

FALL 2014

# Aquatics<sup>in</sup>Brief

Volume 8, Issue 4

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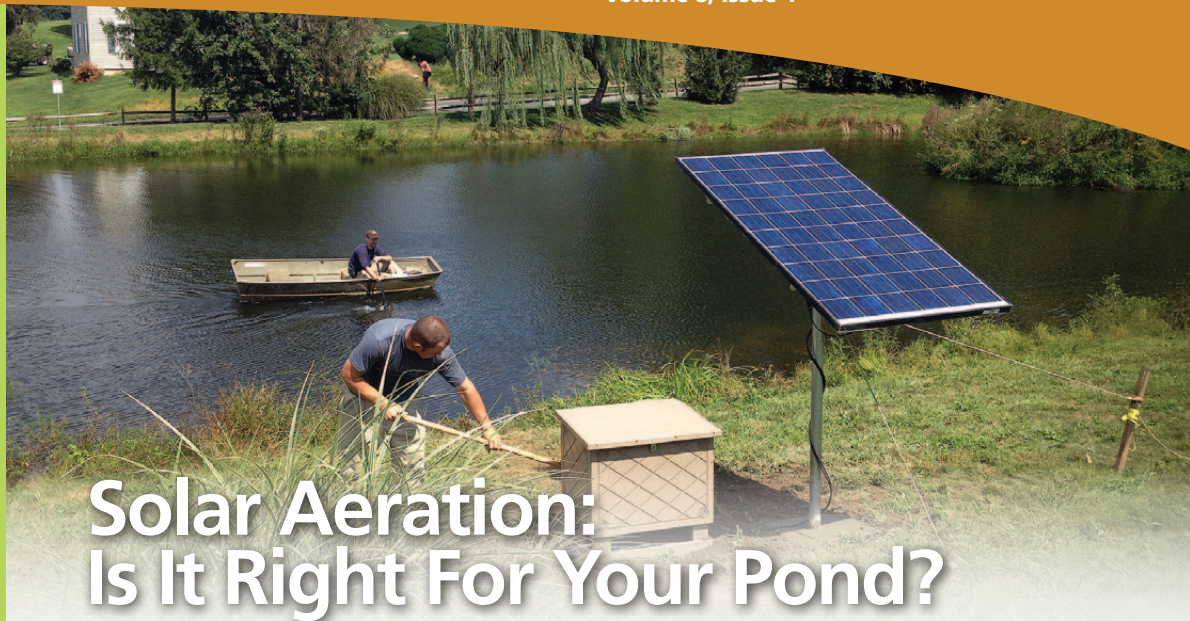
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LAKE MANAGEMENT

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



## Solar Aeration: Is It Right For Your Pond?

By **Shannon Junior, Aquatic Ecologist**

If you are a frequent reader of the SOLitude newsletter or blog, then you are undoubtedly familiar with the numerous benefits of aeration for your pond or lake. In a nutshell, dissolved oxygen is the single most critical water quality parameter affecting the overall health of a waterbody. Adding an aeration system to your pond will increase the dissolved oxygen level, reduce the effects of nutrient loading by accelerating the breakdown of organic matter, and prevent the release of toxic substances from the sediment into the water column. An adequately aerated pond is less prone to harmful algae blooms and provides a healthy environment for fish and other aquatic organisms.

For most waterbodies, a submersed diffused air system is the most cost-effective aeration strategy, both in terms of the initial investment and the long-term operational cost. This type of aeration system utilizes pumped air to de-stratify the water column and to infuse oxygen into the pond.

The typical configuration involves an air compressor that sits on the shore and pushes air through subsurface tubing to one or more diffusers located on the bottom of the pond. The membrane on the diffuser breaks the air into tiny bubbles that are released into the

**A solar powered system may be a good choice for properties where obtaining electrical service is challenging, or where there is a heightened concern for environmental sustainability and "off-the-grid" operation.**

pond. As the bubbles rise to the surface, they carry the hypoxic (low oxygen) bottom water upwards, where it is mixed with the oxygen rich surface water. This constant vertical mixing causes the water column to de-stratify, *Continued on page 2*

## Solar Aeration

*Continued from front cover*

allowing harmful gases to be released into the atmosphere. It also brings more of the water in the pond into contact with atmospheric oxygen, which increases the overall dissolved oxygen concentration in the water column.

