

Towards a Comprehensive Water Quality Plan for Swan Lake

By Fred Peters



Avian Flu Scare

Early warm weather brought not only spring flowers but also signaled the start of the spring migration of Canada Geese. This year was different. Some of the early arrivals were dying from Avian Flu.



Only a few dead birds were found at Swan Lake Park but over 200 were found at other ponds in Cornell and in other areas in Markham.

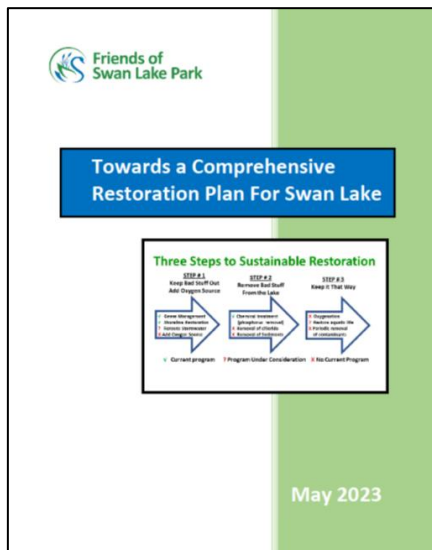
The Avian Flu is not easily transferred to humans and pets, but residents were asked to keep a safe distance from troubled birds.

Fortunately, it seems to have ended as quickly as it started once the migrating flocks moved on.

Winter Drawdown and Sediment Removal

Friends of Swan Lake Park are also coming out of winter hibernation – preparing for a series of meetings with Markham Council starting in May.

Last year we were successful in convincing Markham Council to support an engineering review to see if there are ways to stop the 3 – 5 tonnes of road salt that are flowing into the lake each year. We expect that by this time next year the Flow Diversion Report will outline possible options for reducing stormwater and the road salt currently going into the lake each year.



Our focus this year has been on identifying ways to remove the build-up of chloride from road salt that is killing the aquatic life in the lake. Several options, including use of costly industrial filtration equipment were reviewed but the best option for removing the chloride appears to be to reduce the lake level over the winter months.

The cost to drain 50% or more of the lake water is nominal. A winter drawdown would remove over 50% of the chloride, phosphorus, and nitrogen active in the water and have minimal impact on the remaining aquatic life with the lake restocking with fresh water from precipitation and the aquifer.

Phosphorus, which is considered the primary nutrient fertilizing the algae, resides within the lake bottom sediments. A drawdown would expose large areas of the lake bottom making it feasible to remove some of the sediments – either to be trucked away or stored along the shoreline.

Removing sediments is a costly undertaking however it may be justified if it could reduce the need for repeating chemical treatments every 3 – 5 years as the current plan contemplates and if it can provide a faster and more sustainable improvement in water quality.

Solution Workshop

The current water quality plan is focused on reducing phosphorus as a nutrient fueling the growth in algae. An important goal but the plan does nothing to address the chloride problem nor directly address the need for improved oxygen levels in the lake.

The issues involved in restoring water quality in Swan Lake are complex.

We have been told that in complex situations like Swan Lake, it is common to host a “workshop”, bringing together a variety of experts to render an opinion on possible treatment options. Our primary recommendation to Council is for Markham to host a Solution Workshop to analyse the various options and to provide guidance on what can be done to restore the water quality in Swan Lake.

Water Quality Research



Friends of Swan Lake have identified two research groups that are interested in contributing to the understanding of the chemical dynamics within Swan Lake.

You may see this wind powered device on Swan Lake this summer. Developed by a research group from the University of Toronto, the device is designed to add oxygen to the water in fish farms in Bangladesh and other underdeveloped countries.

Swan Lake is a stagnant body of water and needs more oxygen, but concern has been expressed that the process could make matters worse. The research will help to understand whether a process for adding oxygen is helpful or whether it further complicates our problems.

Another research group from University of Waterloo recently completed a report on Lake Wilcox in Richmond Hill and concluded that the buildup of chloride levels in Lake Wilcox was contributing to the release of phosphorus from the sediments and compounding their algae problems. This team of researchers are interested in assessing whether the chloride levels in Swan Lake are contributing to the release of phosphorus from the sediments.

The results from these studies should provide valuable guidance to the Solution Workshop. In addition, the Friends of Swan Lake Park is encouraging the city to engage environmental professionals to advise on the feasibility and benefits of a winter drawdown of the lake, including the removal of some of the sediments.

What's needed now is an assessment of the situation by an independent, broadly based team of experts that can provide guidance on how best to restore Swan Lake' water quality leading to a comprehensive plan for restoring Swan Lake.