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AquaticsinBrief

INSIDE:

SOLITUDE LAKE MANAGEMENT

A Full Service Lake, Pond, Wetland, and Fisheries Management Company

Invest in Your Waterbody With an Annual Management Program

By **Marc Bellaud, Aquatic Biologist & Director of Technical Services**

As they say, if you don't use it you lose it. In this case, "it" refers to the management of your lake or pond. Many of the things we value require consistency, whether that's sticking with a nutritious diet or regularly mowing the lawn. It's no different when it comes to our water resources.

Lakes and ponds are finite and dynamic systems that we rely on for stormwater collection, recreation, and aesthetic beauty, among additional necessities like drinking water. And while each waterbody is completely unique in terms of use and water quality conditions, all of them are susceptible to nuisance algae and weed growth, invasive species, bad odors, and shoreline erosion. Without intervention, these issues can quickly open the door for other more concerning imbalances such as toxic cyanobacteria, loss of depth, flooding, and costly equipment damage. This is why proactive and ongoing management is crucial.

A professional assessment is the first step. Distinct ecosystems require customized solutions, and this begins with establishing a baseline of understanding about existing conditions and potential challenges through water quality testing and in-depth inspections. From there, your aquatic specialist can work with you to develop and implement an annual management program that aligns with your goals, budget, and required frequency of care.

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The most effective annual management programs protect your complex aquatic ecosystem from all sides and remain flexible; as conditions change in response to new seasons, weather, or water use, your priorities may as well. This is accomplished by leaning on cutting-edge technologies, comprehensive data collection, routine laboratory analysis, and premium services like nutrient remediation, algae ID, biological augmen-

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Invest in Your Waterbody *Continued from front cover*

Water quality testing


Professional consultation

tation, oxygenation, and erosion control solutions that promote the much desired trifecta of health, functionality, and beauty. Ongoing professional guidance provides an additional layer of protection to support your waterbody.

Professional guidance is often the crux to fully understanding and executing an effective long-term management program, but—like every waterbody—each stakeholder is different. Lake and pond owners who seek hands-on involvement or have a limited budget may prefer a more scaled back approach that simply prioritizes the basics like buffer management, herbicide treatments, decorative pond dye, and visual inspections. But it's a fine balance. As data collection, advanced technologies, and immediate professional support become less accessible, water quality conditions can become more volatile and the burden associated with them may intensify. A consultation with your lake and pond management professional can help you evaluate the options and choose the path that best meets your objectives.

Lakes and ponds are precious resources, and if you happen to oversee one, it is your responsibility to ensure it remains a safe, healthy, and functional part of our environment all year long. It's also important to remember that waterbody management is an investment into your property and potentially your reputation as a community or business. Your priorities and budget may fluctuate over time, but one thing always rings true: lake and pond management is never a one-time job. ■


Algae treatment

Professional guidance is often the crux to fully understanding and executing an effective long-term management program, but—like every waterbody—each stakeholder is different.


Before


During


After

Reinforcing a Damaged Pond Shoreline in a Florida Community

By **Mike Kopyta, Erosion Control and Shoreline Manager**

No matter how perfect the water in a lake or pond may seem, a poor shoreline will always take center stage. Not only are eroded, unstable shorelines aesthetically displeasing, but they can also reduce property values, endanger residents, and leave a stain on a community's reputation. One Florida homeowners association recognized this pain point in their community and decided to take action.

This large HOA in Palm Harbor consists of quaint and stylish residences that growing families and retirees call home. Nature is a large focal point in the community where native trees line the streets, creating a picturesque backdrop against manicured lawns. Likewise more than 40 lakes and ponds are featured throughout the property. These waterbodies function as resources for stormwater collection, fishing, and wildlife habitat.

Unfortunately, many of these ponds were severely affected by erosion, which had presented itself fairly quickly. Many homeowners had watched their waterfront properties deteriorate by several feet over just a few years. In addition to the unsightly appearance, the erosion had exposed irrigation pipes and other important structures, particularly around a three-decade-old waterbody called Pond 34.