Although diffused air aeration systems are less expensive and more energy efficient than surface aeration systems (i.e., fountains), many of our clients find that the cost to bring electrical service to the edge of the waterbody is exorbitant. This can be true for rural farm properties where the nearest transformer is hundreds of yards away, as well as for metropolitan sites where the existing infrastructure provides obstacles to installation. In these situations, solar powered aeration systems may be the ideal solution.

The configuration of the solar system is similar to the traditional system, except that the compressor is connected to solar panels instead of an electrical power source. As with any solar powered equipment, the weather can be a limiting factor in how well the systems operate. One manufacturer includes a battery back-up system with their aerator that provides the capability for it to run for 20 hours per day and for up to three days without any sunlight, although these systems are significantly more expensive than traditional aeration systems. Another manufacturer offers a battery-free system that is comparable in price to an electrical system, although it will obviously be more limited in the hours that it can operate.

For sites where electrical power is easily accessible, the traditional diffused air systems remain the most reliable and affordable aeration option. However, a solar powered system may be a good choice for properties where obtaining electrical service is challenging, or where there is a heightened concern for environmental sustainability and "off-the-grid" operation. If you are interested in learning more about solar aeration, a SOLitude Lake Management representative can help you choose the best system for your site and budget. ■

## How To Improve Fishing Success In Ponds And Lakes

By **David Beasley, Lead Fisheries Biologist**

Catching fish in ponds, on a consistent basis, can prove to be very challenging at times. Many variables affect how successful a fishing outing may be. For example, some of the reasons why fish do not bite are related to environmental variables such as barometric pressure and moon phases. Other times, fish are simply full from a recent meal. In these situations, anglers have limited control over their catch rates.

Given that the odds are not always in the fisherman's favor it is best to take action and improve the odds where possible. A fundamental strategy, when improving fishing success, is to increase the number of fish in the areas you are fishing. Sounds simple, right? Two angles can be taken to improve fishing: 1) simply attract the fish you have to particular areas, 2) improve the fishery so that it has more fish.

The most common fish species found in ponds are bluegill and largemouth bass. They both spawn on gravel, but bluegill, which are forage fish, spawn in colonies whereas largemouth bass are territorial and prefer a fair amount of distance between them and other bass spawning beds. Fortunately for those looking to improve fishing, most manmade waterbodies have a mucky bottom and lack the gravel substrate that bluegill and bass prefer. This lack of proper habitat provides a great opportunity for people to enhance the spawning habitat and encourage fish to congregate in fishing areas.

Improving fish cover is another great way to draw fish to an area. The two most commonly known reasons why fish cover attracts fish are because: 1) it provides refuge for small fish, 2) it allows predator fish to ambush prey. Cover can consist of both natural and or artificial materials. Natural materials such as cedar trees work well. If looking for materials that will not break down over time, there are many types of manmade fish cover available. Just like with the gravel substrate, most manmade ponds lack sufficient cover, and as a result, leave fishermen with a great opportunity to encourage fish to congregate in designated areas.

If looking to enhance a fishing area even further and help to ensure fishing will be good, an automatic fish feeder can be installed near the fishing access point. Feeders are great tools for attracting bluegill to areas and are a great fit for ponds that would like large bluegill. In addition to attracting fish and producing bigger fish, fish feeders do a great job at increasing the number of fish a waterbody can support.

Having a pond or lake that is a reliable place to catch fish is hard to find. Providing novice anglers, especially children, with a location where fishing is a bit easier than the real world, can instill an energy and passion for the outdoors and put a positive spin on their experiences. If you have an opportunity to enhance a local fishing area, I encourage you to do so. The enjoyment brought to others will be well worth the efforts. ■



Bluegill Spawning Bed





# Creating the Right Habitat Balance

By **Gavin Ferris, Ecologist**

**M**any species that were once iconic elements of American wildlife, like Bobwhite Quail and Monarch Butterflies, have been declining in recent years due mainly to loss of habitat. The expansion of residential and commercial land use into previously rural and agricultural areas has fragmented the landscapes that many species rely on for food, shelter, and migration. At the same time, other species like Beavers, Muskrats, Raccoons, and resident Canada Geese have adapted to thrive in this type of human-dominated landscape, often in ways that negatively impact people and, in some cases, to the detriment of other wildlife.

