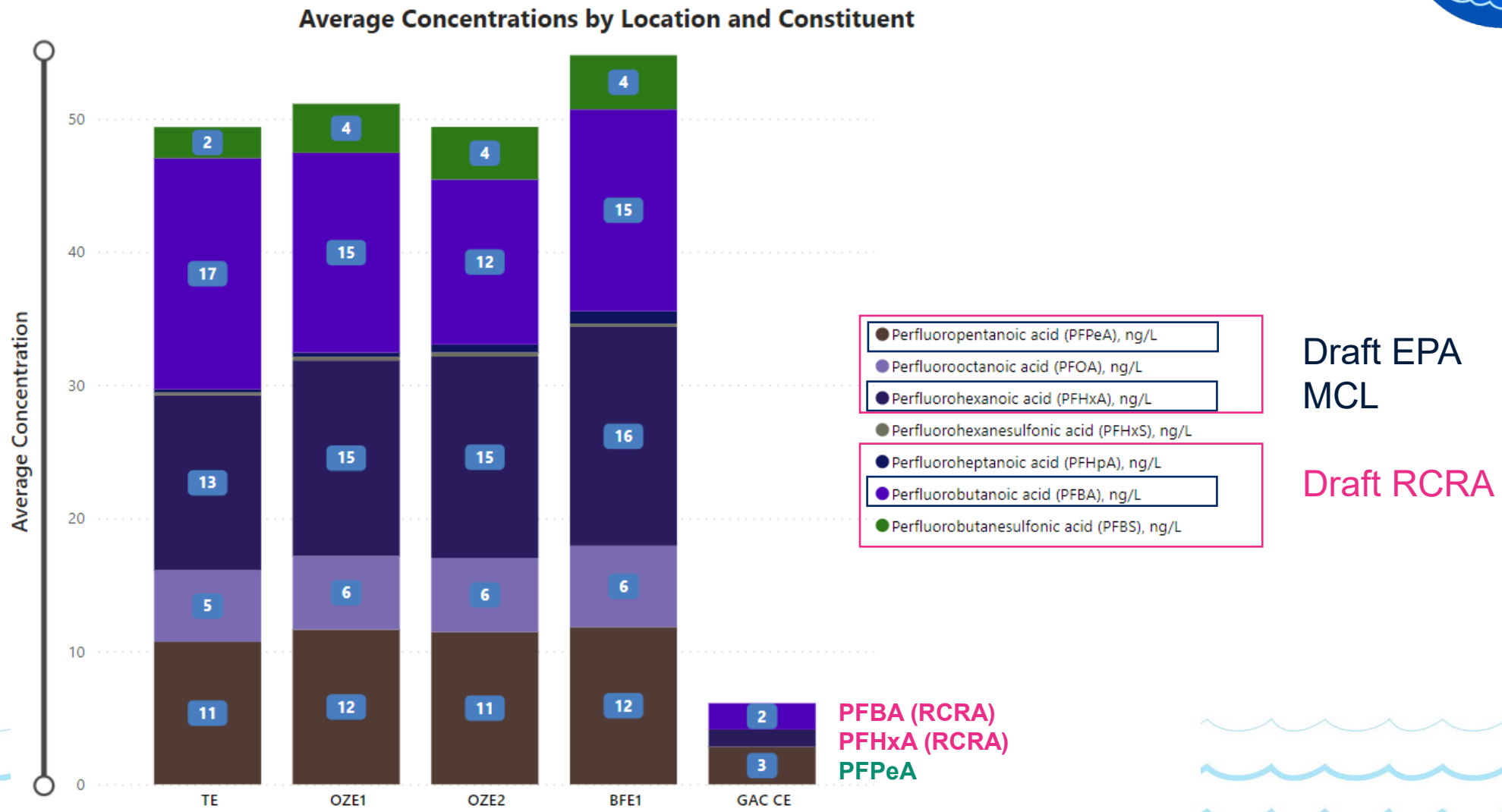
# 03 PFAS

# PFAS

- US EPA has proposed Maximum Contaminant Limits (MCL) for six PFAS chemicals.
  - Of those six, we have detected three in the influent to our pilot.
  - None of these compounds are detectable in the pilot effluent after 15 months of operation.

