

Medora Corporation

Wastewater Treatment Plant

USNHWW-LOC126.001

Topics: wastewater, energy savings, MLSS/TSS, ammonia, odor control, partial mix, sludge reduction



SolarBees deployed in wastewater cell.

Contact: Information is available upon request from Medora Corporation. 866-437-8076 info@medoraco.com

Overview: This municipal wastewater treatment system serves a community of approximately 15,000 residents. The wastewater treatment facility is a partial mix lagoon system utilizing aeration, and comprised of 3 lagoons and 1 sludge storage basin. Lagoon 1 is 9.3 acres, 9.3 ft deep, 25.9 MG total volume, and has 14 X 15 hp aerators, (210 hp); Lagoon 2 is 10.5 acres, 9.8 ft deep, 28.7 MG total volume, and has 8 X 10 hp aerators, (80 hp); Lagoon 3 is 8.3 acres, 9.3 ft deep, 22.8 MG total volume, and has 5 X 7.5 hp aerators, (37.5 hp). Total surface area is 28.1 acres. The system has an operating volume of 77.4 MG, with a total detention time of about 23 days.

Conditions / Objectives: The community was experiencing high energy costs from aeration and water treatment.

Solution: Six (6) SB10000v12 units into this system; two units in each of the three (3) treatment lagoons. Deployment Date: February 2006

Results: The New Hampshire Department of Environmental Services directed pilot studies at three WWTPs to evaluate solar-powered circulation as a replacement for grid-powered aeration while meeting National Pollutant Discharge Elimination System (NPDES) standards. Data were collected for 12 months before and 15 months after SolarBee deployment. Prior to installing SolarBees, the total system used 327.5 hp during summer months and 164 hp during winter months, for an annual average of 259 hp/month. This city met all NPDES limits throughout the 27-month study, with no significant differences in BOD, TSS, ammonia and nitrate concentrations with the change to solar-powered circulation. Adequate dissolved oxygen (DO) concentrations were maintained and odor events were not experienced. Sludge levels decreased in Lagoons 1 and 2, but increased in Lagoon 3, resulting in no net change during the study period. During the SolarBee deployment period, average monthly energy use decreased about 42% from 166,313 kWh to 96,704 kWh. This produced an annualized cost savings of \$94,992, resulting in a 3-year payback period. The City is very happy with the sustainable economic and energy saving benefits achieved by using SolarBees to provide their wastewater treatment mixing requirements.

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