This deterioration was accompanied by steep drop-offs, unconsolidated soil up to 3.5 feet down along the perimeter of the shoreline, and the loss of valuable depth and volume that increased the risk of flooding. The pond had also been over-


Hydro-rake


Armored catfish

taken by a population of South American Armored Catfish (*Plecostomus*), an invasive burrowing species that destabilizes shorelines across Florida.

The community consulted with several vendors specializing in different restoration approaches. Ultimately, SOLitude was selected to create a bioengineered shoreline using a photodegradable technology called SOX Solutions. This approach was identified as the fastest, cleanest, and least likely to disturb surrounding properties. The community also appreciated the aesthetic value of the final product, which is customized to seamlessly integrate into the existing landscape.

During this process, the knitted SOX material was filled with organic sediment and then shaped and anchored across 823 linear feet of shoreline for long-lasting support. Rather than bringing in off-site sediment, the HOA opted to hydro-rake existing materials from within the pond itself. A hydro-rake is a floating barge with a backhoe attached that can remove up to 500 pounds of muck and debris with each scoop. This had twofold benefits: it composed the foundation of the shoreline and increased the depth and volume of the waterbody.

Due to the unique knitted features of the SOX, grass and beneficial buffer plants were able to be installed directly into the barrier, helping it to maintain its shape and stability. The invasive catfish were also removed from the site through strategic trapping. The transformation only took five days to complete and the surrounding homeowners were very pleased with the results.

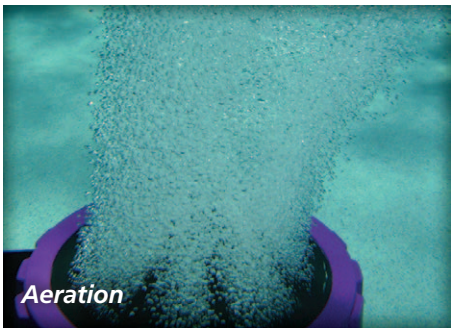
The client went on to utilize this erosion control approach on multiple ponds throughout the community. Though the damage at Pond 34 had gone unchecked for too long, the HOA was able to address their other waterbodies before deterioration had gotten out of hand, ultimately saving money and downtime for many years to come. ■

Enhance Your Lake or Pond with Natural Management Solutions

By **Shannon Junior, Ecologist and Senior Business Development Consultant**

Preserving and restoring water resources is a complex challenge that requires a diverse and adaptive management approach. When managing lakes and ponds, the goal is to implement the best strategies to achieve an integrated balance between effectiveness, affordability, and environmental sustainability. While the proper use of herbicides and algaecides can meet all three of these objectives, there are many natural management strategies that can be implemented instead of or concurrently with chemical products to improve your waterbody's health.

When invasive weeds are the primary concern for a waterbody, physical removal of the plants may be a good control option. Hydro-raking and mechanical harvesting are two alternatives to herbicides for the management of invasive vegetation. The hydro-rake can remove rooted floating-leaved and emergent shoreline vegetation by utilizing a rake attachment to scoop the plants and root matter up to 10 feet deep. The mechanical harvester utilizes a cutting mechanism and conveyor belt to remove floating vegetation with extensive surface biomass. Depending on the species and density of the vegetation, hydro-raking and mechanical harvesting can provide multiple years of plant control. Not only do these solutions remove the plant matter to help reduce nutrient loading to the waterbody, but they also remove the reproductive structures to prevent future generations of plants.



Aeration

Biochar

Mechanical harvesting

A sustainable practice for managing nutrient levels is performed with beneficial bacteria — a process often referred to as biological augmentation. This solution uses naturally occurring enzymes that break down organic compounds and draw nutrients into their cells, thereby removing them from the water. Another natural strategy used to filter nutrients, metals, and other pollutants from the water is Biochar. Similar to activated charcoal, Biochar can be placed in porous bags that are situated in moving water near inlets, fountains, or aeration systems. As the water flows through the bags, the pollutants are absorbed by the Biochar and physically removed once the bag is full. These are both excellent solutions used to manage nutrient levels.

