

# Aquatics **in** Brief



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## Which Sediment Removal Option is Right for My Property?

By **Lance Dohman, Regional Leader**

Virtually all explanations of dredging include the physical scooping up of underwater sand and clay sediments to enhance a merchant ship's access to a port or waterway. If these waterways become inaccessible, the economic consequences are far reaching. Today, however, massive algal blooms, animal fatalities from toxic byproducts of algae and the spread of invasive plants and animals are sharing the front-page news with national economic interests. For those of us living on a waterbody, it's clear that our personal economic interests are rewarded via higher property values if the nearby water is both navigable and healthy. As a waterbody ages and becomes "silted-in," organic nutrients fuel invasive plant and algae growth, and property owners suffer the consequences of bright green water, fish kills and dangerous swimming conditions. Unfortunately, the solution to these rampant biological problems involves more than just scooping up the muck. Hence, we need to look at dredging options and aquatic management in a unified perspective.



Hydraulic Dredge

Fortunately, there are many proactive aquatic management solutions that can be implemented to help slow or prevent the aging of waterbodies, such as proper land use management, maintenance of beneficial vegetative buffers and sediment traps, installation of aeration systems and utilization of nutrient absorbing products. However, when sediment buildup is too much to dock a boat or when aquatic plants and algae are perpetually out of control, you'll need to call *Continued on page 2*

Top image: Aquamog Dredge



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

## Sediment Removal *Continued from front cover*

in a professional waterbody manager accompanied with a portfolio of dredging techniques.

There are several methods of sediment removal: hydraulic dredging, clam shell/backhoe dredging, dry dredging and hydro-raking. The chosen method will depend on a number of factors including sediment composition, environmental sensitivity, volumes of materials removed, budget and disposal considerations.

Hydraulic dredges are the workhorse of the dredging industry and are effective in moving large volumes of organic and inorganic sediment. They work by sucking slurry (a mixture of sediment and water) from the bottom and then pumping it to an off-shore location through a pipeline. Hydraulic dredges have almost continuous operating cycles, allowing removal of large volumes of material in a short time, while minimizing the resuspension of material into the water column due to their closed cycle system of operation. Typically, this method is better suited for sediments with little debris mixed in, as large objects and rocks can damage the cutter and clog the pipeline. A large disposal area is also required.

Mechanical dredges (clam shell or backhoe dredgers) use buckets to scoop out bottom sediment and transfer it to trucks

or barges to be transported to disposal sites. Truck transportable mechanical dredges such as Aquamogs can remove small volumes of sediments such as shoals that prevent boater access to a lake, while large ocean-going dredgers are capable of digging to great depths to facilitate the new era of ultra large container ships.

In the case of the draw-down and excavation method (dry dredging), the whole waterbody is drained and sufficient shoreline access is needed for the trucking and hauling involved. However, most lakes cannot be emptied due to environmental concerns or high water tables.

Hydro-raking is frequently chosen as a method to remove nuisance aquatic vegetation, root structures, debris and soft organic sediment on a smaller scale waterbody. The hydro-rake can best be described as a floating barge upon which is mounted a backhoe with a digging bucket or rake capable of removing accumulated muck in water as shallow as 18 inches. Hydro-raking can effectively target organic sediment accumulations in coves and oth-



er shallow areas that provide nursery sites for aquatic plants and algae. If a pond is periodically maintained through hydro-raking, the need to perform a large-scale dredge project may be eliminated, saving financial resources and minimizing ecological disruptions.