- US EPA is also proposing to regulate an additional three PFAS (with the six that have associated MCLs) under the Resource Conservation and Recovery Act (solid and hazardous waste)
  - Of these additional three, we have detected two in the influent to our pilot.
  - Perflorobutanoic acid (PFBA) broke through in the pilot effluent after four months of operation.  We detected a sharp rise in the influent prior to the breakthrough.
  - Perfluoro hexanoic acid (PFHxA) broke through in the pilot effluent after six months of operation.

# PFAS Removal Through the Treatment Process



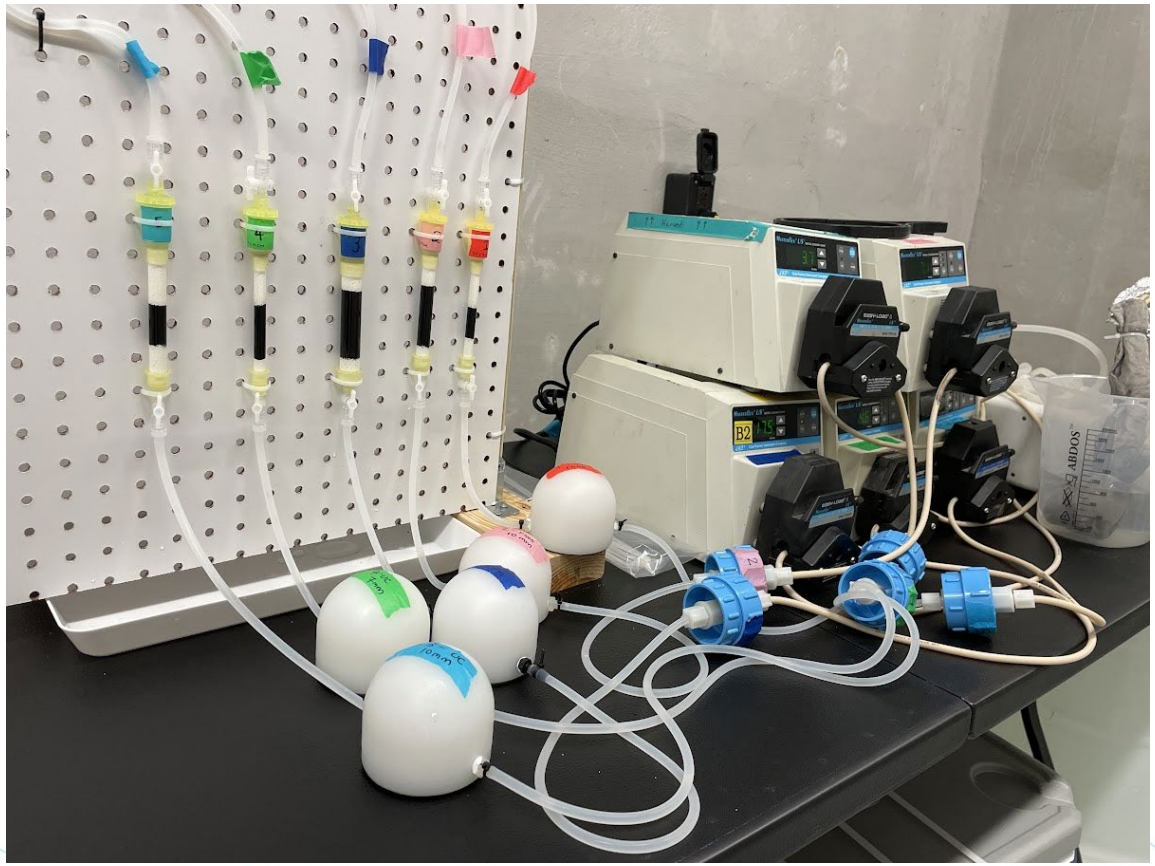

Draft EPA MCL

Draft RCRA

**PFBA (RCRA)**
**PFHxA (RCRA)**
**PFPeA**

# Current Actions Related to PFAS

- Evaluating other adsorption media to optimize PFAS removal
- Evaluating the potential sources of PFAS in the influent for control at the source
- Adapt to meet any regulatory changes