We all want to be good stewards of the environment, and one aspect of that is providing habitat for the wildlife that can safely and sustainably live alongside us in our neighborhoods. Achieving this without encouraging those species that can jeopardize the safety of our property and the integrity of our local ecosystems requires a carefully balanced approach to habitat management.

Establishing beneficial native vegetation around your pond is a great way to provide habitat for native insects, amphibians, and songbirds. If you look around at the landscaping in most neighborhoods, you'll see that most of the ornamental plants are species not originally from this continent. As a result, our native insects are not adapted to eat them. Our songbirds rely on insects to feed their young during the spring and summer, so with fewer insects we also have fewer birds. Because establishing a beneficial vegetative buffer around a pond is already an excellent practice for improving water quality and discouraging geese, it only makes sense to dedicate this area to native plants and give a boost to desirable wildlife.

There are also a few things you will want to do in order to discourage wildlife that can cause problems. For instance, cattails are like a big neon sign that says "Welcome Muskrats!" Muskrats use the succulent vegetation both as a food source and to build their dome-shaped houses, and the large potato-like root of the cattail is a major food source for muskrats over the winter. Muskrats are tenacious and highly abundant throughout their range, so any pond may experience damage from muskrat burrowing from time to time, but keeping cattails from becoming established can help to keep their interest in your waterbody to a minimum.

Beavers, on the other hand, eat mostly tree bark and use sticks and logs to construct their dams and lodges. While they will slide down trees from upland areas to the water, their preferred settlement areas are bodies of water with hardwood trees and saplings close to the shoreline. This is one reason it is not advisable to have trees and woody vegetation near the shore of your pond. Treating and removing willow saplings and other woody stems from around the pond is the best way to discourage beavers from moving in. If you have established trees near the water that you



would like to protect from beavers, a mixture of sand and exterior latex paint (20 ounces of playground sand to 1 gallon of paint) applied to the lower 4 feet of the tree trunk and exposed roots will make

them less palatable to hungry beavers, while still allowing the tree to grow and breathe normally.

If beavers do start damming up your pond's outflow, frequent clearing away of their construction efforts is the best way to encourage them to move elsewhere, but they can be exceptionally stubborn and trapping the offending animals may be required. The same is true of muskrats, and for this reason maintaining habitat that is less appealing to nuisance species isn't just good for us, it's safer for the animals themselves.

In addition to maintaining the right combination of vegetation, structural elements of your environment are important for wildlife as well. Nest boxes for appropriate species of birds are one obvious example. Floating or partially submerged logs provide structure for fish as well as basking habitat for turtles. If you have a large enough body of water or live near a river or the ocean, you might even consider erecting a nesting platform for osprey.

If you do decide to modify your habitat for the benefit of wildlife, a number of wildlife advocacy organizations like the National Wildlife Federation and some chapters of the Audubon Society offer habitat certification programs, which are a great way to show your commitment to giving nature a place in your landscape. However you decide to promote wildlife habitat in your neighborhood, make sure you take time to enjoy observing your local wildlife with your friends and family. ■

## Creating A Better World For Wounded Veterans

**T**hrough our community outreach program, The SOLution, we deployed a social media campaign to generate a donation of \$8,290 to Wounded Wear, an amazing non-profit organization that provides clothing modifications and inspirational opportunities for injured service men and women, as well as graphic tees and clothing to wounded veterans and family members to raise national awareness of their sacrifice. For every new social media follower SOLitude received in July, we allocated \$10 to the total donation. We would like to thank all of our loyal followers, clients, vendor partners, and the Wounded Wear community for promoting the campaign through their individual social media channels. ■



**The SOLution**  
creating a better world



Jason "Jay" Redman, President and Founder of Wounded Wear, Vice President and Co-Founder, Erica Redman, Kenny Miller, Chief Operations Officer, and Nicholas Pierce, Event Assistant and IT Manager, received a generous donation from SOLitude Lake Management that was generated from a social media campaign.

