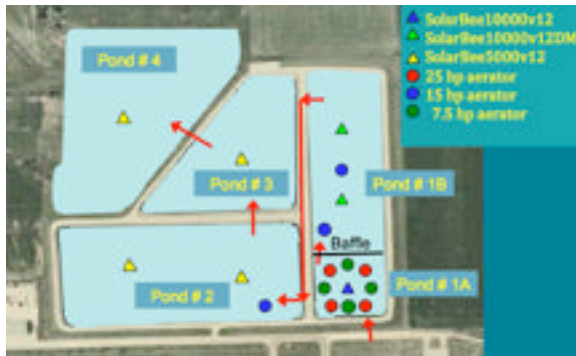


Key Words: municipal and industrial, odor control, energy savings



Photos: The first photo is an areal view of the current wastewater lagoon system showing SolarBee and aerator locations; arrows show flow directions. The second photo shows an SB10000 v12 in Pond 1A, a complete mix lagoon.

Reservoir or Lake Use: This wastewater treatment system services the city, with a population of 2,700. Approximately 30% of the waste flow is municipal waste, with the other 70% coming from a poultry producing operation.

System Overview and Reservoir: The original treatment system consisted of three extended aeration lagoons. Pond 1 covered 10 acres with a maximum depth of 9 ft and utilized 160 horsepower (hp) of surface aerators. Pond 2 covered 12.5 acres with a maximum depth of 10 ft and no aeration. Pond 3 covered 7.2 acres with a maximum depth of 10 ft and no aeration. Flow rate through the system is 700,000 GPD, with a BOD of 400 mg/L. The ponds operate as an intermittent discharge system.

Reported Problem Before SolarBee Installation: The original system was hydraulically undersized and required more aeration horsepower, so energy costs were high. They also had odor problems during the spring, summer and fall. In 2006, a redesign incorporated a diffuser blower system and surface aerators requiring 180-hp and 100-hp, respectively, but both were prohibitively expensive to purchase and operate. A new design incorporated a baffle in Pond 1 forming Pond 1A covering 1.5 acres, and Pond 1B covering 8.5 acres. Pond 4, covering 19 acres and 13 ft maximum depth, was also added at this time.

SolarBee Installation: Date: Sept. 2006, installed one (1) SB10000v12, four (4) 25-hp surface aerators and four 7.5-hp surface aerators in cell 1A, two (2) SB10000v12 dual mix and two (2) 15-hp surface aerators in cell 1B, two (2) SB5000v12 and one (1) 15-hp surface aerator in cell 2, one (1) SB5000v12 in cell 3, and one (1) SB5000v12 in cell 4 (see diagram above). A total of 175 hp of aeration was installed.

Results: The seven SolarBees deployed in the reconfigured lagoon system avoided additional capital equipment expenses of \$100,000 – along with \$49,000 more in electricity cost per year. Since the SolarBees were installed, the city has been able to cycle their existing aerators resulting in energy savings of \$20,000 per year. They have consistently met their discharge limits and odor is no longer a problem. The city is very happy with the performance and low maintenance of the SolarBee units.

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