# 04 Legislative Update

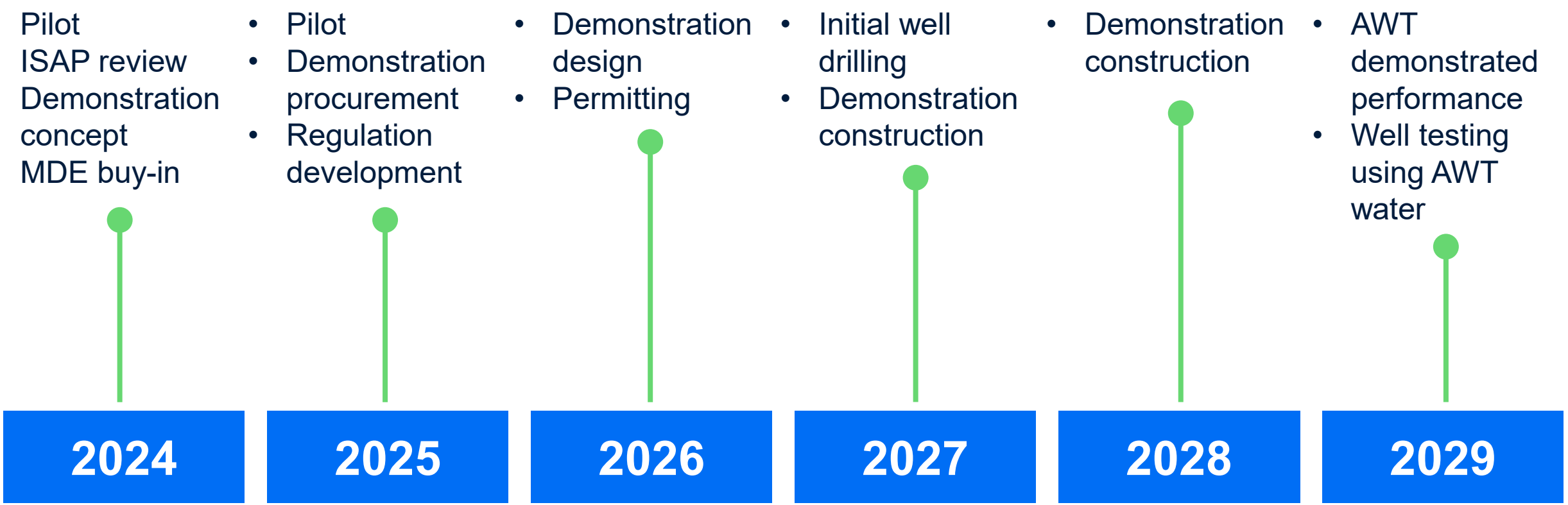
# Legislative Initiative – MAR Demonstration Facility

- County delegation proposed new legislation with support of County Executive to allow for limited testing (demonstration facility) to prove concept
- Legislation was modeled after surface water augmentation legislation passed in 2023
- MDE stated they could not support the legislation at this time
  - MDE noted that they would report on all manner of water reuse in report due to General Assembly at end of 2024
  - Legislators asked MDE to be transparent with Anne Arundel County as they are developing report
- Legislation will not be further pursued until next session

# Demonstration Facility – Next Steps

- Anne Arundel County sees benefit in continuing to support program
- Continue to gather scientific data and support for the program
- Continue to optimize and gain operating experience with pilot system
- Continue to track removal of PFAS compounds through the process
- The County does not anticipate moving forward with demonstration facility design until a permitting process is in place

# Our Roadmap to Renewable Water




**Requires collaboration, based on scientific research, between DPW staff, regulators, ISAP, and elected officials.**

# 05 Minor Systems

# Minor System Update

- Existing owners were fined $1.1 million for poor performance
- County continuing to evaluate feasibility, including funding mechanisms and owner participation

Mobile home park firm fined $1.1 million for pollution violations in Patuxent River watershed

Timothy B. Wheeler Feb 14, 2024 0

News by Topic

This mobile home community wastewater treatment plant along Sands Road in Anne Arundel County, MD, is one of four cited by the U.S. Environmental Protection Agency for pollution violations and noncompliance with its discharge permit.