While dredging is generally thought of as an expensive activity, both your waterbody and your real estate portfolio benefit significantly from just a few days of budget-friendly spot dredging at pump intakes, swimming areas or around boat docks. To navigate through a wide variety of sediment, aquatic plant or algae removal options for your waterbody, we encourage you to speak with your lake or pond management professional. ■

## New Technology Highlight: Bioengineered Living Shorelines & Hillsides

**S**OLitude is proud to provide SOX Erosion Solutions™ in our suite of erosion control products. The SOX system provides an innovative, eco-friendly solution that halts hillside and shoreline erosion while immediately stabilizing shorelines and creating a natural foundation for vegetation. This solution is excellent for re-stabilizing and restoring the shores of lakes, ponds and canals in communities and golf courses. The patented SOX system is made from a combination of ecofriendly, biodegradable burlap fabric and heavy-duty, photodegradable knitted mesh. This combination



provides superior water-retention properties as well as outstanding durability. The SOX system is typically filled with either organic compost or pond sediment. SOLitude's hydro-rakes complement this technology well, as it allows us to utilize material within the waterbody to fill the SOX system. Once filled and secured, a native buffer of beneficial vegetation can be planted or sodded through the mesh and fabric layers. Immediately after installation, the SOX mesh begins filtering and buffering run-off water, removing harmful contaminants and benefiting waterways all while providing ongoing erosion control. ■

# Case Study: Managing Aquatic Weeds and Algae in a Complex Community Canal System

By **Nic Butler, Aquatic Specialist**



Liquid lime application

**A**quatic management plans vary as no two waterbodies or properties are alike, and there is no “one-size-fits-all” approach to lake and pond management. Several years ago, we came across a particularly interesting opportunity that exemplifies how our team is able to successfully utilize a variety of management strategies to develop an effective and customized plan for the restoration of an aquatic ecosystem.

In 2014, the Homeowners’ Association of a large community in North Carolina approached SOLitude for help with restoring balance to their system of waterbodies. The 500-acre development consists of a 56-acre canal system, an 11-acre lake and 11 other small ponds interspersed throughout the community. Significant populations of nuisance bladderwort (*Utricularia*) and proliferating spikerush (*Eleocharis baldwinii*) were observed through the waterbodies, along with several algal blooms of both the planktonic and filamentous varieties.

Our first step was to collect and analyze water samples from various sites throughout the system. These tests revealed several water quality issues including low levels of dissolved oxygen, low pH readings, low alkalinity and higher than ideal nutrient loads. Our next step was to address the aquatic plant and algae growth. Armed with the water quality data, the appropriate products were selected and used to control the populations

of bladderwort and proliferating spikerush within the canals.

In addition to the annual maintenance program, we performed a bathymetric study in preparation for installation of a



**See this project in action!**

[youtu.be/BwwhvRAk6uA](https://youtu.be/BwwhvRAk6uA)

[youtu.be/pCtzzfdQJaA](https://youtu.be/pCtzzfdQJaA)

large submersed aeration system. Over a few days, several thousand data points were recorded by traversing acres of the canal system and other lakes. With these data points, we were able to produce a highly detailed map of the waterbodies and what lied beneath the surface. The information gleaned from bathymetry proves invaluable when making decisions about how best to manage a waterbody.

Our team then worked with engineers to design an aeration system to help improve oxygen levels throughout. Starting in 2016, and adding more in 2017, our team installed 31 submersed

aeration systems throughout the canal system. The aeration systems helped limit water cloudiness and foul odors. More importantly, they helped reduce the overall accumulation of organic sediment on the bottom and available nutrients in the water column, thereby reducing the likelihood of problematic algae blooms and other water quality problems.

Additional services were added in order to meet the needs of the client including introduction of Triploid Grass Carp to the waterbodies. These carp feed on aquatic vegetation, consuming up to three times their weight in food each day. Both pulverized lime and liquid lime formulations were also added to raise the pH and further improve water quality. The applications were made on two separate occasions and involved loading a pontoon boat with the pulverized lime and applying the lime throughout the entire canal system.

