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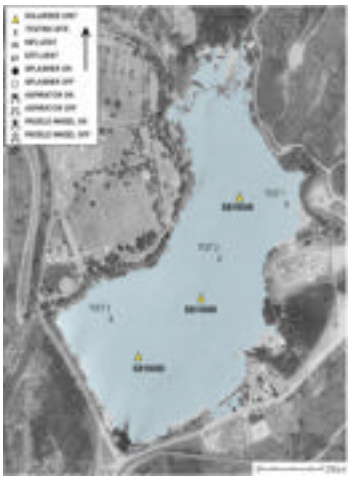
Summarized Case Study (LK)

Key words: recreational lake, blue-green algae, water clarity, DO, impaired fishery, fish spawning, aquatic weeds, coliforms



Photos: One of 3 SolarBees in the lake; aerial photo shows the locations of the three units.

Reservoir or Lake Use: The lake is a recreational lake on a US Marine Corps Base. The lake is 110 years old, and sits in the floodplain of a nearby river, one of the last free flowing rivers in the region. The lake is used for fishing and boating activities (non contact).

System Overview and Reservoir Data: Surface area is 125 acres; volume is 1,100 acre-feet; maximum depth is 16 feet when full; average depth is 9 feet.

Reported Problem Before SolarBee Installation: Initial objective was to increase dissolved oxygen (DO) concentrations in the water column. Problems resulting from high nutrient loadings included blue-green algae blooms and chronic fish kills. Other issues included elevated coliform counts, heavy metals, and turbidity.

SolarBee Installation: Date: June 2003. Installed three SB10000F SolarBees on short notice due to total disappearance of any measurable DO in the lake. The machines are solar powered. Two intake hoses were set at 10 feet deep, and the third was set at 7 ft. deep.

Results: One week after installation the DO levels of the lake were at saturation down to 10 feet. There was initially some strong algal productivity, but not blue-green algae. During the remainder of the 2003 summer there were no blue-green algae blooms, no fish kills, nighttime DO levels were often near saturation (10+ mg/L), water clarity improved, and there was a significant reduction in coliform counts throughout the summer. Results since 2003 have been similar, with good DO distribution in the water column (documented by their data), no fish kills and no sustained blue-green algae blooms. They have also observed a dramatic increase in fish spawning, with many more small fish than ever seen in the past. Water clarity also continues to improve. At the boat dock they can see to the bottom where previously they could not see even 1 foot. Even with improved water clarity, several species of pondweed (submerged macrophytes) have significantly reduced their presence in the lake. Fishing remains excellent; the lake appears very healthy with a vibrant and diverse fish population throughout all four seasons.

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