## Keeping the Entrepreneurial Spirit Alive

**W**e are pleased to announce that Kevin Tucker, President and Owner of SOLitude Lake Management, received the Entrepreneurial Excellence Award from Inside Business, the Hampton Roads Business Journal. Kevin was honored, along with 15 other recipients, at the seventh annual awards luncheon in Virginia Beach, VA. This distinction recognizes Hampton Roads, Virginia entrepreneurs for their "ingenuity, perseverance and positive impact on the community." These awards honor individuals who create businesses that are "successful, sustainable and growing."



In addition to providing water quality management as a way to reduce our impact on the environment, Kevin pioneered SOLitude's own outreach and volunteer program, The SOLution. The program encourages employees to find and volunteer for causes that are important to them, and also, as a company, work towards their motto of "creating a better world." The program gives employees the opportunity to volunteer during company hours and incentivizes them through recognition, rewards and paid time off for pursuing their philanthropic passions on their personal time, advocating and fundraising for important causes. ■

## Congratulations to our Volunteer of the Second Quarter, Ann Marie Dori!

Ann Marie joined SOLitude as our Marketing and Special Projects Coordinator in February 2014. It didn't take long to recognize Annie's deep passion for helping the environment and animals in need. Ann Marie spent over forty-five hours volunteering in her community during the second quarter alone. She helped to coordinate a team for the Chesapeake Bay Foundation's Save the Bay Day, a watershed cleanup event. She also spent numerous nights and weekends setting up appointments for pets of low-income families to be spayed and neutered free of charge through the FiXiT Foundation. In her own neighborhood, she spent many weeks trapping and rescuing a family of feral kittens. Ann Marie continues to seek out new volunteering opportunities for our staff and partners and we are very grateful for her enduring contributions to 'The SOLution.' ■





# New SOLs

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

**Q Where did you grow up and how did you get to where you are today?**

**A** I grew up in the Shenandoah Valley area of Virginia and received my degree in horticulture and landscape architecture from Virginia Tech. I worked in the stormwater, environmental, landscape and turfgrass industries, both in northern Virginia and North Carolina. I always had an affinity for the coast and water from my summer vacations in Emerald Isle, NC, and decided to focus my graduate studies in those areas. I am currently defending a Master of Natural Resources degree from Virginia Tech while helping my wife raise our two children in Alexandria, VA.



**Doug Hawpe**  
*Natural Resources Specialist*

**Q What are you most proud of throughout your career?**

**A** When I worked at the Currituck Club in Corolla, NC, I was responsible for protecting the sensitive natural environment and habitat on which the course was constructed. I really enjoyed working in and around these sensitive areas and making sure our work related to the golf course did not have an adverse effect. During an internship at the Currituck Banks component of the NC Coastal Reserve/National Estuarine Research Reserve, I again performed work related to public use of an environmentally sensitive and protected area. I am most interested in making sure natural environments can function “properly” in the presence of an ever-encroaching human population/influence.

**Q Where can we find you when you’re not working?**

**A** When I’m not on the job, I can usually be found working on home improvement projects, cooking, walking my Labrador retriever around Old Town, Alexandria, VA, or simply relaxing at home with my wife, 3 year old son and brand new baby girl. When I’m able to find time at the coast, I enjoy surfing and exploring estuarine habitats.

**Q Where did you grow up and how did you get to where you are today?**

**A** I grew up in Fauquier County, Virginia, a rural area south of the DC suburbs. My love of the outdoors through hunting, fishing and farming started me on the track to becoming an Environmental Scientist. While attending Ferrum College, in southwestern VA, I found myself gravitating towards the aquatic side of the Environmental Science major. I moved to Virginia Beach, just a week after graduation, to start my career and an extensive training program at SOLitude, shadowing some of the most knowledgeable aquatic scientists in the industry.



**Hunter Poland**  
*Environmental Scientist*

**Q What are you most proud of throughout your schooling?**

**A** During my college internship, I was given the opportunity to help improve the water quality of Smith Mountain Lake near Roanoke, VA. Through a partnership with the Tri-County Lake Administrative Commission (TLAC) and the Virginia Department of Health, I performed extensive water quality sampling and testing, helped educate boaters about the No Discharge Zone regulations on the lake, and provided land and water based pump-out services. I was able to make a lasting impact on the water quality and overall cleanliness of one of Virginia’s most popular lakes. Overall, I am most proud that I have the opportunity to pursue a career in something that personally interests me and allows me to make a direct impact on the environment.

