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Set Your Waterbody Up for Success This Year and Beyond

By **Marc Bellaud, Director of Technical Services**

Imagine sitting near the edge of a lake or pond on a warm, sunny day. Maybe you're enjoying a picnic with friends or watching your family take a dip. Then, all of a sudden, you get a whiff of a foul odor and see green scum floating in the water nearby...

Water quality problems like this can quickly ruin your picture-perfect day on or around the water. Achieving a healthy, beautiful aquatic resource that you and your family can enjoy year-round is no easy task. Depending on where your waterbody is in its lifespan, it may require restorative and proactive management solutions in order to become that ideal waterbody you're dreaming of.

The first step towards a pristine waterbody is identifying the problem's source. [Professional water quality testing](#) provides valuable data on water quality imbalances and informs next steps. For example, high levels of phosphorus and nitrogen can contribute to nuisance pond weed growth, which will eventually die off and the organic material will settle at the



bottom of the waterbody. Year after year, this cycle can lead to muck development and, subsequently, flooding and volume loss which can lead to costly property damage.

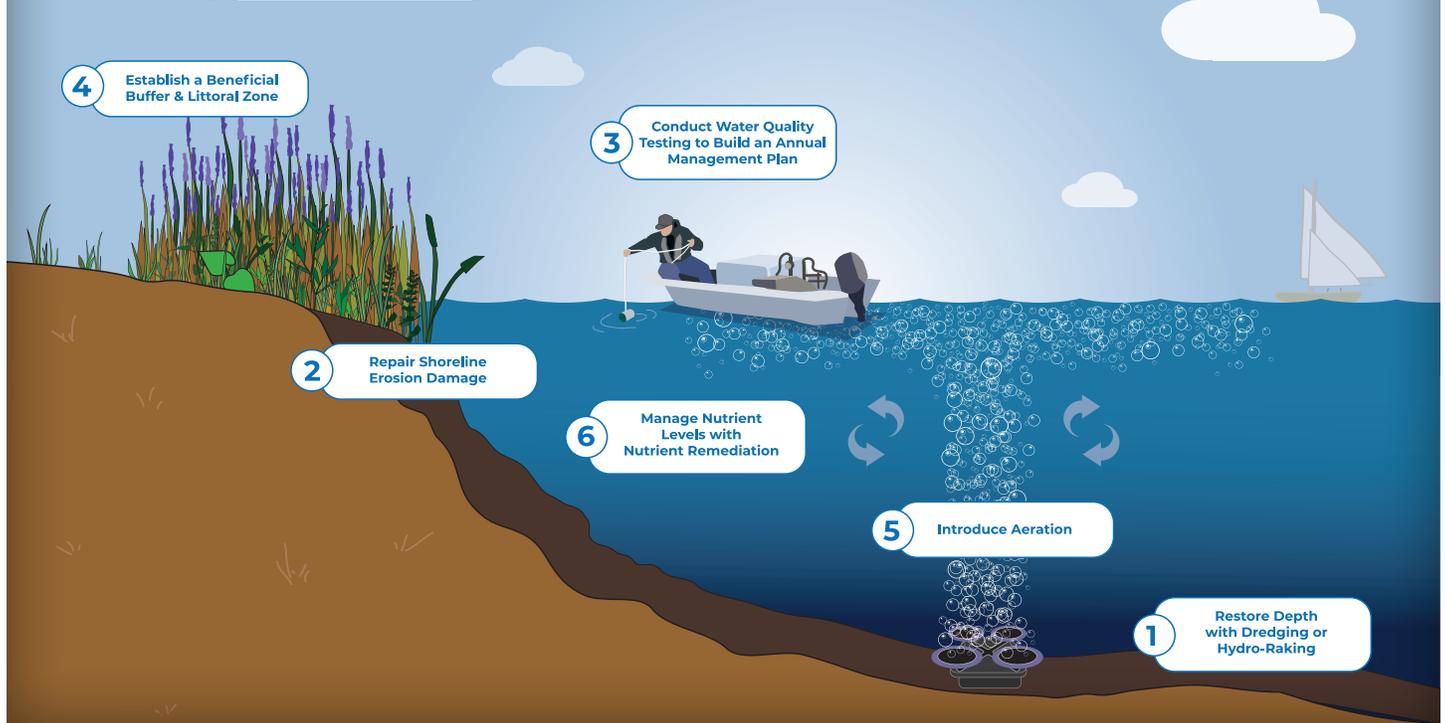
[Dredging](#) is the primary solution for resetting aquatic ecosystems with severe muck and sediment build-up. During this process, waterbodies are cleared of hundreds or thousands of cubic yards of nutrient-rich sediment and nuisance plant life. Though dredging is *Continued on page 2*

