

Winter '06-'07

# Aquatics Updates

Virginia Lake Management Company

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## Winter On Our Lakes & Ponds

—Kevin Tucker, President

Winter is a wonderful time to make some improvements to your lake or pond what will pay huge dividends next spring. It is the perfect time to sit down and evaluate the problems from the previous year, and devise a plan to mitigate those problems for the coming year. Most aquatic problems can be dealt with most effectively when they are addressed early in the spring, before they have a chance to get out of control.

The first thing one might wish to consider during the winter months is to perform a thorough evaluation of the physical characteristics of the pond. Identify erosion problems, areas where leaves or other organic matter seem to be loading the pond, inspect outflow structures for damage, locate areas of significant sedimentation, identify any areas that might have been damaged by muskrats, nutria, beavers, or other nuisance critters, etc. Inexpensive pond surveys can be performed using GPS technology and pictures to provide lake and pond owners

with all of this information in a very simple and easy to use format.

Additionally, winter is the ideal time to perform bathymetric surveys, where the surface area of the pond is mapped and the bottom depths are sampled and plotted on this map. This type of survey will tell us the overall volume of the pond, and when compared to previous surveys or as built drawings of the pond, will allow us to determine the sedimentation rate over time. Once we calculate this rate, we can then forecast when a lake or pond might need dredging.

Once armed with all of this information, a plan can be formulated, costs identified and prioritized, budgets adjusted, and reserve funding established as needed to deal with the problems before they get worse. Careful inspection and planning will often times prevent or mitigate the need for costly repairs at a later date.



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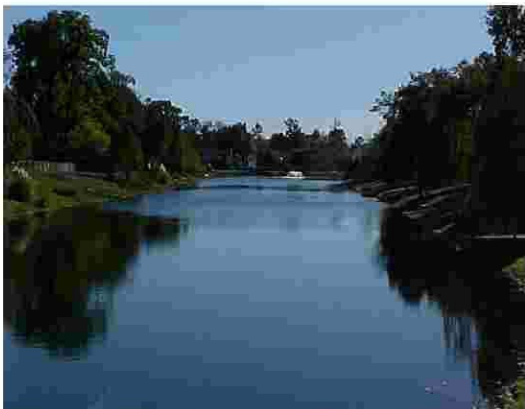
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## Aerating Fountains Add More Than Beauty...

—Bill Morgan, National Sales Manager: AquaMaster

In addition, they add sufficient amounts of oxygen to the water which supports and encourages the growth of beneficial aerobic bacteria. This beneficial bacteria breakdown organic matter and consume excess nutrients which helps to balance and improve water quality and clarity by reducing odors, bottom sludge build-up, and algal blooms.

Aerating fountains or Surface Spray Aerators also induce greater mixing and circulation of the water. This discourages thermal stratification (temperature layering of the water). This is important as the oxygen entering the water at the surface needs to reach the bottom where the beneficial aerobic bacteria utilize it to consume excess nutrients enhancing the natural clean-up process of the lake or pond. Thermal stratification impedes this process.

Increased mixing and circulation also aids in deterring insect infestations as with mosquitoes.

Aerating fountains or Surface Spray Aerators are often confused with non-aerating display type fountains that, although attractive, do not provide enough aeration to support any biological impact on the water body. Display type fountains pump low volumes of water via high pressure. Aerating fountains pump higher volumes of water under lower pressure. To insure aerating capability, look for gallons per minute (gpm) pumping rates of 250 or higher per horse power. Then size at 1.5 – 2 HP per surface acre for beneficial aeration results.

Sizing and placement are critical for success. Consult with your local

Aquatic Management Distributor for proper selection, sizing, placement, installation, service, and routine maintenance of your Surface Spray Aerator or Display Fountain.

To sum up, Aerating Fountains not only add overall beauty to a landscape and raise property values. They provide function in the form of aeration which ultimately helps improve overall water quality.



## Mitigating Nutrient Loading in Your Aquatic System

—Matt Dodson, Environmental Scientist

Eutrophication is the term applied to the natural process of aging in lakes and other freshwater and brackish systems. Human activities can greatly accelerate eutrophication by increasing the rate at which nutrients and organic substances enter aquatic ecosystems from their surrounding watersheds. Agricultural runoff, urban runoff, leaking septic systems, sewage discharges, eroded stream banks, and similar sources can increase the flow of nutrients and organic substances into aquatic systems. These anthropogenic influences can cause algal blooms or the overgrowth of aquatic weeds.

While these blooms do not take place during the winter due to re-

duced water temperature, the body of water can still store limiting nutrients such as nitrogen and phosphorous that will fuel the springtime growth spurt. As a resident or property manager there are several things that can be done to mitigate these effects on your lake or pond. This time of year leaf litter contrib-



utes significantly to the nutrient loading in many neighborhood ponds. Keeping fallen leaves out of your body of water can significantly reduce the organic material stores of the system. A variety of netting and fencing options are available in situations where the leaf litter may be high and difficult to control.

