

Maintaining Reclaimed Water in a Storage Reservoir: Adding Value to a Luxury Home Community

Overview

Lake County, IL—Constructed in 2006 and operated by Aqua Illinois, a subsidiary of Aqua America, the Hawthorne Woods Wastewater Facility provides both sewage treatment for the surrounding Toll Brothers luxury home community and reclaimed water for the irrigation of a neighboring Arnold Palmer golf course. Treated water from the 480,000gpd system is fed into a six acre, 24 foot deep reservoir and stored until needed for irrigation. Surrounded with upscale homes, the reservoir is also viewed as an amenity; residents pay an increased premium to have their home on a lot with a water feature view. In order to provide the best quality irrigation water to the golf course and to preserve the appearance of the storage lagoon for the local residents, Toll Brothers sought for a storage lagoon water treatment solution.

Problem Identification

Algae and odors are of primary concern when maintaining water in a storage reservoir. The effluent from the wastewater facility and the stagnant nature of the lagoon provide the perfect breeding ground for algae, which can emit foul odors and clog irrigation piping. It was determined that some form of aeration and mixing would be necessary to manage and prevent these problems from occurring.



Hawthorne Woods effluent storage lagoon

Toll Brothers also desired a solution that promised low cost installation and maintenance, disrupted the appearance of the reservoir as little as possible, and that required few resources to run. These requirements made the traditional water aeration devices unattractive, as surface aeration is unsightly and consumes large amounts of electricity, and fixed tube aeration involves high installation and maintenance costs. Finally, the solution had to be analyzed and accepted by Aqua Illinois, the operator of the plant.

The Solution: MARS Aeration

Once all options had been researched, Toll Brothers concluded that MARS Aeration would be the most effective solution. After discussing their water treatment goals and effluent standards with Triplepoint Water Technologies, Toll Brothers purchased 11 units and installed them strategically throughout the storage lagoon. The MARS Aeration System stood as the one solution that satisfied all of Toll Brother's needs:

1. Low Cost Installation:

No fixed piping, moorings, or draining of the reservoir was required, saving Toll Brothers a substantial amount of money.

2. Versatile:

The MARS was connected by a valve and tapped into the existing aeration header that surrounds the lagoons. The unit's flexible weighted tubing provides the MARS with complete mobility, so placement and adjustment is simple.

3. Energy Efficient:

Because of its ability to operate effectively with low air flows, the MARS System did not require the WW Facility to upgrade its blowers.

4. Ease of Maintenance:

Just as the MARS can be installed easily by lowering the unit into the water from the surface, maintenance is performed by simply pulling the unit back up.

5. Unobtrusive:

All water treatment takes place subsurface, with no ugly motors, rafts, noises, piping, or cables. The MARS does not replace algae with equally unattractive machinery; rather, it silently polishes stored water.

6. Aqua Illinois Accepted:

Aqua Illinois agreed with the effectiveness of the MARS design, permitting it for use in its wastewater operations.



Two MARS Aerators awaiting installation

A Sustainable Solution

Years later, the Hawthorne Woods Plant's storage aeration is functioning exactly as designed. As the Aqua Illinois operator states, "when you have million dollar homes with lots that backup to this lagoon, it has to look nice." The operator continued by stating that the homeowners were satisfied with the water quality and happy with the nice view, as expected. At the same time, a high quality effluent was being distributed to the golf course irrigation system. Overall, he thought that "MARS are working great," and doing their job "effectively."

Conclusion

Despite their strict requirements, Toll Brothers found a water treatment solution with Triplepoint MARS Aeration. High water quality offered aesthetic quality to the homeowners surrounding the storage lagoon, and avoided clogging of the Arnold Palmer golf course irrigation infrastructure. In addition to being versatile, easy to install and maintain, and energy efficient, the MARS does its job effectively—adding value to the Toll Brothers development while achieving treatment objectives.