Another efficient natural management strategy is to change the physical characteristics of the aquatic environment through the introduction of oxygen. Aeration is an effective solution recommended to help naturally improve water quality. Increasing oxygen levels at the bottom of the waterbody near the sediment helps prevent the release of nutrients that can fuel algae and aquatic weed growth. Aeration can also enhance fish habitat, prevent foul odors, and deter mosquito breeding. Depending on the size, depth, and other site-specific characteristics, aeration can be accomplished by diffused air systems, oxygenation systems, or floating aerators. Pairing aeration with a vegetative buffer can help improve habitat, enhance aesthetics, stabilize the shoreline against erosion and filter out excess nutrients and sediment.

There are many natural solutions that can be implemented as part of an integrated lake management program. Since every waterbody has unique characteristics, the selection of the most effective strategies should be based on specific water quality challenges or target pests, site-specific conditions, and regulatory requirements of the locality. A lake management professional can help you identify the most appropriate program for your goals and waterbody. ■

Understanding the Restorative Power of Alum Applications

By **Dominic Meringolo, Project Manager & Sr. Environmental Engineer and Jameson Bastarache, Environmental Scientist**

For a waterbody with chronic algal blooms, an alum treatment can be a truly restorative management technique that addresses the root cause of excess growth — phosphorus. Some of the most notable and effective water quality management programs conducted by SOLitude across the country have involved alum treatments.

Alum (or Aluminum Sulfate) is a liquid compound that was traditionally used for drinking water treatments and has been used to balance water quality in lakes and ponds since the 1970s. When applied to water, this compound forms a solid known as "floc" which reacts with phosphorus and coagulates solids while settling to the bottom sediment. Once this floc and collected material have settled to the bottom, the nutrients are permanently removed from the water column so they can no longer fuel the development of water quality nuisances. And when applied at higher doses, the alum also helps to intercept and inactivate phosphorus that may be released from the sediments.

Phosphorus in lakes and ponds can come from stormwater runoff, pollution, wildlife waste, decomposing plant matter, and even from connected waterbodies nearby. In increased concentrations, phosphorus has a direct impact on the amount of algal biomass that can be produced. In particular, Harmful Algal Blooms (HABs) like cyanobacteria can become more prevalent as phosphorus levels increase. It's important to conduct water quality tests to monitor the presence of cyanobacteria as it is known to release toxins that are dangerous for humans, pets, and wildlife. Other types of algae, though not toxic, can also cause poor water clarity, interfere with recreation, and contaminate drinking water.

Alum is applied using a boat equipped with GPS technology to ensure adequate coverage is achieved throughout the waterbody. The vessel is also equipped with onboard containment tanks and a calibrated pumping system with a submersed nozzle for discharge into the water. Applications are most effective when alum is dispensed several feet below the surface of the water so wind and surface currents cannot disturb the settling process.

Alum can be a great solution for stakeholders who are looking to "reset" their lake or pond's water quality health. Ideal candidates for an alum treatment are waterbodies that hold water for long periods of time or those with substantial internal phosphorus loading. To ensure a productive application, the sources of nutrient loading should be addressed beforehand — this could mean establishing a beneficial vegetative buffer, addressing erosion issues, harvesting nuisance plants, or repairing damaged stormwater equipment.

To stay ahead of water quality issues and reduce the need for an alum application, other proactive management strategies like professional water quality testing, aeration, and mechanical hydro-raking should be implemented. When in doubt, consult with your local

SOLitude representative to see if alum is the right solution for your waterbody and discuss how you can create a balanced aquatic ecosystem with an Annual Management Plan. ■

The SOLution
Creating A Better World
2020 ACCOMPLISHMENTS

As part of our commitment to environmental stewardship and community involvement, we strive to foster our company's core values both inside and outside of the workplace. Through our volunteering and community outreach program, The SOLution, we believe that we can help to make a difference in the world.

19,853

HOURS VOLUNTEERED BY COLLEAGUES, PARTNERS & FAMILIES SINCE THE PROGRAM'S INCEPTION IN 2012

2,975 hours volunteered in 2020

Average of 7.6 hours per colleague (392 Colleagues)

$541,929

IN DONATIONS INCLUDING GOODS AND IN-KIND SERVICES SINCE THE PROGRAM'S INCEPTION IN 2012

$23,074 donated in 2020

Participated in...