Composting and recycling yard wastes provides an environmentally responsible alternative to allowing organic materials to be washed into storm water systems. As they say, an ounce of prevention is worth a pound of cure, so take these small steps to ease the management of your lake in the new year.

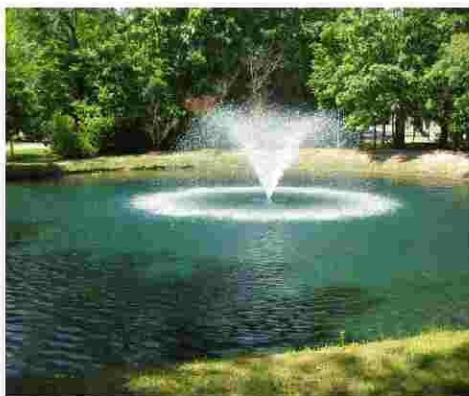


# The Importance of Winter Aeration

—Dustin Kennedy, Aquatic Biologist

Local ponds and lakes stratify with cooler water to the bottom and warmer to the top during the warmer months. As the weather in South Eastern Virginia starts to cool so do the local ponds and lakes. As the weather and ponds cool, fall turnover will take place. This is when the top temperature becomes the same as the bottom causing thorough mixing. As winter sets in, these bodies of water will start to stratify again but in the opposite way. Inverse stratification will occur as the top layer becomes cooler than the bottom. Mixing will not occur because water reaches max density at 39°F (4°C). This is when proper aeration can be very important. Just like summer, proper mixing will be needed to make sure that stratification is broken down and mixing can occur. Aeration running during the winter will help to keep ice from forming on the top by hav-

ing moving water. This moving water will cause the dissolved oxygen levels to be sufficient. In the event of heavy freezing, winter kills can take place by ice forming thick on the top and blocking out sunlight. This causes the vegetation to die off and use up all dissolved oxygen leading to fish kill. Aeration is very important no matter what the season!



Floating fountains (left) or diffused aerators (above) both provide adequate turn-over in the winter months.

## Don't forget about your pond during the winter months!

—Kyle Finerfrock, Aquatic Specialist

As the temperature drops and winter sets in for another year, pond owners should begin to start thinking about future pond health. In the winter months ponds are looking good because the cold weather retards the growth of plants and algae. Now is the time to develop a plan for your pond for the next spring and summer growing season. By treating your pond in early spring you have a better chance of maintaining control of the vegetation throughout the spring and summer. When working on a plan for your pond you need to know what the problems were during the previous season. This will make your treatment in the spring more effective. Juvenile species of nui-

sance plants are more susceptible to treatments. Knowing what species are likely to be a problem will help you develop a plan for treatment that can be implemented early, and therefore be more effective.

Above Right: Parrotfeather  
*Myriophyllum aquaticum*



Below Right: Watershield  
*Brasenia schreberi*





## Renovate OTF Receives EPA Approval

— Tyler Koschnick, Ph.D. and Sam Barrick — SePRO Corporation

SePRO Corporation will be launching a new tool for the Aquatic Plant Management Industry for use in 2007, Renovate OTF. SePRO recently received the USEPA registration for this new formulation, and is currently pursuing state registrations. Renovate OTF is a dry formulation containing 10% triclopyr acid equivalent, and is labeled for control of emerged, submersed and floating aquatic plants in the following aquatic sites: ponds; lakes; reservoirs; marshes; wetlands; impounded rivers, streams and other bodies of water that are quiescent; non-irrigation canals, seasonal irrigation waters and ditches which have little or no continuous outflow. The use of a dry carrier for triclopyr will improve control of Eurasian watermilfoil and other susceptible weeds in shoreline treatments and in deeper water areas that

are more susceptible to dilution. The use of Renovate OTF allows for a portion of the water column to be treated in deeper water (depths exceeding 4 feet deep) before plants have reached the water surface. For example, Renovate OTF may be more effective and economical than Renovate 3 when treating watermilfoil in 8 feet of water, by calculating a concentration based on treating only a portion of the water column (e.g. bottom 4 feet of water).

In 2006, SePRO conducted small-scale trials to determine herbicide release and residue profiles, and to evaluate use rates in a system designed to simulate herbicide dilution from a spot treatment. The properties of Renovate OTF result in a quick release of triclopyr to obtain threshold concentrations, followed by a continual release of triclopyr

to maintain sufficient exposure time. Replicated pond trials conducted at the SePRO Research and Technology Campus indicate that approximately 50% of triclopyr is released in less than an hour, with the remaining triclopyr released within 48 hours. By utilizing a dry carrier, triclopyr can be carried onto the target plants in deeper water and spatially localized where plants are growing. Please consult your SePRO Aquatic Specialist if you have questions pertaining to the use of Renovate OTF.



**Fountains  
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Algae & Aquatic  
Weed Control  
Biological Aug-  
mentation**



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