Dave Harp

# Affordability Challenges

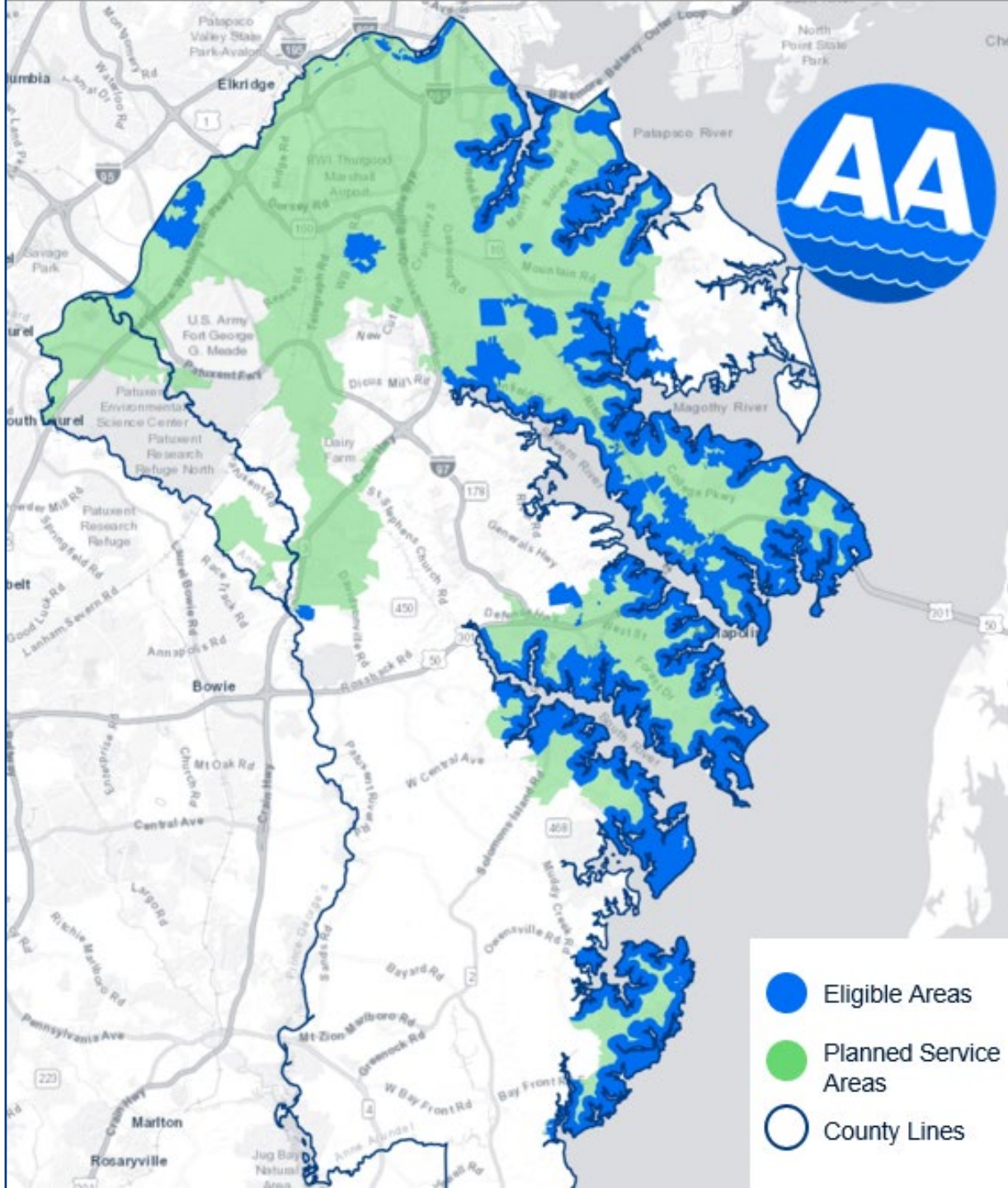
Long term affordability of the program presents several key challenges