36 Trash clean-ups

Volunteered at more than…

75 Different organizations

Thanking Essential Workers • In 2020, SOLitude Lake Management helped launch the Hometown Heroes program. Through this new program, SOLitude's team of freshwater management professionals delivered care packages to deserving healthcare, childcare, senior living, and military organizations in their local communities across the country. In collaboration with SOLitude's parent company, Rentokil, colleagues were able to impact more than 8,100 individuals throughout the nation.

HEART & SOL DAY:

Colleagues volunteered 334 total hours across SOLitude's 35+ nationwide offices on November 20.

LOVE YOUR LAKE:

Repaired fountain at Camp Conquest, a camp for adults with special needs, disabilities, & chronic illnesses.

HOLIDAY CHEER:

Purchased gifts for 103 children through Angel Tree and donated 241 toys & gifts to five hospitals across the country.

LITTLE GOBBLERS:

Provided 267 families with Thanksgiving turkeys or grocery store gift cards.

"With your help, we were able to provide some comfort for the families & excitement for the kids at the hospital."

— Sherry Brooks, *Hospital Office Coordinator, CHKD*

Learn how you can be a part of The SOLution:

solitudelakemanagement.com/solution

VOLUNTEER HIGHLIGHTS

- Beneficial Plant and Grass Plantings
- Invasive Species Removals
- River, Bay, Lake, & Beach Clean-Ups
- Equine Rescues
- Card Decorating for Children's Hospitals
- First Responders
- Foodbank Meal Programs
- Youth Mentoring & Educational Programs

VOLUNTEER AWARDS

Q1 Volunteer of the Quarter: Robert Finnick, FL

Q2 Volunteer of the Quarter: Ean Sims, FL

Q3 Volunteer of the Quarter: Flo Paterno, FL

Q4 Volunteer of the Quarter: Ellen Stace, VA

HEART & SOL AWARD

Congratulations, Ean Sims!

This is an annual award given to the colleague who goes above and beyond with personal volunteering, inspires others, and has a true commitment and passion to make the world a better place.

Before & After Showcase

Parrot Feather Treatment

Property type:
Private Pond

Acreage:
2 acres

Jason Emmel, Fisheries Biologist, VA

Spatterdock Treatment

Property type:
High School Pond

Acreage:
3.4 acres

Anthony Oraczewski, Field Operations Manager, FL

Invasive Plant Removal

Property type:
Municipal Pond

Acreage:
2 acres

Steve Lawler, Project Manager, CA

Filamentous Algae & Pondweed Treatment

Property type:
Community Pond

Acreage:
1.35 acres

Katelyn Behounek, Aquatic Biologist, CO

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BBB RATING: A+

3 Simple Ways to Prevent HABs

By **Greg Blackham, Aquatic Specialist**

Harmful Algal Blooms or "HABs" have become a major topic of discussion as they intensify in waterbodies around the world. HABs disrupt ecosystems and can be harmful to humans, pets, and wildlife due to toxins that they sometimes release into the water and air. Scientists recommend several strategies to inhibit this dangerous algal species.

1. Regularly Test and Monitor

To get ahead of potential imbalances, it's important to conduct professional water quality testing on a regular basis. By identifying the root causes of recurring algae growth, you can make informed management decisions for long-term prevention.

2. Implement Proactive Management Solutions

Fountains and aeration systems can prevent stagnation and increase oxygen levels. Likewise, beneficial vegetative buffers can limit excess nutrients from entering the water column. These solutions help create conditions that make algae growth more difficult.

3. Educate Your Community

Community education is key to improving lake and pond health. Encourage best practices like using zero-phosphorus lawn fertilizer and cleaning up trash, pet waste, and lawn clippings near the shoreline.

If you see green, slimy algae developing around your waterbody, remember these three management strategies. With these tips in mind and an annual management program in place, you can preserve the beauty and balance of your waterbody for years to come. ■