



CASE STUDY FLAT CREEK

CASE STUDY: FLAT CREEK WATER RECOVERY FACILITY GAINESVILLE, GEORGIA

The Flat Creek Reclaimed Water Plant in Gainesville, Georgia, has won national and regional operations and management awards. Operated by the City's Water Resources Department, the wastewater treatment plant is highly regarded, with a reputation for innovation and a solid track record of complying with strict environmental licensing requirements for operation.



SITUATION

- The Flat Creek reclaimed water plant receives approximately nine million gallons per day (0.5 m³/s) of wastewater from the greater Gainesville area, including a significant industrial contribution.
- The plant used two oxidation ditch reactors for secondary treatment, with each using three 250 HP surface aerators.

COMPLICATION



- Despite having an award-winning track record, the station experienced failures in some of its aeration equipment, resulting in effluents that temporarily exceeded permit requirements.
- Two of the three surface aerators in one of the reactors failed in August 2023, resulting in elevated levels of ammonia, phosphorus, turbidity, fecal coliforms, and biological oxygen demand (BOD).
- Hot summer temperatures intensified the effects of aerator failure, further compromising the biological treatment process.

RESOLUTION



- The Gainesville Water Resources Department contracted with ChartWater™ to provide emergency, supplemental oxygenation to the biological process with BlueInGreen supersaturated dissolved oxygen (SDOX®) technology under a monthly service contract.
- Phase 1: Recovery of reactor biology.
 - Three Dual SDOX® 600 containers were quickly retrofitted into the oxidation ditch reactor with the two failed aerators, providing approximately 30,000 lbs. (13,608 kg) of highly available oxygen per day to the existing biomass.
 - From September 1 to November 20, 2023, supplemental oxygen helped reestablish a healthy microbial biomass with a robust population of nitrifying microorganisms. Phosphorus, turbidity, fecal coliform, BOD, and ammonia levels in the treated effluent were drastically reduced within 70 to 80 days of supplemental oxygenation, overcoming the large accumulation of organics and nitrogen to produce high-quality effluent that met requirements of the facility's NPDES environmental permit.
- Phase 2: Continuous supplemental oxygenation
 - Two of the three Dual SDOX® 600 containers were kept on site under a long-term service contract to deliver up to 20,000 lbs. (972 kg) of additional oxygenation during periods of hot weather and to mitigate risks associated with regular maintenance and possible malfunction or failure of older aerators.



ECONOMIC/OPERATIONAL

- Operate in compliance with legislative requirements (environmental license and others)
- Prevention of administrative actions by the State's jurisdictional authorities
- Increased operational efficiency
- Operational continuity



SOCIAL/COMMUNITY

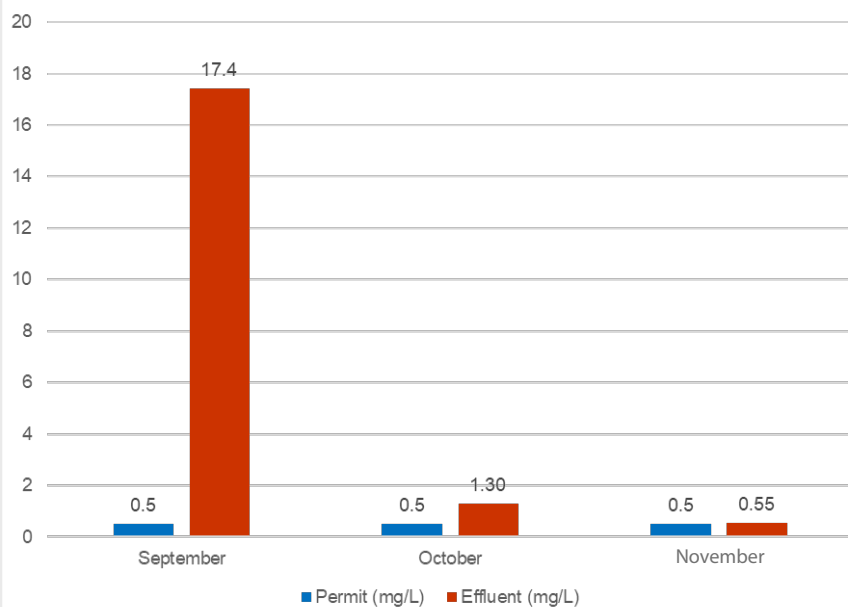
- Reduction of negative effects on the recreational use of local water bodies



ENVIRONMENTAL

- Improving water quality and mitigating the negative effects of nutrient pollution on aquatic ecosystems
- Reduction of greenhouse gas emissions

Gainesville Ammonia Nitrogen Performance w/SDOX



Objective: Oxygenate existing biomass to rebuild a strong nitrifier population and help treated effluent meet permit standards while vital equipment was being repaired. Result: The temporary oxygenation provided by SDOX® technology revitalized the existing biomass and helped the facility re-establish a robust population of nitrifiers.



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