Establishing a Demonstration Project in Anne Arundel County to Improve Water Supply and Water Quality

Legislative Approach

Anne Arundel County requests that local municipalities be allowed to investigate technologies and approaches for providing long-term benefits to water supply resiliency and nutrient challenges through applied scientific research under the guidance of the Maryland Department of the Environment (MDE). This legislation proposes a carefully monitored managed aquifer recharge demonstration project as a step toward addressing water resource challenges.

Desired Outcome of Legislation

1. Support innovative, integrated, proven, long-term sustainable solutions to meet water resource challenges impacting local water supplies and the Chesapeake Bay.
2. Recognize that managed aquifer recharge can be an innovative, resilient solution, validated through an informed applied scientific research and pilot programs.
3. Request that MDE work with the County and independent experts to complete the applied scientific research, via piloting, to collect data necessary to validate managed aquifer recharge and establish definitive performance metrics.
4. Develop regulations and guidelines that are informed by treatment objectives.

Supporters

August 2024

- Anne Arundel County
- City of Annapolis
- City of Bowie
- WateReuse, Mid-Atlantic Section

There are proven technologies for safely treating reclaimed wastewater to drinking water quality to replenish aquifers. Such technologies, already regulated and used in neighboring Virginia, across the United States, and around the world, could be beneficial for implementation in Maryland. **This technology also removes PFAS, pharmaceuticals and personal care products prior to aquifer recharge.**

Our wAAter. THE ANNE ARUNDEL CLEAN WATER PROGRAM | DPW & YOU Making a difference, together

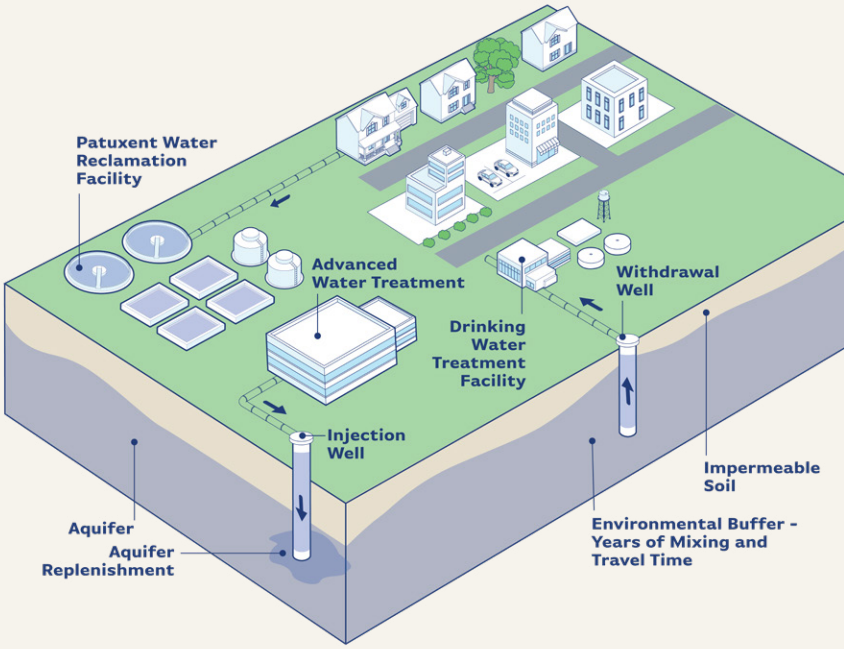
Needs for Water Resiliency and Nutrient Planning

- Anne Arundel County and other Maryland jurisdictions rely solely on groundwater for drinking water supply.
- Groundwater levels are dropping across the region, risking the long-term availability of groundwater for use as drinking water.
- Continued decline of the aquifer water levels increases the risk of land subsidence and saltwater intrusion.
- Sustainable groundwater resiliency should be implemented in advance of water supply constraints.
- Nutrient discharges to surface water continue to impact local streams, rivers, and the Chesapeake Bay.
- Climate change is increasing and accelerating the impacts of nutrients on our local waterways.

Anne Arundel County's
Our wAAter Program Elements

Summary of Managed Aquifer Recharge

- Anne Arundel County (the County) has initiated a voluntary integrated plan (Our wAAter) to address long-term challenges associated with groundwater resiliency and nutrient discharges to the Bay.
- Managed Aquifer Recharge (MAR) is a key component of the Our wAAter integrated plan. The inclusion of MAR into the County's integrated plan provides a cost effective strategy with co-benefits to address long-term nutrient issues and compliance with the Chesapeake Bay TMDL.
- The County has discussed development of an integrated regional groundwater model with MDE to identify long-term water concerns (as referenced in the report, "*Water For Maryland's Future: What We Must Do Today*," also known as the Wolman Report) and the benefit that a MAR program could provide for groundwater sustainability.