SOLITUDE
LAKE MANAGEMENT

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

Set Your Waterbody Up for Success *Continued from front cover*

6 Ways to Set Your Waterbody Up for Success



costly and invasive, it's an extremely impactful management tool that should be followed by regular maintenance, water quality testing and monitoring, and proactive strategies like [shoreline management](#).

Rehabilitating eroded banks will prevent nutrient-rich sediment from returning to the water. One of the most effective

To extend the longevity of a newly restored shoreline, it's crucial to maintain a healthy beneficial buffer comprised of native, deep-rooted plants.

[erosion repair solutions](#) is a durable knitted soil containment system called SOX. This patented tool is used to reshape and strengthen a shoreline for many years. Once installed, turf or other vegetation

can be planted over the system to create a living shoreline. This results in a natural, integrated look that serves as a bio-filter, creates a safe stable shoreline and enhances the aesthetics of any property.

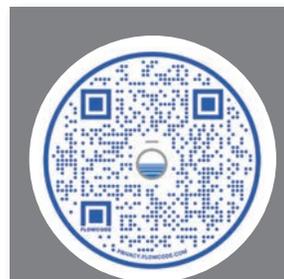
To extend the longevity of a newly restored shoreline, it's crucial to maintain a healthy [beneficial buffer](#) comprised of native, deep-rooted plants. Vegetative shoreline buffers should extend 3-5 ft from the water and grow approximately 18 in tall. In addition to creating a complex web that holds soil in place, buffer plants help filter runoff that contains pet waste, trash, fertilizers, yard debris, and other sources of nutrient pollution.

Balanced nutrient levels can also be maintained with the help of beneficial bacteria that

consume sludge naturally, as well as [nutrient remediation](#) products like [Phoslock](#) and [Alum](#) that bind with nutrients to prevent plant uptake. [Fountains and submersed aeration systems](#) can further support these efforts by increasing dissolved oxygen, which helps convert nutrients to forms that do not fuel organic growth.

Each of these solutions plays a key role in restoring and maintaining a healthy waterbody, but it's important to remember that there is no one-size-fits-all

approach. Professional lake managers understand how to collect and interpret data and select the best tools and technologies to help you achieve your goals. With an annual [SQL Pro Plan](#), you can achieve your dream waterbody and begin making lasting memories on and around the water in 2022 and beyond! ■



Who We Are



Shoreline Erosion: The Cause, Effect, and Solution

By **Joe Harms, Erosion Repair Expert and Business Development Consultant**

There are many factors that contribute to [shoreline erosion](#) including stormwater runoff, wind, rain, irrigation, wildlife, and humans, to name a few. It's inevitable that erosion will affect the shorelines of lakes, retention ponds, and canals. Shoreline erosion damage can have an economic impact on property owners or managers as well as cause unwanted environmental issues and safety concerns.

Shorelines with erosion damage are often continually impacted by environmental factors such as heavy rains, rainwater run-off, and water fluctuation. Rainwater run-off can slowly erode the soil and kill root systems of plants and grass that typically stabilize the shoreline. The constant movement of water running over the edge of the shoreline can lead to the formation of gullies and unstable areas. This can cause the shoreline to be misshapen and can often lead to the loss of land,

which can slowly encroach towards home and pool foundations and fencing.

