

South Winds Homeowners Association

Pond Dredging Committee Report

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The Pond Dredging Committee members are: Adrienne Brochu, Jack Kearns, Peter Bonnano, Jerri MacMillian and Stu Fisher.

The Pond Dredging Committee was charged with the tasks of addressing issues of timing, benefit, process and access related to an opportunity to have the pond dredged.

Timing: The engineering effort depends entirely on the availability of a qualified engineer. The estimated time of engineering/permitting process, once begun, would take up to two years. Once permitting is complete, the project of draining, extraction and refilling would not exceed 2 years. This is an understanding that would have to be clearly specified in the drawing of the contract with significant, enforceable provision for adherence.

Benefit: Sonar results of the 2003 Connecticut Pond Services study found that the average pond depth is 4 feet and that the deepest part is about 6 feet, but it has never been clearly established what the pond depth was, so that it is somewhat difficult to determine the extent of changes in depth over time. It is safe to say, however, that the pond is in a state of diminishing depth. The more shallow the pond is, the greater the opportunity for aquatic growth.

There were four specific species of aquatic plant growth identified in that same study performed by Connecticut Pond Services prior to treating the pond in 2004. These were: the American Waterweed (*Elodea Canadensis*) which is a native aquatic plant. Fanwort (*Cabomba caroliniana*), which is a highly competitive, densely growing, submerged aquatic plant. Upon introduction into a new water body it progressively colonizes near shore areas, where it crowds out native plants. In relatively shallow ponds, fanwort can colonize the entire water body. Dense infestations of fanwort can alter species relationships and affect fish habitat. Like many invasive aquatic plants, fanwort can reproduce from small fragments. In late summer fanwort stems become brittle, and plants tend to break apart, creating opportunities for spread. As with other invasive aquatic plants, fanwort is extremely difficult to remove once it becomes established. The third aquatic plant growth identified is Water lilies (the water lily's scientific family is *Nymphaeaceae*). There are about 70 different species of water lilies. They grow and live on the edge of ponds and lakes, in the shallow water. Water lilies are placed at the bottom of the food web. They are producers of energy and food in ponds and are generally viewed as a positive influence on the pond's healthy environment. The last type of aquatic vegetation identified in the report is, perhaps, the most problematic. The Eurasian watermilfoil (*Myriophyllum spicatum*) is a plant that has demonstrated the tendency to take over entire ponds and is constantly in invasive mode, coming to Birch Mill Pond through the three water source points which supply the pond.

A naturally functioning pond can easily develop its own bacterial colonies sufficient to decompose organic wastes. Natural ponds develop the complex assemblages of invertebrates such as insects, amphipods (freshwater shrimp), worms, leeches, daphnia, crawfish and mollusks to sustain a vibrant ecological system. The system in Birch Mill Pond is manifesting both natural aquatic vegetation and a serious consequential response to the invasion of the milfoil. Since this invasion occurs through avenues out of the control of the SWHOA, the invasion and its effects will be ongoing concerns for the SWHOA.

Because milfoil is widely distributed and difficult to control, it is considered to be the most problematic plant in pond environmental life cycles. The introduction of milfoil can drastically alter a water body's ecology. Milfoil forms very dense mats of vegetation on the surface of the water. These mats interfere with recreational activities such as fishing and boating. The sheer mass of plants can cause flooding (this happened in 2001 on Birch Mill Pond) and the stagnant mats can create good habitat for mosquitoes (think West Nile virus and Eastern equine encephalitis). Milfoil mats can rob oxygen from the water by preventing the wind from mixing the oxygenated surface waters to deeper water. Milfoil also starts spring growth sooner than native aquatic plants and can shade out these beneficial plants. When milfoil invades new territory, typically the species diversity of aquatic plants deteriorates. While some species of waterfowl will eat milfoil, it is not considered to be a good food source. Milfoil reproduces extremely rapidly. Milfoil is able to reproduce very successfully and rapidly through the formation of plant fragments. In the late summer and fall, the plants become brittle and naturally break apart. These fragments will float to other areas, sink, and start new plants. Milfoil will also grow from fragments during any time of year. A new plant can start from a tiny piece of a milfoil plant. This is why milfoil can so easily be transported from upstream sources. Once established in its new home, water currents may carry milfoil fragments and start new colonies within the same body of water and downstream. Because milfoil is a plant that travels with the upstream tributary water sources feeding Birch Mill Pond, milfoil will continue to be problematic, even after dredging.