**Q Where can we find you when you’re not working?**

**A** When I am not working, you can find me fishing, bow hunting, or hanging out with friends. Fishing from my kayak has become one of my favorite ways to spend my weekends during the summer. When the weather turns cold, you can almost always find me in a tree stand or my goose blind.

## Are You In The Know?

Visit our website to catch up on past issues of Aquatic In Brief or download our **FREE** Informative Guides. Our expert biologists, ecologists and environmental scientists bring you this educational content to assist in making important decisions regarding the health of your lake, pond and/or fishery. From water quality restoration, bathymetry studies, sustainable algae control, and more, you don’t want to miss out on this knowledge and information.

**Visit: [www.solitudelakemanagement.com/education](http://www.solitudelakemanagement.com/education) to download your **FREE** copies today!**



## Winter Drawdown: *Reducing Nuisance Aquatic Weeds*

By **Kyle Finerfrock, Environmental Scientist**

**S**ometimes, in order to solve a persistent problem, you have to take a different approach to gain the results you are looking for. A lake or pond choked out with aquatic weeds can be an issue for the people living around or using the waterbody. The typical method for treating this problem is to first identify the nuisance weed, second determine a treatment protocol, and then finally wait to see how the treatment works. If the results come out how you planned, then it's a success. But when traditional methods do not work, the pressure is on to determine why the initial treatment failed and to quickly determine a better treatment procedure. Sometimes, traditional methods for treating aquatic weeds will not work because circumstances prevent you from treating how you would like. For example, some ponds are used for irrigation which restricts certain products from being used. In other ponds, the water chemistry can decrease the effectiveness of a product. These are some of the issues that have to be considered at every pond.

So the challenge is set; traditional methods to treat during the growing season are not an option. As lake management professionals, it is our job to find a way to solve the problem. We have to think outside the "pond" to come up with a solution. Typically, most invasive aquatic plants originate from much warmer climates, but can survive over our cold winters because the pond insulates the plants from sub-freezing temperatures at the bottom. As temperatures drop, aquatic weeds go dormant to survive in the sediment over the cold winter months.

An effective method, that is not new to lake management, is winter drawdown. This technique drops the water level to expose the dormant plants in the sediment to sub-freezing temperatures during winter months decreasing their survival. Additionally, "a drawdown is a prime opportunity to conduct a pre-emergent herbicide application for aquatic weed control," says Sarah Miller, *Aquatics Specialist* at SePRO Corporation. "During this time, low rates can be strategically applied to the exposed littoral zone and prevent nuisance weeds from ever having a chance to establish or regrow after filling. This proactive approach provides a proven management option for sites with challenges such as high flow and irrigation use." These products may not be an option during the summer, because of irrigation restrictions, but with no irrigation required in the winter, these products will be long gone before irrigation resumes in the spring.

This method does have some drawbacks and may not work in every lake or pond. In order to drawdown a waterbody, you must consider the wildlife living in the pond. Can the animals that make this pond home still survive the winter if the water level is dropped a few feet? Also, can the watershed downstream handle the excess flow of water leaving the pond? While these drawbacks can prevent you from using this method, the idea is to consider a different solution to your problem. With winter drawdown, we try to harness the power of nature to control a nuisance aquatic weed where traditional treatment methods are not an option. ■

## Nutrient Loading: *Cultural Practices and Stormwater*

By **David Ellison, Aquatic Biologist**

**B**enjamin Franklin once said "an ounce of prevention is worth a pound of cure." This can be applied to many aspects in life, including lake and pond management. Many cultural practices in lawn and turfgrass maintenance can significantly impact the overall health of a lake. As fall and winter approach, some preventative measures will provide long-term benefits for having a healthy lake or pond.

Limiting phosphorous inflow to your lake or pond will reduce unwanted algae blooms. Grass clippings contain phosphorous and blowing clippings into storm drains or directly into ponds provides a direct nutrient source for algae growth. Some studies have estimated that one bushel of grass clippings contains 0.1 pounds of phosphorous and can potentially cause the growth of 30 to 50 pounds of algae in a lake or pond. Leaving grass clippings on your lawn can provide some natural fertilization benefits, as the clippings contain a significant amount of water and decompose quickly, which can reduce the amount of fertilizer required.

