



The Schmidt Lake Case Study

The Schmidt Lake Improvement Association Pioneers Biological Approach to Lake Water Clean-up with Healthy Ponds Lake Cleaner.

Situation

Schmidt Lake, located in Plymouth, Minnesota, is a 37-acre lake that has experienced declining water quality over the past decade.

It exhibited the typical characteristics of a high nutrient load: increased growth and abundance of algae and aquatic vegetation, reduced water quality, and reduced water clarity. These problems led the Schmidt Lake Improvement Association and Schmidt Lake residents to explore options for improving the water. Traditional lake water management practices had been the primary methods used to treat the problems with water clarity and water quality. These treatments included the use of herbicides to control aquatic vegetation and algaecides to kill algae. After such treatments the lake did show improvement; however, having only addressed the symptom and not the problem, they were inconsistent improvements and short lived. In addition, many residents began to express concerns about the use of chemicals and the effects they can have on people, pets, plants, and fish. These concerns led them to explore solutions that focused on the actual source of the problems.

Bruce Wahlstrom, a resident of the lake, expressed his concerns this way, "Our lake was at a critical point. If we didn't make responsible water quality decisions, we might lose its recreational value."

The source of the problems exhibited in most lakes stem from excess nutrient loading.

Every lake has its own capacity to process some nutrients. This nutrient load most commonly comes from a natural cycle of aquatic plants and fish dying and decomposing. However, when *excess* organic materials permeate a lake from external sources such as fertilizer runoff, storm water, and agriculture, the nutrient levels typically exceed a lake's natural capacity, causing the lake to become unbalanced. External excess nutrient loading thus requires outside intervention to help restore a lake to its proper balance.

In 2004, the Schmidt Lake Improvement Association agreed to treat Schmidt Lake utilizing a biological, nutrient-reducing product that increases water clarity and quality. They chose to partner with Bioverse, Inc., a biotech company that develops and distributes biological pond and lake water cleaners that are safe to use around people, pets, plants, and fish and designed specifically to break down organic matter and reduce excess nutrients.

Solution

Since the objective was to improve the water quality and clarity in Schmidt Lake, clusters of the Healthy Ponds Lake Cleaner dispensed in its one-acre AquaSpheres were deployed throughout the 37 acres and rotated with new spheres monthly starting in June 2004 and ending in October 2004.

This solution represents two breakthroughs in biotechnology developed by Bioverse. First, the proprietary Healthy Ponds Lake Cleaner formula which utilizes enzymes that breaks down organic matter and many strains and species of beneficial bacteria that consume excess nutrients. The

second is the unique, patented dispensing system, the AquaSphere, which serves as an on-sight factory: incubating, growing, and deploying beneficial bacteria 24 hours a day, 7 days a week.

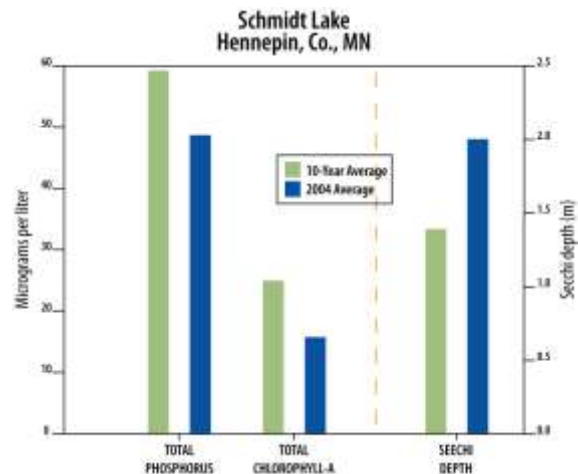
To independently verify the effectiveness of the Bioverse solution, The Limnological Institute, an accredited conservation and research organization, was hired to provide monthly testing. Three primary measurements are needed to determine the water quality, or health, of any lake: *phosphorus*, one of the primary food sources for plant life; *chlorophyll-a*, the direct indicator used to measure algae growth; and *Secchi depth*, used to measure water clarity. Lake management companies and regulatory agencies use these three measurements as a collective indicator of the nutrient load of each lake.

Results

“When the Bioverse treatment started in June 2004, Schmidt Lake already had significant lack of clarity,” observed Stu Froelich, former president of the Schmidt Lake Improvement Association. “Worse than usual for that early in the season. It took roughly a month before we saw any effect. Then, there was a dramatic increase in clarity over a two week period, and continuous improvement after that. The time during which we saw the clearing effect, mid to late summer, most often water clarity decreases. However, in August 2004, the clarity was what we would normally see in April or October.”

According to the data collected by The Limnological Institute and compared with the

10-year historical average provided by the Minnesota Department of Natural Resources, the test results revealed a 17.2% reduction in the levels of phosphorus, a 37.5% reduction of chlorophyll-a, and a 42.9% increase in depth of water clarity.



Finally, a study in 2003 conducted through Bemidji State University by Charles Krysel and others linked lake property values to water clarity. For every 1-meter of water clarity increased, property values could increase as much as \$423.58 per frontage foot and for every 1-meter of water clarity decrease, property values could also decrease as much as \$594.16 per frontage foot.

The measurable impact on the reduction of nutrients in Schmidt Lake indicates that a biological approach will help manage many of the nuisance problems caused by excess nutrient loading. Said another way, the objective was met. This reduction of nutrients improved water quality and water clarity, increasing both the aesthetic and recreational value of Schmidt Lake.

Who is Bioverse?

Bioverse, Inc., based in Worthington, Minnesota, is a biotechnology company that manufactures, markets, and sells products that improve the quality of fresh water in small ponds and lakes. Founded in 1995 by Michael VanErdewyk, a biologist who has been involved with water and wastewater treatment for 20 years, Bioverse was established as a research and development company. In 1999, products were introduced for sale commercially. Today, Bioverse has treated over 400,000 ponds and lakes ranging in size from backyard water features, to ponds and lakes (up to 10 acres). Bioverse products are sold under the *Healthy Ponds®* brand. Bioverse owns 4 patents on its technology. www.bioverse.com