The combination of techniques utilized to create a customized management plan tailored to this unique property allowed the team at SOLitude to exceed all of our client’s expectations. At the end of the day, it’s more than just dropping in a fountain or pond aerator—we look at each situation with a new set of eyes and use all of the professional management tools available to us to create a healthy and balanced aquatic ecosystem and, in this case, we can truly say we have accomplished that mission. ■

# What Exactly Is Stormwater Runoff?

By **Jason Luce, Lake Management Scientist**

**H**ave you ever wondered what happens to a single drop of water when it rains? Depending upon where you live, that drop of water may land on the ground and seep into the soil or it may land on a leaf and evaporate back into the atmosphere. But, if you live in a developed area such as a city or housing community, the fate of that droplet of water may be a rooftop, sidewalk or road—and eventually end up in a stormwater lake or pond. As development increases, so does stormwater runoff. Stormwater runoff is the portion of rainfall or snowmelt that “runs off” the landscape instead of seeping into the ground. When managed incorrectly, stormwater runoff can become a major problem.

Why is stormwater runoff a concern? As stormwater runs across impervious surfaces, like sidewalks and parking lots, it accumulates and transports nutrients, pollutants, debris and even harmful chemicals. If the runoff is not properly captured in a stormwater basin, this polluted water can make its way directly into a nearby stream, lake or wetland. Stormwater management facilities are designed to stop stormwater from directly entering natural waterways and also to decrease the speed in which water enters a natural landscape from a developed one. Stormwater management facilities also allow nutrients, pollutants



*Overgrown and damaged outflow*



*Stormwater management facility inspection*

and sediment to be captured before entering into a freshwater ecosystem. Problems arise when facilities are left unmanaged or allowed to “grow in” with unwanted vegetation or filled in with too much sediment. Problems due to unmanaged stormwater runoff include costly erosion, property damage and flooding.

What can we do to help manage stormwater runoff effectively? There are likely stormwater management facilities and infrastructure already present in your community. Left untouched, these facilities can develop deficiencies and even be-

come non-compliant with local, state or federal regulations. Having an annual management plan in place with a lake or pond management professional is the best way to make certain your facilities are functioning properly. Routine monthly inspections focused on managing vegetative growth, sediment and debris build-up and erosion are strongly encouraged. Monthly inspections should also focus on the structural aspects such as inflow pipes, outflow structures and dams. This can help reveal small problems, such as new erosion or minor structural damage, before they become a large and costly endeavor for land owners or HOAs. Additionally, proactive management strategies such as installation of an aeration system or maintenance of a beneficial vegetative buffer are recommended to help promote good water quality and keep your stormwater lake or pond looking beautiful.

Whether you notice it or not, stormwater management is an important part of our everyday lives. As we continue to develop our landscape, we must also educate and emphasize the importance of keeping our natural ecosystems intact. Through proper stormwater management and routine maintenance, we can meet the needs of our developing world, while keeping our natural freshwater ecosystems healthy for generations to come. ■

## Nuisance Plant Highlight: Torpedograss

By **Robert Truax, Natural Resources Scientist**

**M**any southern states experienced Torpedograss infestations this year. Torpedograss (*Panicum littorale*), also known as quack grass and bullet grass, was first introduced to the United States in 1876 near Mobile, Alabama and has spread to nuisance levels throughout the South. Torpedograss is a perennial grass, and the first step to proper control is correctly identifying it. It can grow up to three feet tall and, unlike some grasses, is commonly identified by its creeping rhizomatous root structure and rigid sharp pointed (torpedo-like) tips. Upper leaf sheaths can also have hairs on their upper edges. A unique characteristic used to identify torpedograss are the long hairs near the base of the leaf (ligule). Physical control techniques such as cutting and digging up the rhizomes may be employed, but complete eradication through physical control alone is often difficult due to the plant's ability to reestablish from seeds. Successful control of torpedograss can be achieved through precise herbicide applications by a licensed professional, performed alone or in conjunction with physical control. ■

# New SOLs

In each issue, team members from SOLitude are highlighted. It is our pleasure to introduce you to the incredibly talented members of our team and give you insight into the vast array of knowledge and experience they offer.

**Jim Sheeran**  
*Aquatic Specialist*  
Fort Myers, FL



Jim is an aquatic specialist with more than a decade of experience in the aquatic weed management industry. He works with golf courses, homeowners associations and private landowners in Southwest Florida to cultivate lakes, ponds and wetlands that meet their aesthetic, ecological and budgetary goals.

