

The Potomac Aquifer Recharge Oversight Committee

Meeting Minutes

June 12, 2025

In attendance: Whitney Katchmark (Committee Chair), Mark Bennett (remote), Charles Bott, Brian Campbell (remote), Curtis Consolvo (remote), Jason Early (remote), Dan Holloway, Preston Kirby, Mark Kram (remote), Erin Love, William Mann, Bryant Mountjoy (remote), Ivy Ozmon, Charles Paulin (remote), Harold Post (remote), Doug Powell, Jennifer Reitz, Gary Schafran, Mark Widdowson (remote).

Mr. Holloway (HRSD) called the meeting to order at 11:05 a.m.

The minutes of the previous meeting were approved as distributed.

Dr. Widdowson provided updates on the enhanced aquifer recharge (EAR) research funded by an EPA grant. The EPA terminated the STAR grant funding, stating the EAR research project is no longer consistent with funding priorities. Virginia Tech submitted a letter of dispute demonstrating how the project supports each of the [five pillars](#) guiding EPA efforts. Next steps and outcomes are uncertain. The EAR research is halfway through the three-year project period, and about 40% of the STAR grant has been spent. The Potomac Aquifer Recharge Monitoring Lab (PARML) has sufficient budget for student support and will continue with major research activities.

Dr. Widdowson presented plans for push-pull tests scheduled later in June. The tests will use bromide and dissolved oxygen (DO) tracers to evaluate the recovery of various water constituents. Results from prior tests show some attenuation of constituents where the masses of those constituents in recovered water are less than those injected. Dr. Widdowson shared the push-pull testing schedule, broken into four phases based on different activities, with varied test durations, flow rates, injection volumes, and water sampling events. Water samples will be analyzed in the lab for total organic carbon (TOC), total metals, microbes, ions (bromide, sulfate, nitrate, chloride, and fluoride), and PFAS; online analyzers will be used to measure chloride, pH, DO, total nitrogen (TN), TOC, and temperature. Other sensors or sampling kits will be used to measure field parameter data, including: DO, turbidity, pH, ORP, temperature, bromide, iron, alkalinity, chloride, TOC, and TN.

Dr. Widdowson also reviewed how soil aquifer treatment (SAT) columns will be used in research experiments. Eight SAT columns were packed with cleaned aquifer sediment collected during the well drilling process at the James River SWIFT plant (JR SWIFT). The packed columns were conditioned with native Potomac Aquifer groundwater collected by the USGS. The experiment was designed using four paired sets of eight-foot SAT columns and 13-foot SAT columns placed in a lead/lag configuration. Water will pass through the eight-foot SAT columns to simulate a 3-day travel time, and then through the 13-foot SAT columns to simulate an additional 28-day travel time. During the experimental phase, native groundwater, SWIFT water, aerated Biologically Active carbon Filtration (BAF) water (water from upstream in the SWIFT treatment process train), and deoxygenated BAF water treatments will be applied individually to each of the paired SAT columns. Various measurements and samples will be collected to determine contaminant mobilization and microbial response. Experiments will run from June through August 2025.

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Dr. Schafran provided additional updates on recent activities related to the PARML expert panel review. PARML directors will hold a virtual review panel evaluation kickoff meeting with Ms. Katchmark, National Water Research Institute (NWRI) representatives, and the expert review panel chairperson on June 16. PARML is preparing documents and presentations for the July 23 technical orientation meeting for the panel members' review. PARML intends to share the legislation creating the Potomac Aquifer Recharge Oversight Committee (PAROC) and PARML as state entities, the Virginia Code outlining PARML requirements, documents describing the history of SWIFT and operational relationship between HRSD, PAROC, and PARML, a description of past activities aligning with legislation and protection of health, and a summary of the lab's future goals. A workshop with the panel will be scheduled after the July 23 technical orientation. NWRI will follow up after the workshop with a report aimed at helping PARML develop a path to meet current and future objectives.