Dense mats of milfoil vegetation can also increase the sedimentation rate by trapping sediments. Not all the decomposing vegetative matter sinks to the bottom, but rather forms islands of bogs which tend to migrate. These bogs provide challenges to the areas bordering the pond, especially at the one outlet over the spillway, and the three inlet areas. The formations of bogs at the mouths of the inlet areas are the perfect demonstration of the sources of the infestations in Birch Mill Pond. They come from upstream. The presence of these bogs at the outlet over the spillway, is testament to the migratory nature of the bogs. These bog formations can be, to some degree, managed by individual property owners and a drawdown would facilitate the effort in the lesser accessible areas.

Localized control of milfoil can be achieved by covering the sediment with an opaque fabric which blocks light from the plants (bottom barriers or screens). Winter draw down has been used as a method of managing aquatic plants. The Tennessee Valley Authority (TVA) uses both winter and summer water level drawdowns as an effective way of reducing Eurasian watermilfoil biomass. They found that a drawdown of about 2 meters is effective in reducing excessive populations. Short-term dewatering for 2-3 days during period of freezing temperatures has been effective, but multiple exposures may improve control. A 1-week drawdown of a large TVA impoundment in July 1983 desiccated about 81,000 acres of Eurasian watermilfoil. A narrow, relatively weed-free band occurred after refilling and control effects extended into the following two growing seasons. In Washington, the Bureau of Reclamation lowered the water level of Banks Lake in 1994 in an effort to manage Eurasian watermilfoil populations. The success of a drawdown on Eurasian watermilfoil is dependent on several factors such as degree of desiccation (drawdowns during rainy periods are often ineffective), the composition of substrate (sand vs. clay), air temperature (the exposed sediments need to freeze down to 8-12 inches), and presence of snow.

Fluridone (brand name Sonar®) has been successfully used to eradicate Eurasian watermilfoil. Birchmill Pond has had a fair degree of success with its application in 2004. A new herbicide, triclopyr, holds great promise for Eurasian watermilfoil control. Unlike fluridone, triclopyr

requires a short contact time (18 to 48 hours) and will selectively control Eurasian watermilfoil while leaving many native aquatic plants relatively unaffected.

Birch Mill Pond has shown signs of stress and remedial methods of controlling the vegetation have proved effective, if temporary. These efforts at remediation began with chemical application and harvesting performed by the developers prior to deeding the common area to the SWHOA. Further, the SWHOA paid for the harvester to return in 2001 and funded a chemical application in 2004. A dredging effort would not eliminate the presence of the identified aquatic vegetation. The beneficial lily would most likely take a longer time to return, but the invasive aquatic vegetation would continue to present challenges since its avenue(s) of invasion would persist and the shore line would continue to be shallow enough for a toe-hold for future colonization. Birch Mill Pond is not in immediate danger of becoming a marsh. However, a dredging effort would retard the effects of invasion and, at the same time, produce a source of funding for future remediation efforts.

Deepening the pond to a level of at least 20 to 30 feet would provide a longer lasting control on the vegetative growth and bog formation. Preliminary tests performed by Venutti Enterprises established that there is a significant quantity of bottom sediment and a likelihood of significant quantity of sand and gravel beneath the sediment. The projected dredging effort would extract an estimated 160,000 cubic yards of all types of material – topsoil, sand and gravel. The material composition of this extraction is unknown at this time. The estimated area of extraction is 10 to 12 of the approximate 14 acres of the pond. The depth of excavation is projected to be 10 feet.

All expenses, other than association attorney fees incurred in the drafting of the contract with Venutti, would be born by Venutti. Venutti will pay the SWHOA at a rate of no less than \$2.00 per cubic yard for all types of material extracted. The contract would call for monthly payments without taking into account the timing of Venutti's sale of the material. Monies would be set aside by Venutti in the event that material sales fail to sufficiently fund the monthly payment.