- **DPW user rates** - If the residents pay current standard County sewer rates, the revenue generated would be much less than the estimated operations and maintenance costs.  Absorbed costs would strain the Utility Fund's current rate structure.
- **Resident Affordability** -  Current tenants of the properties pay for water and sewer service through rent owed to the property owners. Significant increases in the living expenses of the current residents may impact the ability of some residents to remain in their homes.
- **Maintaining Affordable Housing** – A cessation of operations due to financial instability could impact the availability of these housing options for residents.

# 06 Alternative Septic Conversion Delivery Concepts

# Considerations for Revising Approach

- Original goal was 200 septic conversions per year, 3-4 average size communities
- Over 30 community meetings hosted to date
- 11 applications submitted
  - 1 awarded BRF loan – Parker Drive 11 lots
  - 2 communities voted no or withdrew
  - 1 still developing community interest
  - 5 outside of PFA
  - **2 submitted in 2023**
    - **Ulmstead Estates**
    - **Chestnut Hill**



# Septic-to-Sewer Program Challenges

- No successful petitions to date
- Headwinds:
  - Interest in program has been from outside PFA
  - Affordability – Likely need additional revenue sources
  - “sewer = development = degraded water quality”
  - Water Quality Revolving Loan Fund scoring changes appear likely to reduce State loan and grant opportunities for septic connections
  - Uncertainty around future Bay model update (2027)
  - Septic owners generally do not think their systems are a problem; therefore, there is some other motivation

# Septic-to-Sewer Program Summary
## Potential Paths Forward

- Continue program as-is
  - Not practical since little tangible progress made
- Become a more passive program
  - Remove application and ranking process
  - Discuss septic connection as variation of the petition process
- Focus on education and outreach
  - Increased Office of Planning and Zoning involvement
- Amend current program to improve affordability
  - Explore Nitrogen fee
- County CIP projects with mandatory connections

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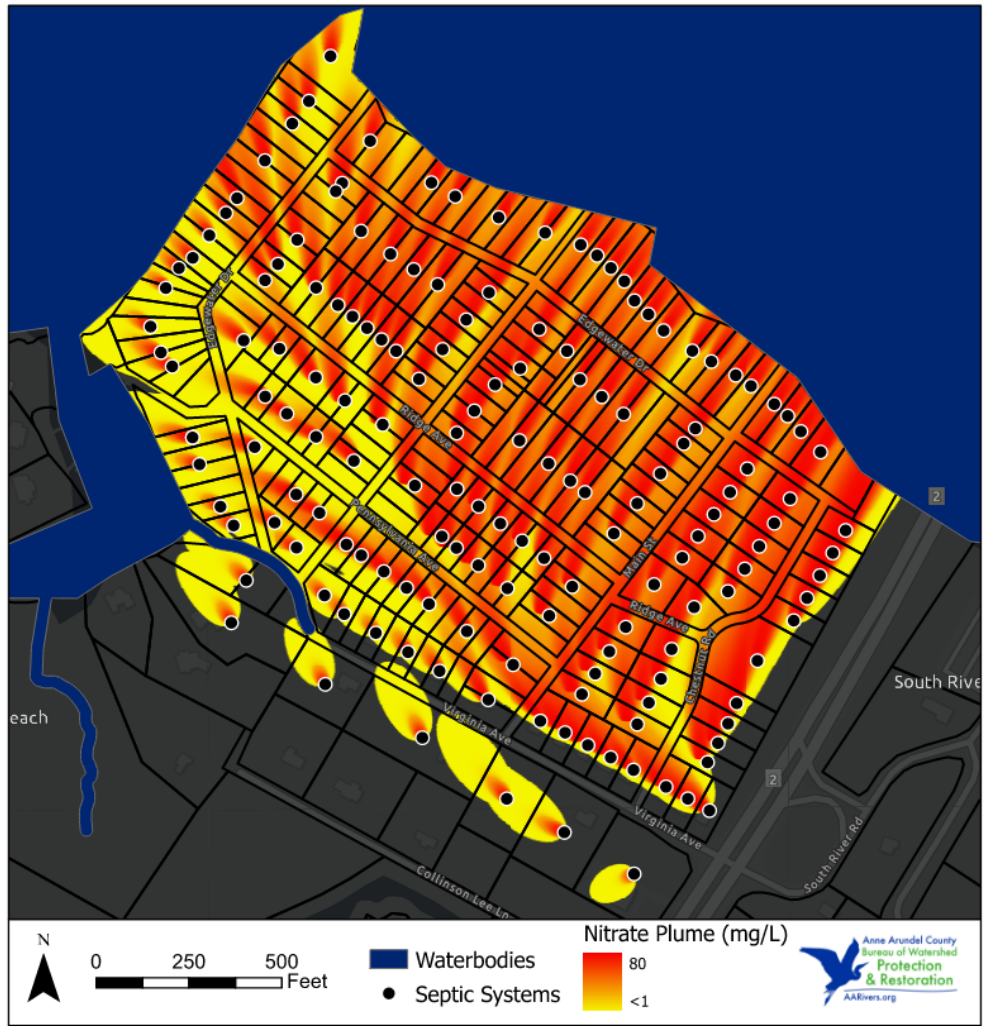
*Focus Here*