Dr. Schafran updated the committee on recent monitoring and research activities. He shared that the SWIFT SAT monitoring wells are monitored biweekly, and SWIFT conventional monitoring wells and the SWIFT process train are monitored monthly. PARML is assessing the distribution of metal and organic compounds in the aquifer as a function of depth along with any associations with PFAS using strong acid and base extractions on (MAR) well cuttings from the Nansemond Plant site. PFCA sorption experiments are also planned with virgin carbon. Research findings will be presented at the annual HRSD SWIFT research meeting in July. Dr. Schafran also announced that the PARML Quality Management Plan will be finalized by early Fall. The Lab team will coordinate an annual review by an external team to evaluate how well PARML adheres to the protocols in the plan. Dr. Widdowson added that PARML directors are working with the National Institute of Aerospace (NIA) to expand the lab into additional space in the NIA building to improve PARML's capability and capacity.

Ms. Love (HRSD) presented recent research findings from the HRSD SWIFT Research Center (SRC). She shared that GAC operations have shifted at the SRC. The change extends the useful life of GAC, reducing GAC replacement costs. GAC costs represent the highest operational cost for SWIFT, driving HRSD research on optimizing GAC use for PFAS treatment. HRSD is studying ion exchange (IX) treatment as one option to reduce GAC demands at the future full-scale Nansemond SWIFT facility. HRSD will conduct a pilot-scale contaminant removal evaluation testing three strong base IX media types and a bentonite blend-based removal media (FluoroSorb). HRSD will evaluate the release of N-Nitrosodimethylamine (NDMA) from virgin IX resins and the impact of resin exposure to chlorinated water. HRSD will also conduct rapid small-scale column tests (RSSCTs) with UV-treated GAC effluent and scale up RSSCT and pilot data to predict full-scale plant performance. HRSD will also investigate contaminant removal efficiencies in dual-media contractors (GAC plus IX resin, or IX resin + Fluorosorb), impacts from changes to upstream treatment operations, comparisons of virgin versus reactivated GAC, and comparisons of various backwashing operations.

A two-year backwashing pilot study was recently completed by HRSD. Water treatment researchers acknowledge that the mass transfer zone (MTZ) of the GAC is disrupted with frequent backwash events. Backwashing is necessary to recover hydraulic head losses when GAC media clogs, leading to a loss of GAC adsorptive efficiency. However, MTZ disruptions lead to

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earlier breakthrough of PFAS compounds. The full-scale SWIFT facilities will use gravity GAC contactors, which experience more frequent backwashing compared to the pressure vessel contactors at the SRC. HRSD used GAC columns designed to simulate full-scale GAC contactors to determine the impacts of backwashing on PFAS breakthrough in GAC. Two columns were operated in parallel, receiving SRC biofilter effluent. One column served as the control, backwashed only as needed (after head loss of 25'), and the other column was backwashed every three weeks. TOC water samples and samples for PFAS and contaminants of emerging concern (CECs) were collected throughout the experiment. HRSD found that backwashing slightly reduces GAC PFAS removal, that backwashing may disturb the GAC MTZ, reducing the lifespan of GAC for PFAS removal, and that increases in empty bed contact time (EBCT) amplify the impact of MTZ disruption from backwashing. Committee members asked about GAC costs. Dr. Bott (HRSD) said that replacing the GAC in one contactor at the SRC costs around \$8,000. The full-scale JR SWIFT will require roughly 16 times the amount of GAC needed at the SRC.

Ms. Love shared also status updates and data for the ongoing RSSCT experiments. Preliminary results show better PFAS removal performance by some IX media than others. PFAS breakthrough occurred first in the bentonite blend-based media RSSCT. The IX media types perform better, but the bentonite blend-based media is half the cost compared to the IX resins. None of the media types tested remove TOC effectively. Committee members asked about costs for IX resins. They are more expensive than GAC, but far less material is needed compared to GAC.

