

Case Study

USORRW-52062.001

SolarBee® helps keep manganese under control

50% less manganese coming into the plant after SolarBees deployed.

Topics: raw water, manganese, iron, hypolimnetic withdrawal



Location & Contact Information:

Further information may be available upon request. Please contact Ixom Watercare by phone at 866-437-8076 or by e-mail, watercare@ixom.com

Reservoir Overview: This is a multi-purpose reservoir behind an earthen dam that feeds a Water Treatment Plant (WTP). It is used as both a source of drinking water and for recreational activities.

Surface Area: 118 acres.
Average Depth: 42 feet.
Max Depth: 55 feet.

Pre-Deployment Conditions: This reservoir had experienced regular water quality problems, particularly with manganese levels as high as 2.4 mg/L. As a result, this source of water into the WTP required significant chemical treatment. Each year in late summer, the manganese levels became so difficult to treat that the plant would have to be shut down.

Stratification during the summer months created anoxic conditions in the lower depths. This allowed sedimentary manganese and other elements to be released into the water column. Water with high manganese concentrations would then enter the WTP through the intake built low on the dam.

A multi-intake structure was considered, as well as moving the intake during summer months; however, relocating the intake to warmer water held the potential for taste and odor issues due to increased algal activity.

Project Objectives: Minimize concentrations of manganese and iron released into the WTP by increasing oxygen levels in the lower depths of the reservoir. Make raw water to the WTP more easily treatable. Reduce stratification in the reservoir and improve overall mixing.

Solution: Two (2) SolarBee® SB10000LS V20 Lake Circulators set deep for hypolimnetic withdrawal. They were installed near the WTP intake in the deeper part of the reservoir.

Results: During a six-month rental period, the mixers were evaluated for performance in reducing manganese levels of raw water entering the WTP. Monthly raw water data indicated success in reducing manganese levels to a maximum of 0.6 mg/L over that time with a more than 50% decrease from the previous year. This was the first time in five years that concentrations did not exceed the 1.0 mg/L threshold.