# Program Modifications

- Remove application and ranking process
  - Not enough interest to justify screening and ranking
  - Provide preliminary info meeting to community
  - Go straight to petition process
- Couple with increased funding opportunities and improved education and outreach

# Education and Outreach

- Involve Office of Planning and Zoning to discuss community concerns about growth
  - Communicate infill potential as upper limit of community's growth
- Only submit for PFA exception after community petition
- Continue to evaluate methods to demonstrate public and environmental health impacts and demonstrate benefits to communities
- Use resources of local environmental groups to communicate



# Additional Funding Opportunities

- Increased Contribution
  - Utility Fund
  - General Fund
  - Watershed Restoration Fund
  - New Nutrient Fund
  - Continue BRF Fund Equivalent after Sunset (2028) if applicable
- Use current available funding for small scale conversions

# Alternative Implementation Concepts

- WPRP funding ($1 million /year)
  - Offsets upfront (private plumbing) costs and connection fee
  - Up to 100 connections/year
  - Homeowners only pay minimum assessment
  - BRF funding still applied on the back end for homes in PFA

*Focus Here*

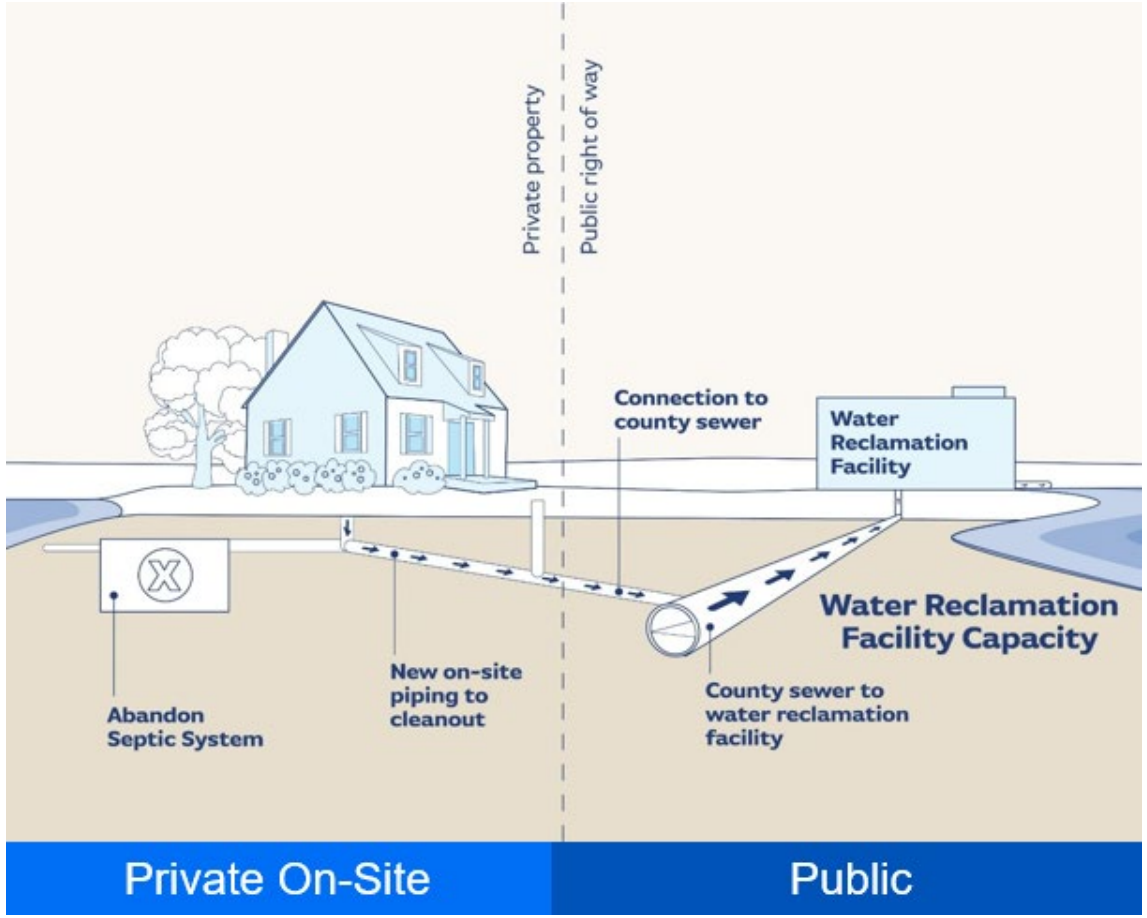
- Alternatives:
  - Individual septic-to-sewer implementation
    - Individual connections where a sewer main is available
    - No growth-related perception risks
    - $6K-$20K/EDU project cost
  - Small septic-to-sewer implementation
    - Smaller scale connections (<40 homes), sewer main not available
    - Same risks as larger scale program
    - $30K-$70K/EDU project cost

# Alternative Implementation Concepts

- Consider turnkey type project