Algae growth in lakes or ponds can also be attributed to leaf litter. Leaves contribute phosphorous to ponds and can significantly reduce the waterbody's depth and volume capacity over time. Bagging leaves and keeping them from entering ponds and storm drains will also reduce the amount of debris present to clog floating fountain intake screens, nozzles, and impellers. Fountains will often become clogged when leaves are blown into ponds, as they can completely cover a strainer screen, drastically reducing the water flow. Debris will also wrap inside fountain nozzles and impellers causing fountain patterns to be very low.



Bank stabilization and vegetative buffers are also important in minimizing debris and nutrient loading in waterbodies. Having well stabilized grassy banks will reduce phosphorous loading from erosion. Vegetative buffers help trap leaves, debris and sediment, and will filter nutrients before they enter the lake or pond, reducing the chances of algae blooms and fountains clogging with debris.

Many of these preventative measures will provide direct aesthetic benefits to your lake or pond, and will also provide long-term benefits to your local watershed. ■



# 2014 Before & After Showcase

## Successful Aquatic Weed and Algae Treatments

A sustainable, annual management plan is always recommended to ensure your lakes and ponds are both healthy and looking their best year round. Sometimes we come across new waterbodies in need of major TLC. They are shallow from years of sediment deposit and/or lack of proper aeration and beneficial buffers, allowing for severe, recurring issues. Other times, Mother Nature presents us with a new problem on the lakes and ponds we already manage and

corrective action is required. SOLitude has licensed and experienced aquatic pesticide applicators, who remain on the cutting edge of product and technological advancement, allowing us to provide our clients with the right prescription for treating nuisance aquatic weed and algae. **Learn strategies for sustainable approaches to effective lake and pond management at [www.solitudelakemanagement.com/education](http://www.solitudelakemanagement.com/education).**



## Check Us Out...

### October 21

Chesapeake Chapter of Community Associations Institute (CAI) Annual Conference & Expo  
Martin's West, Baltimore, MD

### October 22

Delaware Valley/Pennsylvania Chapter of Community Associations Institute (CAI)  
Poconos Trade Show & Education Forum  
The Inn at Pocono Manor, Pocono Manor, PA

### November 8

New Jersey Chapter of Community Associations Institute (CAI) Annual Conference & Expo  
Garden State Exhibit Center, Somerset, NJ

SOLitude Lake Management will be participating in the following events over the coming months. We encourage you to come see us! If you need information on attending any of these events, please call our office at 888-480-LAKE (5253).



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# AquaticsinBrief

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## Ponder These Thoughts

**S**OLitude Lake Management wants you to be prepared for the autumn season and all of the wonderful cool weather it brings. With this in mind, we recommend you consider the following tips as you enjoy the colorful fall months on your lake or pond:

- The majority of ponds and lakes in the mid-Atlantic region have low alkalinity levels and lack sufficient minerals due to the soil types found in the region. The addition of limestone to waterbodies with low alkalinity enhances water chemistry and provides aquatic life with important minerals such as calcium and magnesium. Fall and winter are the ideal times of year to add limestone.
- Stocking golden shiners and trout are two great options available to improve largemouth bass growth rates while also enhancing the current forage base in your fishery. Stocking a combination of both golden shiners and trout in the fall is an ideal approach to putting pounds on your bass.
- Schedule a Bathymetric and Sedimentation Study as well as a structural inspection of your pond. This will allow for proper

budgeting for future dredging and repair of any physical problems with your pond and its related structures.

- Fall is a good time to think about repairing and maintaining the areas around your pond. Be sure to trim the buffer zone and make certain that it is free of any woody vegetation. Repair any eroded areas around your pond before they become major issues. Erosion repair can easily be done in the fall months when you can over seed and apply an erosion blanket to allow for soil stabilization until the new seed germinates.
- Falling leaves and other yard debris may blow into your lake or pond. Try to keep leaves, clippings and other debris out of the waterbody and the ditches and storm drains that lead to it, as this adds nutrients which could lead to the growth of algae and other unwanted vegetation.
- If your pond has a fountain, now is the perfect time to schedule an Oil and Seals service which should be performed every three years. For those who live in the colder climates, you may desire removal and winter storage for your fountain. If so, this should be completed by early December.