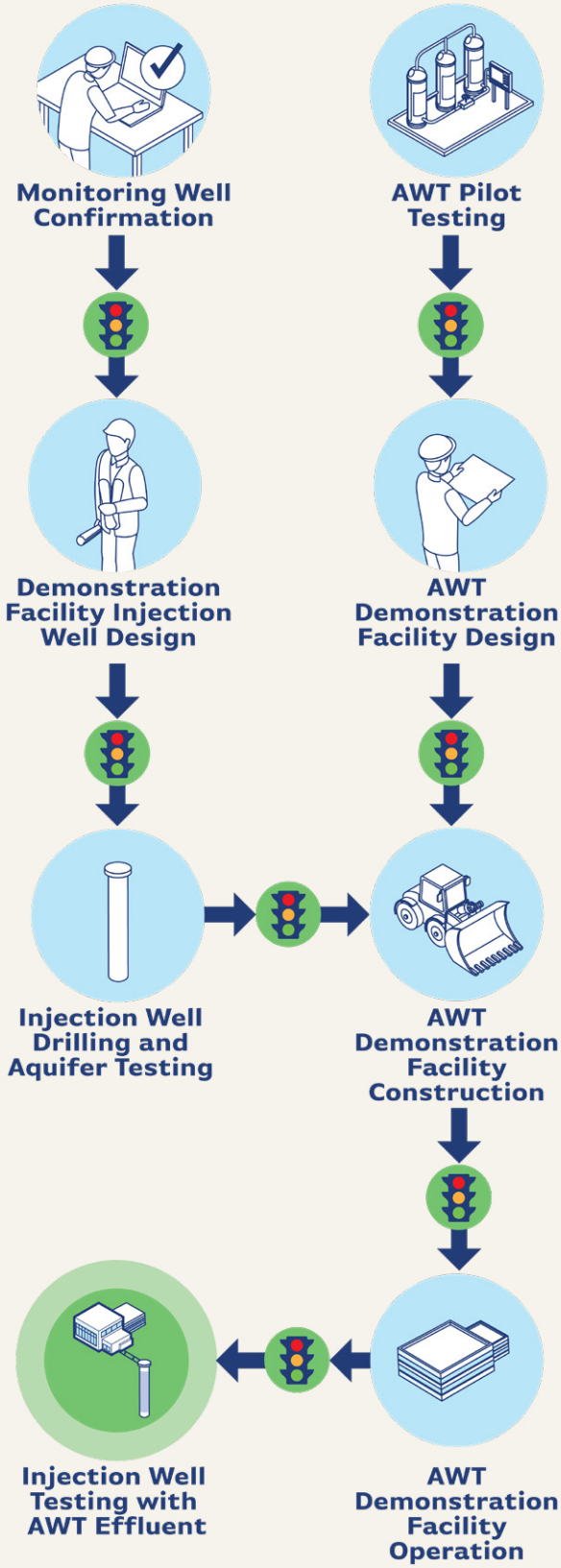
Managed Aquifer Recharge Concept

Regulatory and Legislative Challenges

- The County has been working with the Maryland Department of Environment (MDE) over the past five years to transparently review and develop the scientific research program, with a focus on treatment goals and objectives and compatibility with the underground aquifers.
- Recent legislation (SB407/HB848) promotes an indirect potable reuse pilot program in the State; however, language in the bill limits technologies and injection, and impedes on the County's approach. The County understands that the legislation can be amended in future legislative sessions and seeks to make the appropriate changes.
- MDE has indicated that they do not have regulatory authority to issue an injection permit. Therefore, further progress on the MAR groundwater injections has come to a standstill. SB 942/HB1131 introduced during the General Assembly's 2024 session, but withdrawn, can serve as a starting point for the upcoming session.

Applied Scientific Research Approach

Anne Arundel County has implemented an applied scientific research program to investigate the use of MAR within the County. Should current testing continue to show success, the County intends to proceed with the design and subsequent installation of a demonstration scale facility. This 500,000 gallon-per-day facility will allow for demonstration of the full MAR concept, including treatment and underground injection, on a small, localized scale.



Multiple Steps for Review and Confirmation prior to Demonstration Implementation

Potential Legislative Approach

1. Authorize MDE to approve a Demonstration Facility for treating reclaimed wastewater to the following standards:
   a. Meet all current and proposed Safe Drinking Water Act standards
   b. Demonstrate pathogen removal consistent with the most stringent indirect potable reuse requirements enacted elsewhere
   c. Allow for use of proven technologies for meeting the above goals, including non-membrane treatment systems
   d. Require detailed testing and monitoring plan to demonstrate compliance with the treatment requirements

2. Authorize MDE to approve limited groundwater injection of water that meets the above requirements to certain aquifers through permits obtained through the Underground Injection Control program.
   a. Require such testing be governed by compliance with treatment standards
   b. Require detailed testing and monitoring plan to demonstrate groundwater compatibility during underground injection, including limitation on duration of underground injection

3. Require documentation of applied scientific results, reviewed by MDE, and present to the Governor and General Assembly.

Key Tenets

Protect human health.

Protect and strengthen the Potomac aquifer group, of which the County is the largest user in the State of Maryland.

Use sound science and approaches.

Safe Drinking Water Act provides guiding principles for treatment approaches.

Keep regulators and key stakeholders informed with open communication at each step of the way.

Validate at key decision points including independent experts to keep the program moving forward.