The committee recommends that whatever financial gain to the SWHOA be allocated, first, to a reserve for future dam related expenses. This is not to imply that the committee has any information which would lead to the conclusion that the dam is in any manner in need of maintenance or repair. Quite the contrary, but the committee feels that any financial gain would most prudently be set aside in the event that there were significant expenses related to the dam in the future. Since the milfoil invasion will continue to be a challenge, monies should also be reserved for the remediation efforts that controlling this invasive plant will require.

Process: The pond must be inspected and drawn by a qualified engineer. The permitting process includes review and permits from the Essex Inland Wetlands, the State Inland Water Resources Division and/or the US Army Corps of Engineers. The Pond would be drained using quiet(er) electric pumps. The continuous flow from the three main sources of inflow would be channeled to the spillway. The area directly in front of the dam would be partitioned off so that the dam would not be affected by the dredging process. Once empty, the remainder of the pond would be excavated between the hours of 7 AM to 5 PM, six days a week. Dredging equipment in the pond would consist of excavator(s), loader(s), and dump trucks. The pond would be dredged with a shallow edge and be tapered to a deeper center. Every effort to avoid disturbing shoreline vegetation will be taken.

Prior to the formation of the Pond Dredging Committee, the board articulated two requirements that must be met before proceeding with a dredging effort: 1) access to the pond must be available

from either the farm field south of the Clinic or from the Clinic's property; and, 2) agreement for the dredging from all households whose property abuts the pond. These requirements were communicated to the SWHOA in a document: August 2005 Board of Directors Update available on the SWHOA website. At the outset, the committee affirmed those recommendations. The reasons for these conditions are self evident: The quiet enjoyment of SWHOA homeowners is of greater concern than the potential benefits from dredging. As to the second requirement, the Doctrine of Riparian Rights define the rights relating to the bank of a watercourse which says that a landowner adjacent to a body of water has the right to the water in that body of water. There is a document recorded in the Essex Land records which gives priority right to the clinic. Any deliberate diminution of water in the pond would have to be acknowledged and approved by the abutting property owners. Abutting property owners have the greater legal power of veto in property development conflicts. In the spirit of neighborliness, respect for the individual, thoughtful perspectives of each one on the front line was deemed to be of critical importance in the process. Fleshing out and addressing all stakeholders' individual concerns increases the likelihood that this proposal can go forward with the strength of input and support. In large measure, reservations on the parts of the abutting property owners reflect unanswered questions rather than outright opposition.

Access: The committee agreed, for pond dredging purposes, to limit the possible access points to either through the Clinic property or the adjacent Higgins farm which is almost contiguous to the pond and would have to include permission to cross the Essex Land Trust/Nature Conservancy property before arriving at the Brochu property which abuts the pond. The committee feels it important to avoid disturbing the quiet enjoyment of those homeowners who might be impacted if there were access and activity either through the fire truck access way off Birch Mill Trail or through the Open Space access off South Winds Drive. The SWHOA does have a deeded easement over the fire truck access way for purposes of performing maintenance in, on or for Birch Mill Pond. Access through the Clinic property has been ruled out due to concerns related to the heavy traffic impact on Route 153. Negotiations for access through the Higgins farm (and over Land Trust and Brochu land), are on-going and have yet to be concluded. Preliminary estimates are that, if agreeable, the owners of the Higgins property would be compensated by the Association at a rate of, perhaps, 20 cents a cubic yard.

Conclusion: The committee understands that serious questions and concerns remain unresolved. Prior to proceeding with a commitment to spending SWHOA funds on attorney fees, the committee needs to complete its mission to address the unresolved issues related to this opportunity to have the pond dredged. Additionally, further questions have arisen that require thoughtful consideration before proceeding. At this time, the committee expresses its gratitude for the efforts spent on this endeavor and invites interested parties to become members of the committee so that the work of addressing these outstanding issues can be spread over additional recruits.