

# HAMPTON ROADS SANITATION DISTRICT (HRSD) Automating Regulatory Monitoring Of Residual Chlorine

NEAA26 OPERATIONS & ENVIRONMENTAL PERFORMANCE



National Environmental  
Achievement  
AWARDS

**Faster response to potential issues:** Real-time monitoring provides readings every 2.5 minutes, allowing operators to detect and correct chlorine dips immediately.

**Improved public health protection:** More frequent monitoring helps safeguard local waterways and the shellfish industry.

**Operational efficiency:** Automation saves operators approximately 2.5 hours per day, freeing up time for other critical activities.

**Regulatory innovation and scalability:** HRSD is setting the stage to enhance automation at other facilities.





## **Automating Chlorine Monitoring: Advancements for Operation and Public Health Protection**

The Hampton Roads Sanitation District (HRSD) treats and protects the region's water for 1.9 million people across 20 cities and counties in Southeastern Virginia. One of its key facilities, the Nansemond Treatment Plant (NTP) in Suffolk, can treat up to 30 million gallons of wastewater per day before releasing it into the James River, a vital waterway connected to the Chesapeake Bay. Because this area supports thriving oyster and clam fisheries, keeping the water clean and disinfected is critical to protecting both public health and the environment.

Traditionally, NTP operators checked chlorine levels in the water manually every two hours. These "grab samples" were tested with handheld instruments, and any reading below strict limits had to be reported as a violation. While this method worked, it left long gaps between tests, increasing the risk of missing sudden drops in chlorine levels, and these repeated measurements diverted staff away from other operational activities.

To improve this process, HRSD sought approval to use an automated continuous chlorine monitoring instrument, the Hach Cl-17, for regulatory reporting. Because this was not an approved method for compliance monitoring, HRSD had to work through the Alternate Test Procedure approval process. After receiving approval for a limited use ATP, NTP implemented the procedure in March 2023, using the Hach Cl-17 to take chlorine readings every 2.5 minutes, 48 times more frequently than the old method. This change allows operators to detect and respond to problems in real time, making the system more reliable and protective.

Getting approval for this change took years of careful testing, comparisons with manual methods, and close coordination with state and federal regulators. Backup systems and strict daily quality checks ensure accuracy and reliability. If the instrument shows a sudden "zero" reading, operators follow a clear step-by-step procedure to determine whether it's a real issue or a false alarm.

In its first year, this new system identified chlorine dips that manual testing likely would have missed and allowing staff to act quickly and prevent violations. By automating this routine task, operators also save about 2.5 hours each day, freeing up time for other critical work.

HRSD plans to expand this innovation to more treatment plants. This advancement strengthens its commitment to clean water, regulatory compliance, and protecting the health of both residents and local waters.