

# Chemical Lake Treatments Gone Bad

## Our Story

### BY: John Tucci – President of Lake Savers

In 1999 my wife and I bought a small cottage on a nice 165 acre lake in Michigan. I grew up on a lake in Maine and I wanted to share that experience with our daughter. When we purchased the property, the water was clear, the surface clean, and there was a nice gravel bottom off of our shoreline. Right around that time, Eurasian Water Milfoil invaded our lake. Within a season, the milfoil had taken over large sections of the lake.



Our Lake Association knew we had to take immediate action. We hired experts and did what we were told. *We initiated an aggressive herbicide program for the lake. At first, the program was successful. We got the milfoil under control. We thought the problem was solved. We were wrong.*

By 2003 my wife and I finally moved to the lake after restoring the cottage. We couldn't wait to enjoy the lake. Unfortunately, on our daughter's first swim in the lake, we discovered that our once nice gravel-bottom shoreline was now plagued by over a foot of black, smelly, greasy muck. Her bathing suit was so black after a few minutes in the water that my wife pulled her out and immediately took her up to the house for a bath. We had to throw her bathing suit away.

Needless to say, this was heart-wrenching. We had just spent lots of money purchasing this property and lots of time, effort and money rebuilding the cottage. After all of that, we couldn't even go for a swim in the lake where just four years prior we had a clean gravel bottom and clear water. I started to project what the lake might look like in 5-10 years. I realized that our lake property might not be the legacy I had planned on passing on to my children and their children. I had to do something about it.

*I discovered that the invasive over-growth of milfoil and our well-intentioned herbicide program to control the problem was actually causing the rapid accumulation of organic muck and deteriorating water quality in our lake.*

*This is the story of Sherman Lake. I talked to John Tucci about Sherman Lake and he said it's taken 6 years to turn the lake back around after chemically treating the lake.*

*Courtesy of Lake Savers: To read the full article go to the link below.*

<http://lake-savers.com/why-lake-savers/our-company/>

## Indian Lake Restoration Story

Indian Lake in Dowagiac, Michigan is a 500 acre lake deteriorating under the weight of nutrient overloading. The lake is experiencing excessive hybrid weed growth (Eurasian water milfoil), toxic blue-green algae blooms, reduced water quality, and has a substantial sediment accumulation of decayed organic matter (muck) coating the lake-bottom. *Previous efforts at controlling weeds included the application of chemical herbicides which proved to be unsatisfactory and unsustainable.*

### The Study

In 2009 the *Indian Lake Improvement Association* commissioned an independent 2 year study by *Lakeshore Environmental Inc.* to measure the effectiveness of Lake Savers' Lake Bottom Aeration and Biological Acceleration in reducing muck, excess weeds, toxic algal growth, and restoring water quality. An 85 acre test site was selected for the study. The lake association wanted scientific proof that our technology worked before moving forward with a whole-lake restoration plan.

The study was one of the most comprehensive analyses ever conducted of deep-basin laminar flow inversion (Lake Bottom Aeration) and biological augmentation (Biological Acceleration) operating In Situ (in the field). Previous studies of both technologies had only been conducted in laboratory settings.

The 85 acre test site was divided into 4 sections. In one section, only bacterial augmentation (Biological Acceleration) was applied. In another section, only laminar flow inversion (Lake Bottom Aeration) was applied. In a third section, both technologies were used. The fourth section was the control area in which no technology was used.

### The Results

In 2011 the study was completed. The data revealed that [Lake Bottom Aeration](#) when combined with [Biological Acceleration](#) was most effective than each technology used alone. After 2 years, there was a 2' reduction in sediment organic matter (muck) as well as a "significant" reduction in phosphorus, nitrogen and ammonia, Eurasian water milfoil, pondweed and other nuisance weed species, and toxic blue-green algae (Microcystis). Water quality increased substantially.

### The Conclusion

Based on the results, Lakeshore Environmental Inc. strongly suggested that a whole-lake system be put in place to resolve the current issues of nutrient overloading in the rest of the lake. *They also explained why chemical herbicides are not the answer...*

***"Such a system is much preferred over the use of aquatic herbicides which only lead to partial and/or temporary death of aquatic vegetation and cause the damaged vegetation to release phosphorus back into the lake sediments."*** \_ Lakeshore Environmental Engineering 2011

*Courtesy of Lake Savers: To read the full article go to the link below.*

<http://lake-savers.com/most-comprehensive-scientific-study-ever-conducted-of-inversion-oxygenation-bio-acceleration/>

## Keeler Lake Restoration Story

*"I have been coming to this lake for over 30 years and can honestly say it has never looked this clear before"* Lynn Scardulo, President of the Keeler Lake Property Owners Association

Keeler Lake was suffering from extreme nutrient overloading. There was moderate water transparency, elevated phosphorus levels, abundant exotic and native aquatic weeds, and persistent algal growth.

*For 15 years lake property owners had spent approximately \$10,000 per year on chemical herbicide treatments to resolve excessive weed and algae growth and poor water quality.*

As Keeler Lake Property Assoc. President Lynn Scardulo described it, *"this process of (chemical) application was complex not only for the company that we hired but also for the Lake quality chairperson who had to arrange the applications and give reports on its effects and/or lack of results. It was difficult to maintain quality water as the weather conditions became more unpredictable and the increase of new invasive species of weeds and algae occurred."*

*"What we were actually doing all this time was putting a bandage on a major problem, without resolving the problem itself"* George Hartley, former Keeler Lake Property Association Water Quality Manager.

## 85 Acre Keeler Lake, Michigan

First ever Whole Lake System implemented in Michigan. An independent 2012 Study reported significant phosphorous reduction and Eurasian Watermilfoil control – *without chemical herbicides!*

### PROBLEM

- *Out-of-control aquatic weeds despite 5 year herbicide program*
- Persistent algal blooms despite multiple algaecide treatments per year
- Severe phosphorous overloading from 15' of decaying organic sediment

### SYSTEM RESTORATION DESIGN

- Baseline Water Quality Analysis in July 2011
- [Whole-Lake System](#) implemented in August 2011
- Aggressive [Biological Acceleration](#) treatment
- 2nd Water Quality Analysis in August 2012 to measure results

### RESULTS

- Submersed Curly-leaf Pondweed reduced from 49% (2011) to 1% (2012)
- *Eurasian Watermilfoil brought under control*
- Significant phosphorous reduction

### THE FUTURE

*"It has become our pride & joy."* Lynn Scardulo

*Courtesy of Lake Savers: To read the full article go to the link below.*

<http://lake-savers.com/pondweed-reduced-40-in-one-year/>

**For More Success Stories Go To:**

**<http://lake-savers.com/our-results/success-stories/>**

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