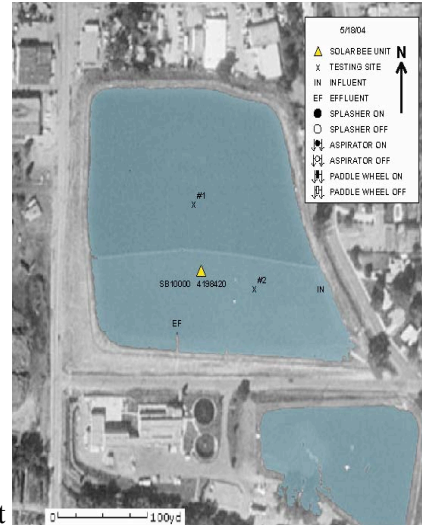


Key words: RW reservoir, blue-green algae, muck reduction, manganese, hypolimnetic oxygenation, dissolved oxygen, chemical savings



Photos: Shows unit in reservoir; aerial photo shows unit location.

Reservoir or Lake Use: Raw water storage reservoir, located in front of some settling and to take up surge flows in the system. Source water is piped in from a local river.

System Overview and Reservoir Data: Surface area is 11 acres; volume is 250 acre-feet (81 MG). Maximum depth is 20 feet when full; average depth is 14 feet. Depth typically fluctuates 2-4 feet during the year. Average withdrawal rate is 3 MGD, so hydraulic residence time is approximately 27 days.

Reported Problem Before SolarBee Installation: Initial objectives were to resolve problems of high concentrations of algae. During summer months, owner had to treat the reservoir 1-2 x per week with copper sulfate to prevent clogging in the plant. Owner had tried using a 30 hp aerator, but shut it down because it did not solve the algae problem and it had continual mechanical problems.

SolarBee Installation: Date: July 2002. Installed one SB10000F, solar-powered, with intake hose initially set at 9 feet due to the sludge depth in the reservoir.

Results: Algae blooms have disappeared and the City has not had to treat the reservoir with copper sulfate in the years since the SolarBee unit was installed, even though it was installed after blue-green algae were established in July (2002). In March 2003, the City disclosed for first time that the reservoir also had a manganese problem. Therefore, the intake hose was lowered to the deepest part of reservoir so the SolarBee could perform hypolimnetic oxygenation (maintaining sufficiently high DOs down to bottom sediments) to prevent manganese release. Lowering the intake hose apparently solved the manganese problem. By October 2004 enough sludge had been oxidized that the SolarBee intake was lowered further. Consequently, turbidity readings were greatly reduced when the wind stirred up the reservoir. The superintendent is very happy with the SolarBee's performance, and in both 2005 and 2006 purchased additional units for other applications within the water storage/treatment system.

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