Not only does erosion create hazardous shorelines, but the nutrient-rich soil that enters the waterbody from runoff can also have a significant impact on the overall health of your lake or pond. The increase of soil deposits can lead to water quality issues like [algal blooms](#) and [aquatic weed growth](#). If a waterbody is showing signs of erosion damage, it may be time to implement repair solutions.

Through our partnership with SOX Erosion Solutions, we are proud to offer [bio-engineered erosion control systems](#) for lakes, ponds, and canals. With decades of experience installing these systems, SOLitude's Erosion Repair Division is highly qualified to implement this

game-changing technology for shorelines suffering from erosion damage.

The SOX system is made with a double layer of knitted high-density polyethylene mesh, which is both durable and eco-friendly. The custom-made systems are attached to the shoreline through the patented anchoring channel and are then filled with organic material, typically sediment or muck from the lake or pond bottom. Using materials from the local aquatic resource not only makes installation more efficient but also restores the depth and volume of the waterbody.

Once the system is filled, it is sealed so that water can only pass through the mesh system. This helps filter excess nutrients before they enter the water column. With this long-lasting shoreline restoration solution, you can regain several feet of valuable shoreline and protect your waterbody and property against future erosion damage.

An additional benefit of this erosion repair system is that it is adaptable to beneficial plantings. Once installation is complete, the system can be sodded over and beneficial vegetation can be planted through the mesh, which will not tear or lose integrity over time.

Aquatic plants will root and grow along the shoreline, holding soil in place so it does not run into the water during



heavy rain events or water fluctuation. These [beneficial buffer zones](#) will help protect your lake, pond, or canal against erosion damage and further stabilize the repair system while elevating the beauty of your newly restored shoreline.

If you are experiencing shoreline erosion, please reach out to our team of shoreline repair experts to discover the best solution for your waterbody. ■



Shoreline Erosion Repair in Action



Water Quality Testing Deep Dive

By Ryan Ebanks, Laboratory Scientist

Water quality is the foundation of any healthy water resource. If you think about going to the doctor and getting blood drawn to identify a health issue, you could compare that with [water quality testing](#). In lake and pond management, scientists evaluate these and many other water quality parameters to determine the root of water quality issues.

The first parameter typically measured in water quality tests is oxygen. Oxygen is one of the most important elements to humans. Just like humans and animals, waterbodies also utilize oxygen to survive. In lake and pond management, we use tools to test for dissolved oxygen (DO) levels in the water. If dissolved oxygen levels are low, aquatic life becomes stressed. This usually occurs when excess organic materials, such as large algal blooms, are decomposed by microorganisms.

Like oxygen, ammonia can cause parallel issues in aquatic environments if levels are unbalanced. For example, high levels of ammonia can make fish become lethargic and even cause them to die off. Higher concentrations of ammonia are more likely when dissolved oxygen levels

are very low or when the water is polluted. The introduction of [floating fountains or submersed aeration systems](#) can help maintain healthy levels of both oxygen and ammonia.

Another parameter measured is phosphorus, another essential element of all living things. However, when in excess, it can cause many systemic changes to the ecosystem such as increased production of [algae and aquatic plants](#), as well as depletion of fish species. How can we stop this from happening and create a balanced ecosystem? Try reducing fertilizer use around your lake or pond and treat phosphorus-laden bottom sediments with nutrient remediation solutions like [Alum](#), [Phoslock](#), or [biologicals](#).

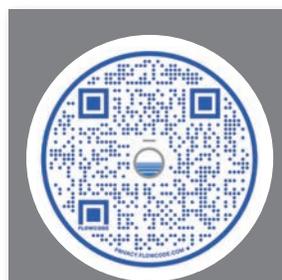
Nitrogen is a similar parameter measured during water quality testing. Nitrogen provides food for plants, algae, fish, and smaller organisms in the water. Nitrogen can enter the water through fertilizer runoff, and when in excess, it can lead to the growth of nuisance aquatic plants and algae, creating an unbalanced ecosystem. To maintain healthy levels of nitrogen, reduce fertilizer runoff to water resources and implement [nutrient remediation solutions](#) when needed. Excess nitrogen levels, along with other elements, can be reduced by

[repairing erosion damage](#) and establishing a [native vegetative buffer](#) and [littoral zone](#) that helps filter excess nutrients before they enter the water column.

