The East Coast Solution:

Water Reuse + Enhanced Aquifer Recharge = Water Security

Mark Widdowson, PhD, PE
Professor & Department Head, Civil & Enviromental Engineering

Abstract: Groundwater is a critical resource for public water supply in the U.S. Coastal Plain; a region stretching from New York to Texas. Total groundwater usage for public water supply in this region is 3.8 BGD, and a population greater than 28 million are served by public-supplied groundwater. Coastal Plain aquifers are typically confined and receive insufficient natural recharge to counterbalance groundwater withdrawals. Nevertheless, enhanced aquifer recharge (EAR) has yet to gain wide on the U.S. East Coast. This presentation will explore sustainable EAR operations and risk factors being addressed by Virginia Tech through research funded by the U.S. EPA and the Hampton Roads Sanitation District (HRSD) in Eastern Virginia. HRSD is implementing a >60 MGD EAR infrastructure project known as Sustainable Water Initiative for Tomorrow (SWIFT) at a cost in excess of $2B. HRSD has developed advanced water treatment systems that bring wastewater effluent to drinking water standards and produce recharge water that matches existing groundwater chemistry in the Potomac Aquifer System (PAS). In addition to replenishing the PAS, outcomes of SWIFT are reduction of nutrient discharge to the Chesapeake Bay and mitigation of land subsidence. Widdowson will present research findings of a 5-year EAR demonstration at the SWIFT Center in Suffolk and lessons learned.

Bio: ***Dr. Mark Widdowson*** *is Professor and Department Head in the Charles E. Via Jr. Department of Civil and Environmental Engineering at Virginia Tech. Dr. Widdowson is also the Co-Director of the Potomac Aquifer Recharge Monitoring Laboratory and serves on the Potomac Aquifer Recharge Oversight Committee. He is the author and principal investigator of the software tools SEAM3D and NAS (Sequential Electron Acceptor Model, 3D transport and Natural Attenuation Software) for evaluating remedial strategies to meet site remediation objectives in conjunction with economic and risk assessment models. Dr. Widdowson serves on the Managed Aquifer Recharge and per- and poly-fluoroalkyl substances (PFAS) teams of the Interstate Technology and Regulatory Council. He recently served as the state's technical expert to the Joint Legislative Audit and Review Commission of Virginia on the sustainability of groundwater supply in the Eastern Virginia Groundwater Management Area.*

108 SN
Nov 13, 2023
12pm - 1pm EST