

PRESIDENT'S MESSAGE

By Al Tucker



It's really hard to talk about lack of water when we have just had the wettest year in recorded weather history. But as those of you who follow CEPA's interest in the decline of the aquifers in Anne Arundel County and Southern Maryland know, the vicissitudes of weather have little impact on the levels in the confined aquifers that serve as our primary sources for drinking water. In spite of the weather, the decline continues unabated¹. And this decline poses the question: are we using the groundwater in our aquifers sustainably? And a follow-up question: Is it possible to slow the decline without impacting growth? The answer to the first question is we don't really know, but there is a prima facie case that we are not.

CEPA intends to address the second question at our next Forum later this spring. We will introduce a concept to recharge our local aquifers with purified wastewater. This process, called Managed Aquifer Recharge (MAR), may seem controversial at first glance, but it is being piloted and implemented throughout the US and around the world. It has the potential to support not only the sustainable use of groundwater but also to solve several ancillary issues such as nutrient loading and land subsidence – perhaps even presenting the most economical solution for each.

Since our area has few industrial users, the aquifer decline correlates primarily with the population increase. We recognize that limiting growth will clearly have ancillary environmental benefits beyond minimizing the impact on our water supply, yet, a growth limit will not resolve future challenges to using aquifers sustainably. These challenges include the increase in impervious surface, saltwater intrusion, and sea level rise. These challenges may be interrelated, but solving one will not necessarily resolve the others.

In Anne Arundel and Southern Maryland, all public and private users extract water from the confined aquifers. The coastal aquifer system may be buried deeply where you live, but the pressure in the aquifer can cause it to rise within a few feet of the surface. A century ago many area wells were artesian or free-flowing at the surface. The water in the wells was maintained by the ability of the recharge areas to supply a sustainable amount of water to down-aquifer users. In the 1970s, the area population exploded and the wells began to show an immediate impact. The distribution of people throughout the region, though, was not uniform. Northern Anne Arundel experienced the largest growth. Unfortunately, the recharge areas for the aquifer system lie mostly between Annapolis and Baltimore. With the rapid suburbanization and development came the increase in impervious surface, which interrupts the natural flow of water recharging the aquifers.

The rapid rise in population has had an added effect. The water in the aquifers where you live is thousands to millions of years old. This is because the water-flow in the aquifers is extremely slow, in many cases just a few tens of feet per year. As a result, we are using water faster than the natural system can resupply it. When the levels drop, especially in areas where it is below sea-level, saltwater intrudes into those aquifers that terminate in the Bay or the ocean. As I have given talks and met some of you, I am always amazed by the number of people who have had to re-drill their wells as a result of drawdown or saltwater intrusion.

The first question of whether or not the aquifers can provide a sustainable water supply to support the future population remains unanswered². Can we wait until there are more signs of wells reaching their limits? Probably not! The Maryland Department of the Environment recently notified Charles County that their water supply is insufficient to meet their future needs.

In last year's winter newsletter, Bill Klepczynski described a new technology for recharging aquifers in the Hampton Roads Sanitary District. In the fall, a small group of CEPA board members, along with the Anne Arundel County Department of Public Works, had the opportunity to visit this pilot project called Sustainable Water Initiative For Tomorrow [SWIFT]³. The SWIFT project is of interest to us since it operates in the same aquifer system and addresses

¹ I did a quick check of water levels in representative wells in So. MD and it shows that the past year's water levels remain at or near their historic lows.

² The Maryland Geological Study on [Groundwater Sustainability](#) is on hold due to lack of funding,

³ Klepczynski, W., CEPA newsletter, no. 40 Winter 2017-2018

similar problems facing Anne Arundel County, namely failing septic fields, saltwater intrusion, land subsidence, and decreasing availability of freshwater.

The concept is simple: by injecting purified water into the recharge areas of the aquifers, the water pressure in the aquifer is increased. This pressure increase boosts the flow of freshwater and counteracts the seawater pressure to inhibit saltwater intrusion. The extra steps in the purification process reduce nutrient levels further, thus contributing toward meeting the county's TMDL goals. While the overall benefits seem attractive, there are several topics of public concern that will need to be addressed. All public water supply systems are required by the EPA to monitor for specific chemical contaminants, but there exist several contaminants like pharmaceuticals, endocrine disruptors, and microplastics that are not monitored. In order not to permanently damage the aquifers, the MAR process will need rigorous testing for contaminants not listed by the EPA.

At the forum, we intend to have a speaker from the Hampton Roads Sanitary District describe their experience to date. Currently, Anne Arundel County is exploring the use of this technology to address the anticipated decline of its aquifer system and saltwater intrusion, as well as the impact of using the technology to meet TMDL goals. Of critical public concern will be the cost of implementing it. Chris Phipps, the Director of Public Works for Anne Arundel County will discuss a proposed study program to determine if MAR is technically and economically feasible for Anne Arundel County.