  - Recently WPRP implemented similar type of contract for BMPs
  - Contractor provide outreach and obtain homeowner agreement
    - County risks reduced
  - Contractor selected by cost efficiency, guarantee of homeowner agreement, and nutrient reduction
  - Utility contractor with plumbing subcontractor

# Alternative Implementation Next Steps

- Coordination with Department of Health and Bureau of Watershed Protection
- Solidify funding mechanism for individual connection projects
- Conceptualize turnkey program for individual connections



# 07 Outreach Update

# Anne Arundel Youth Environmental Action Summit

Held Feb. 10, 2024 at Anne Arundel Community College

Approximately 100-125 high school and college students attended

Designed to introduce attendees to environmental career opportunities

# Pilot Tour

- Held Feb. 21, 2024
- Attended by Severn River Association and Watershed Stewards

# Upcoming Opportunities

- DPW Outreach Day (May 4)
- Baltimore Public Works Experience
  - May 11
- Additional pilot system tours


# Septic-to-Sewer

- **Recent post-application meetings**
  - Parker Drive
  - Chestnut Hill

- **Upcoming post-application meetings (tentative)**
  - Poplar Point
  - Crain West
  - Gingerville Manor Estates
  - Indian Hills/Glen Eden
  - Ulmstead Estates

# 08 Meeting Schedule

# Meeting Schedule

- November 16, 2023
- December 2023* (stakeholder tours)
- February 2024
  - Alternative septic delivery conversion concepts
  - Legislative update
  - MAR/other states' water reuse policies
- **May 2024**
  - Minor systems
  - Wastewater treatment enhancements
  - Outreach events
- **August/September 2024**
  - Stormwater/WPRP

Our wAAter.

THE ANNE ARUNDEL CLEAN WATER PROGRAM

# Thank you!