**Rease Patrick**  
*Aquatic Specialist*  
Tyler, TX



Rease specializes in the sustainable management of aquatic weeds and algae, and has a special interest in fisheries management. Rease has a Bachelor of Science degree in Interdisciplinary Studies with a concentration in wildlife management, forestry and history from Mississippi State University.

**Ricardo Montalvan-Alamo**  
*Wetland Crew Technician*  
West Palm, FL



Ricardo is knowledgeable about sustainable lake, pond and wetland management strategies and how to utilize those strategies to cultivate a healthy native ecosystem. As a member of the Wetland Crew, he focuses on the restoration and preservation of precious marsh areas and delicate aquatic ecosystems in southwest Florida.

**Lauren Sullivan**  
*Project Coordinator*  
Shrewsbury, MA



Lauren assists SOLitude's Mechanical Division with invasive weed management projects, GIS mapping and freshwater conservation efforts. Lauren graduated in 2010 from Westfield State University with a degree in Environmental Science and a minor in Geographic Information Systems (GIS).

**Pam Murray**  
*Service and Contracts Administrator*  
Virginia Beach, VA



Pam is a service and contracts administrator focused on processing service agreements and supporting SOLitude's operations and administrative teams in Virginia Beach, VA. Pam has more than a decade of project management, business and leadership experience. Prior to joining SOLitude, Pam was a leader with Bank of America for 17 years.

**Mary Jane Moyer**  
*Regional Administrator*  
Georgetown, DE



Mary Jane is a client relations professional who works closely with the sales and operations teams to create and process proposals, welcome new clients and implement special projects throughout the region. She previously worked as a community manager, where she gained valuable knowledge in the fields of lake and pond management.

**Devin McGuire**  
*Business Development Consultant*  
Richmond, VA



Devin is focused on educating and supporting clients throughout the Richmond, VA region. Devin has extensive sales and account management experience in a variety of markets, including healthcare, IT, pesticide supplies and the industrial equipment industry.

**Marti Veatch**  
*Business Development Consultant*  
Orlando, FL



Marti helps support the team's territory growth across Central and North Florida, educating property owners about sustainable lake, pond and wetland management solutions. Marti graduated with a bachelor's degree in Landscape Architecture from the University of Georgia.

## Upland, Wetland and Aquatic Plants Every Turf Manager Should Know About

By **David Riedl, Environmental Scientist**

Not only are turf managers responsible for the land, but quite often are tasked with overseeing the maintenance of the waterbodies on the property as well. Pond maintenance, in combination with turf management, opens the door to a plethora of issues most turf managers might not know how to address. However, simply knowing how to identify a few types of vegetation within a waterbody can help turf managers maintain a healthy property.

The first type of vegetation turf managers should be aware of is shoreline vegetation. A few notable examples that can cause stress to turf managers are Cattails (*Typha sp.*), Creeping Water Primrose (*Ludwigia peploides*, CWP), and Phragmites (*Phragmites australis*). Cattails grow in shallow areas and can block inflow and outflow points, ultimately increasing potential for flooding. CWP can be very aggressive and, if left unchecked, can quickly cover an entire pond in one season. Phragmites is one of the most aggressive and invasive plants. They can quickly grow over fifteen feet tall, shading out any native vegetation.

When it comes to aquatic vegetation, turf managers should be aware of both floating and submersed lake weeds. Floating weeds, such as duckweed (*Lemna sp.*) and watermeal (*Wolffia sp.*), often get confused with algae, but are actually small plants floating on the surface of the water. Duckweed and watermeal often grow in slow-moving and nutrient-rich waterbodies, such as old farm ponds or golf course ponds that are next to frequently fertilized turf areas. While often mistaken for algae, management strategies for these types of floating weeds are very different.

A prime example of a problematic submersed weed is Hydrilla (*Hydrilla verticillata*). A couple of easy ways to identify Hydrilla are by its bushy appearance and, if studied closely, the edges of the leaves, which are serrated. Hydrilla can resemble other beneficial types of submersed vegetation, as well, so it's important to consult a professional who can correctly identify the plant and recommend the appropriate treatment strategy.