Another parameter commonly tested is alkalinity. The alkalinity of a waterbody is very important. Think of this in terms of human physiology. Your blood pH should always be balanced to allow enzymes to function effectively. In lakes and ponds, alkalinity is a measure of the waterbody's ability to neutralize acids and bases, and thus, maintain a stable pH level. If the alkalinity is too low, this can lead to dangerous pH swings, which can become life-threatening to aquatic life. Professional liming is often recommended to increase alkalinity and prevent pH swings.

Knowing the levels of each water quality testing parameter is vital. Through recurring water quality testing and monitoring, aquatic resource experts can develop effective [management plans](#) that

meet the needs of your waterbody. SOLitude is proud to offer a variety of [water quality testing packages](#), tailored to fit the needs and budget of your waterbody. With insight from our biologists, you can stay ahead of water quality issues and maintain a healthy, beautiful waterbody year after year. ■



Learn About
Water Quality
Assessments



The Power of Drone Applications for Invasive Species Management

By Marc Bellaud, Director of Technical Services

In recent years, the lake and pond management industry has seen exponential growth and innovation. As an industry leader, SOLitude is dedicated to leveraging new technologies to make freshwater management safer, more accessible, and more efficient — all while reducing our environmental impact. The newest tool in our toolbox of professional solutions is [advanced drones](#).

Also known as unmanned aerial systems (UAS), drones are changing the way we approach the management of [nuisance and invasive weeds](#). They play a key role throughout the process, starting with data collection and surveillance. With a bird's-eye view of the site, professionals are better able to map target areas and identify safety challenges such as difficult terrain, flooding, infrastructure damage, or dangerous wildlife.

Drones are operated by our experienced in-house pilots licensed through the Federal Aviation Agency (FAA). After site surveillance, pilots use GIS software to preprogram custom treatment routes for precise herbicide applications in target zones.

Our state-of-the-art drones have a 6ft wingspan and advanced battery capacity, allowing them to transport approximately 35 pounds of liquid or granular herbicide during an application route. Once emptied — often in just 2-3 minutes — the drones are returned to a designated reloading station. Reloading can be completed on-shore, in a boat, or from a truck bed. This efficient technology is an excellent tool for wide-area coverage in difficult-to-reach or ecologically sensitive environments as it can treat up to 200 acres a day, making it a cost-effective solution for large or remote areas.

Drones allow us to manage many different [nuisance or invasive plant species](#). Some of the most common floating aquatic weeds include water hyacinth, giant salvinia, water chestnut, and crested floating heart. Common emergent wetland plants include cattails, phragmites, Brazilian pepper, and flowering rush.

The drone's highly-targeted applications make it easier to access sensitive or hard-to-reach areas without putting the environment or aquatic experts at risk. Areas that are normal-



ly inaccessible to ATVs and ground specialists can now be effectively managed with precise applications.

In addition to optimizing the treatment process, drones are discrete and less intrusive in residential and recreational locations. HOAs and golf courses take pride in cultivating beautiful landscaping around their water resources. Drones eliminate the need for specialists to interfere with these areas and help ensure flowers, turf, and other ornamental growth remains untouched. Most importantly, our drones are configured with software designed to block recording near living spaces.

Drones have changed the game in many ways for lake and pond management experts, and we continue to uncover new ways to integrate this exciting technology into our many service offerings and [annual management programs](#). As we continue to expand these abilities, we're also working to develop other innovations to support healthy, beautiful, long-lasting waterbodies. Stay tuned! ■



Watch the
Drone in Action

The SOLution

Creating A Better World

2021 ACCOMPLISHMENTS

Through our corporate volunteering and community outreach program, [The SOLution](#), we believe that we can help to make a difference in the world. Despite the challenging times we faced in 2021, our team remained committed to their volunteer efforts through socially-distanced trash cleanups, making handmade cards for local children's hospitals, and more. Learn more about our volunteer and community outreach initiatives from the past year.

