

Key Words: RW reservoir, blue-green algae, taste & odor, chemical savings



Photos: First photo shows 7 SolarBees being prepared for installation; second photo shows locations of the 20 units around the treatment plant's intake; third photo shows several units deployed in the lake.

Reservoir or Lake Use: The lake serves as a recreational and raw water reservoir, providing about 30% of the total drinking water supply to the city, one of the largest cities in the US.

System Overview and Reservoir: The lake, constructed in 1954, is approximately 11,800 surface acres, with a maximum depth of 50 ft, an average depth is 11 ft, and a current capacity of about 130,000 acre-feet. The water intake pipe to the Water Purification Plant (WPP) is located 15 ft from the lake surface. The capacity of the WPP is 80 MGD, with an average daily flow rate of 25 MGD.

Reported Problem Before SolarBee Installation: The WPP suffered from serious summer and winter taste and odor problems resulting from chronic blue-green algae blooms producing MIB (2-methylisoboneol) and geosmin, and possible elevated manganese and sulfide levels in the reservoir's bottom waters. The goal here was a partial lake solution providing a 30-day supply of good water quality ahead of the WPP intake.

SolarBee Installation: Date: April 2006, twenty (20) SB10000v12 units were installed in 600 acres of the lake near the intake of the WPP. The 600-acre coverage reflects a 30-day water supply.

Results: As part of the city's evaluation, the U.S. Geological Survey (USGS) installed 3 real-time monitoring platforms in the lake in August 2006. These and other water quality data indicate that the SolarBees have kept the treated area of the lake well mixed and free of blue-green algae blooms since they were installed. MIB and geosmin concentrations have been consistently less than 5 parts per trillion, and taste and odor complaints have essentially ceased. The more consistent, good quality water has made water treatment requirements more predictable. Furthermore, the reductions in MIB and geosmin have resulted in a 33% decrease in powdered activated carbon (PAC) use at the WPP, providing an initial annual cost savings of about \$500,000. The city has been very pleased with the water quality benefits and economic savings SolarBee circulation has provided. In fact, the city authored a paper and presentation for the state Water 2007 AWWA annual meeting.

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