Turf managers have a broad spectrum of duties and being tasked with water management can be overwhelming. Knowing how to identify a few basic types of vegetation can go a long way in keeping water-related issues at bay and relieving extra stress on the job. The control techniques used for these weeds is not, however, "cookie-cutter" and each management plan should be unique based on a variety of considerations and variables. That is why it is always recommended to work with a professional lake and pond manager when combatting nuisance or invasive upland, wetland or aquatic vegetation. And, ultimately, the best solution for long-term control is a proactive and ongoing management plan. ■



Creeping Water Primrose



Watermeal



Cattails



Duckweed



Hydrilla

# Before and After Showcase

## Excellence in Water Quality Treatments



Before



After

**Location:** Fort Myers, FL

**Surface Area:** 4.71 acre community waterbody

**Primary Target:** Southern naiad and lyngbya

**Restored By:** Jim Dougherty, Regional Leader



Before



After

**Location:** St. Louis, MO

**Surface Area:** 4 acre private pond

**Primary Target:** Alum treatment to improve water quality and reduce turbidity

**Restored By:** Adam Burger, Aquatic Biologist



Before



After

**Location:** Dallas, TX

**Surface Area:** 3 acre medical center terraced drainage canal

**Primary Target:** Filamentous algae and American pondweed

**Restored By:** Cory Smith, Regional Leader

## Check Us Out

**S**OLitude will be participating in the following events over the coming months. Come visit us!

### CAI San Antonio CA Day

September 28

San Antonio, TX

### Orlando Condo and HOA Expo

October 3

Orlando, FL

### CAI Houston Trade Show

October 5

Houston, TX

### CAI Tennessee Trade Show

October 16

Nashville, TN

### CAI New Jersey Conference & Expo

October 18

Freehold, NJ

### CAI Hudson Valley Expo

October 24

White Plains, NY

### St. Louis Apartment Association (SLAA) Fall Expo & Seminar

October 25

St. Charles, MO

### North American Lake Management Society (NALMS) 38th International Symposium

October 30 – November 2

Cincinnati, OH

### Carolinas GCSA Conference and Show

November 12-14

Myrtle Beach, SC

### Colorado Water Congress (CWC) Annual Convention

January 30 - February 1 (2019)

Denver, CO

### Mosquito and Vector Control Association of California (MVCAC) Annual Conference

February 3-5 (2019)

Burlingame, CA

## Volunteer of the Quarter Supports Grade School Science Project

We're pleased to name Aquatic Biologist Brea Arvidson of Massachusetts as Volunteer of the Quarter for the second quarter of 2018! Brea started the second quarter participating in the annual New England office Earth Day cleanup with the Blackstone River Watershed Association. On her own time, Brea organized an independent Earth Day cleanup with her mother in her neighborhood in Harrisville, MA. Next, Brea and her parents attended and volunteered for Stonewall Farm's annual educational open house, which strives to connect local residents through education and sustainable farming practices. Brea also participated in a community food drive benefiting Stamp Out Hunger and spent an afternoon judging water-related projects created by 3rd and 4th graders at a local school.

In the second quarter, Brea logged 14 family hours and 14 volunteer hours of her



own, bringing her total hours for the year to 20. In 2017, the SOLitude team volunteered more than 3,000 collective hours as part of The SOLution program. Congratulations, Brea!

To learn how you can join Brea and others at SOLitude in making a difference in your local community, visit [solitudelakemanagement.com/solution](http://solitudelakemanagement.com/solution). ■



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We're pleased to announce that we are offering free shipping\* for all orders placed through our online storefront. Purchase from our entire catalog of superior lake and pond management products at affordable prices. From aquatic herbicides to pond aeration systems, you'll find a wide array of supplies from leading manufacturers.

## FEATURED PRODUCTS\*\*



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Slow-release probiotic that targets muck at the bottom of lakes and ponds.

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