22,007

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

3,029 hours volunteered in 2021

Average of 6.8 hours per colleague (446 Colleagues)

\$536,305

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

\$17,450 donated in 2021

Participated in...

31

Trash clean-ups



Volunteered at more than...

103

Different organizations



HEART & SOL DAY:

Colleagues volunteered 480 total hours across SOLitude's 35+ nationwide offices on April 22.



HOMETOWN HEROES:

Donated care packages to frontline workers and first responders, serving 90 organizations and impacting over 3,700 individuals.



HOLIDAY CHEER:

Donated gifts for 130 children through Angel Tree and contributed 160 toys & gifts to five hospitals across the country.



LITTLE GOBBLERS:

Provided 350 families with grocery store gift cards for Thanksgiving meals.



HEART & SOL AWARD

Congratulations, Raquel Mason!

This is an annual award given to a 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.



VOLUNTEER HIGHLIGHTS

- Repaired Enclosures at Animal Sanctuaries
- Beach, Natural Areas, Parks, and Highway Trash Cleanups
- Invasive Vegetation Removal
- Food Bank Meal Programs
- First Responders
- Equine Rescues
- Homemade Cards for Children's Hospitals

VOLUNTEER AWARDS

Q1 Volunteer of the Quarter: Raquel Mason, FL

Q2 Volunteer of the Quarter: Patrick Mefferd, TX

Q3 Volunteer of the Quarter: Veronica Biro, FL

Q4 Volunteer of the Quarter: Samantha Corbin, MA

"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

Before & After Showcase

Invasive Salvinia Treatment

Property type:
Community Lake

Acreage:
7 Acres

Shane Kemp,
Environmental
Scientist, FL



SOX Erosion Solution Install

Property type:
Golf Course Pond

Footage:
325 Feet

Steve Lawler, Project
Manager, Aquatic
Specialist, CA



Filamentous Algae & Duckweed Control

Property type:
Private Landowner

Acreage:
0.45 Acres

Peyton Woods,
Aquatic Scientist, GA



Invasive Watershield Treatment

Property type:
Private Landowner

Acreage:
4.4 Acres

Hunter Poland,
District Manager,
Environmental
Scientist, VA



THANK YOU TO OUR VENDOR PARTNERS





Services and Consultation Offered Nationwide

- Annual Lake & Pond Management
- Water Quality Restoration
- Fountain & Aeration Systems
- Algae & Aquatic Weed Control
- Fisheries Management
- Water Quality Testing
- Bathymetric Studies
- Biological Augmentation
- Mechanical Harvesting & Hydro-Raking
- Shoreline Management & Erosion Repair

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PPCECO
It's our nature to be green.

This paper contains 10% Post-Consumer Waste and is printed using soy-based ink.



BBB RATING: A+

Toxic Algae PSA

Lakes and ponds allow us to nurture meaningful connections with nature through swimming, fishing, boating, and other activities. Still, it's important to remember that even the most beautiful waterbodies can contain hidden dangers. One of the most often overlooked is cyanobacteria.

Cyanobacteria (also known as blue-green algae) is a type of [Harmful Algal Bloom \(HAB\)](#) that may produce dangerous toxins. Exposure to these toxins can kill pets and wildlife and may cause physical and neurological problems in humans. Typically, HABs manifest as blue or "pea-soup" green spots and oily streaks on the water's surface, particularly near the shoreline.

Though algae develop naturally, cultural factors such as pollution, urban development, and agriculture can increase the risk. Follow these best management practices to help prevent the conditions that cause HABs:

- Limit nutrient pollution by disposing of trash, pet waste, and yard clippings
- Support healthy dissolved oxygen levels with [fountains or aerators](#)
- Apply beneficial bacteria to reduce muck and pollutants
- Introduce [native littoral](#) and [buffer plants](#) to stabilize soil and filter runoff
- Repair aging shorelines using erosion control tools like [SOX Solutions](#)
- Regularly [test water quality](#) to identify potential imbalances
- Create a year-round [management plan](#) to prevent future blooms
- Educate friends and neighbors about their role in HAB prevention ■