Dr. Bott noted that constructing a local GAC reactivation facility would significantly reduce GAC costs. The success of the ongoing process optimization efforts will determine whether HRSD pursues construction of a regional GAC reactivation facility.

Mr. Holloway (HRSD) shared updates on the well installation at the JR SWIFT plant. Ten managed aquifer recharge (MAR) wells and eight monitoring wells have been installed and tested. MAR wells can withdraw three million gallons per day (MGD), and their recharge capacity is 2 MGD. Mr. Holloway reviewed the well installation procedures and shared details on the MAR and monitoring well designs. He reviewed well construction materials, well specifications, and figures for the well construction logs, showing where wells are screened below ground. MAR wells are about 1000 feet apart, and monitoring wells are about 500 feet from the MAR wells in clusters of four at two locations. The depth to the top of the aquifer, the depth to basement rock, the number of well screens, and the depth of well screens are very similar for all ten MAR wells. However, a lot of variability in the aquifer shows up in the drilling logs for the MAR wells. Wells were tested for performance based on their specific capacity. Capacities met or exceeded predictions for all wells. HRSD is now evaluating whether the observed specific capacities will achieve the targeted groundwater injection rates. Initial findings are promising, and work is ongoing to develop a higher-resolution groundwater model to better assess the impacts of the distribution of injections across the 10 MAR wells on overall injection capability. Mr. Holloway also shared photos from camera surveys of wells one month after installation and 18 months post-installation. No corrosion concerns are evident, and the well screens remained unobstructed. He thanked DEQ and all construction partners for participating in a smooth installation process.

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HRSD expects to complete the remaining work on the wells by the end of July. Baseline water quality samples will be collected soon and the findings from those analyses will be discussed at the next PAROC meeting. HRSD will send the well completion reports to the EPA for approval, and commissioning will follow. HRSD hopes JR SWIFT will be operational a year from now.

Committee members asked if the recharge volume will be distributed through injections at all 10 MAR wells. HRSD is working on developing its recharge strategy now, acknowledging that well downtime could elevate clogging risks. Rotating use of the MAR wells to keep them active is being considered.

The committee discussed private well testing around the JR SWIFT facility before injections begin. Mr. Kirby (VDH) shared contact information of VDH staff to contact with questions about the agency's testing program funding source and data privacy procedures. Committee members noted there are few private wells aside from a few shallow irrigation wells within a one-mile radius around JR SWIFT. Mr. Kirby noted the risk of claims of private well contamination in the future and whether there is an ability to rule out SWIFT impacts without water quality monitoring data from before injection startup. Committee members noted reluctance to pursue sampling of private wells. They prefer to work with DEQ to identify wells in the vicinity under community ownership as candidates for baseline water quality characterization.

Funding for PARML was also discussed. The committee acknowledged that the NWRI report in the fall could be useful documentation to support any additional budget requests. They discussed requesting help from water industry advocates to develop justifications and identify patrons in the General Assembly that would introduce PARML budget requests, since the representatives who introduced the original PARML budget items no longer hold office.

There were no public comments.

The meeting adjourned at 1:45 p.m.

Approved:

Date:



9/18/25

Whitney Katchmark, Committee Chair

Committee Members:

- Mike Rolband, Director of Virginia DEQ
- Dr. Karen Shelton, Virginia State Health Commissioner
- Dr. William Mann, Governor Appointee
- Doug Powell, Governor Appointee
- Whitney Katchmark, HRPDC
- Dr. Stanley Grant, Director of Occoquan Watershed Monitoring Laboratory

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- Dr. Mark Widdowson, Co-Director of the Potomac Aquifer Recharge Monitoring Lab
- Dr. Gary Schafran, Co-Director of the Potomac Aquifer Recharge Monitoring Lab

Non-voting members:

- Mark Bennett, Director of the Virginia and West Virginia Water Science Center, USGS
- Leslie Gillespie-Marthalier, Deputy Director, Water Division, US EPA Region 3