World water works
Clean Water and Energy from Wastewater

CASE STUDY

HOPEWELL WATER RENEWAL

BACKGROUND

Hopewell Water Renewal (HWR) is a 50 MGD secondary wastewater treatment plant that treats the wastewater from local industries and domestic sources of the Hopewell, VA area. The plant began operating in 1977 and treats approximately 85% industrial waste. The facility achieves the treatment permit requirements for both BOD and TSS; however, treatment regulations have changed over the years and now require the removal of nutrients.

HWR discharges effluent into Gravelly Run, a tributary of the James River and Chesapeake Bay Watershed. As a significant discharger to the Chesapeake Bay, HWR's allowable nutrient discharge loading is capped based on the Chesapeake Bay and its tributaries nutrient control regulations adopted by the Virginia Department of Environmental Quality. Historically, HWR was below its phosphorus waste load allocations, but exceeded its TN waste load allocations, which they offset with the purchase of nutrient credits through the Nutrient Credit Exchange Program. With the future possibility of limited nitrogen credit availability, HWR needed to implement nitrogen reduction plant improvements.

SOLUTION

HWR conducted an extensive alternatives evaluation and pilot treatability study of various technologies to select the appropriate treatment technology. With more than six months of pilot testing complete, World Water Works' Ideal MBBR-DAF™ system was the clear leader. The pilot system consistently achieved the required treatment levels, while proving to be robust against the hard-to-degrade and potentially toxic industrial wastewater sources being treated. The result of the pilot treatability study not only proved to be the best available technology but also led to a reduction in capex while providing an easily implemented unit process to the plant.

continued on reverse.

QUICK FACTS

- **OWNER:** Hopewell Water Renewal
- **INDUSTRY:** Municipal
- **LOCATION:** Hopewell, VA, USA
- **STARTUP DATE:** October 2017

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SOLUTION CONTINUED

At HWR, World Water Works' moving bed biofilm reactor (MBBR) technology allows for the segregated high nitrogen influent flows to be nitrified and denitrified in order to meet the nitrogen permit requirements. The MBBR technology is a fixed-film process instead of a suspended growth process, which provides protected surface area for bacteria to form biofilm and adhere to the surface of the free-floating media. The removal of TSS is achieved by dissolved air flotation (DAF). The complete system is low maintenance and requires little operator interface.

CONCLUSION

The Chesapeake Bay is of great recreational and commercial importance, and protecting it today is critical in order to preserve it for future generations. HWR's installation of nitrogen removal technology assures its compliance with these goals. The new facility has been designed to handle the future flows and loads anticipated for 2040. This will allow local businesses and jurisdictions discharging to the plant to operate and grow, providing valuable jobs and resources to the surrounding community.