



# *Salt Spring Island Water Preservation Society*

## OCTOBER 2013 NEWSLETTER

### News Updates on the Lakes

**St. Mary Lake** is now blue, rather than brown as it was all winter. It cleared up last summer as well.

This is believed to occur because the cyanobacteria that are living in the lake do not like sunlight so avoid it by moving deeper in the lake. However, they are expected to be more visible and numerous as the weather cools. If this happens, it will be the third year of almost continuous blooms of toxin-producing cyanobacteria on St. Mary Lake. If it does not happen, it will mean that something different has occurred which we do not yet understand.



Your society continues to monitor efforts by our Islands Trust trustees to collaborate with other agencies to address this problem through the recently renamed Salt Spring Island Watershed Protection Authority. The Authority is forming a Technical Advisory Committee to advise them on what steps to take for the health of the lake. We remind them at intervals that the science-based Management Plan for St. Mary Lake, published in 2009 recommends that the next step in curing the lake is to prevent migration of phosphorus (a primary constituent of urine) from septic fields through the soil to the lake. Every expert consulted about the lake has said that this step is a necessary step to restore the lake. This is because even well-functioning septic fields do not eliminate phosphorus.

**Cusheon Lake** had an algal bloom in the spring, which thankfully had a low cell count of cyanobacteria.



But the bloom plugged up water system filters worse than has ever been seen by long time lakeside residents. The bloom lasted approximately 6 weeks. During the summer the lake had swimmer's itch, which is caused by small worm-like parasites called Schistosomes (shiss-toe-soams). This parasite originates from waterfowl, and is then taken in by snails that later release it into the water.

Going into the dry months, the lake was higher than normal due to the beavers building a dam at the outflow earlier than normal. Although some lakeside residents were inconvenienced by the high water level, the greater quantity of water in the lake meant that water continued to flow out all summer. This movement of the water is believed to have contributed towards good water quality over the summer season.

In August, a previously-occurring alga called *Spirogyra microspora* was observed in some shallow areas along the shore, more than has been seen in the past. This alga is not associated with toxins. It is not known why this occurred. In September, clarity in the lake started to decrease, indicating a bloom was beginning, but testing showed no toxins. Then, the heavy rains flushed water through the lake, improving the lake's water quality which has remained good.



## North Salt Spring Waterworks: Balancing Supply and Demand: Part One

In the last issue of this newsletter, an article briefly discussed water supply and demand for the areas served by the North Salt Spring Waterworks District (Waterworks). This article continues with more information on the supply/demand part of the picture focussing on St. Mary Lake. An article in the next issue will provide information on Maxwell Lake and a conclusion.

The Waterworks obtains its water from St. Mary and Maxwell Lakes. Both lakes are fed by relatively small watersheds which means that water withdrawn from these lakes must be replaced by rain and snow the following winter. The two lakes have man-made obstructions at their outfalls that hold back water for use during the summer dry months, both for humans and in the case of St Mary Lake, also for fish in Duck Creek.

The structure holding back water on St. Mary Lake is called a weir. The weir can hold water up to a level of 40.7 m above sea level, which is 0.7 metres (2.3 feet) higher than the minimum height required to be kept in the lake. When the water is higher than 40.7 metres, it flows over the weir down Duck Creek. The Waterworks aims to go into the driest months with the water level in the lake near its maximum level. Since, the water is not supposed to fall below 40.0 m, let us assume, for the purposes of the explanation,

that the supply of water for the summer months, May to September, is that water in the top 0.7 m (70 cm = 28 inches) across the entire area of the lake plus rain that falls and water from the lake that is used and then flows underground from septic systems back to the lake. This amount of water has been estimated to average approximately 390 million Imperial gallons.

From this amount of potential supply, during the summer months, approximately 46% is lost to evaporation and another 14% flows into Duck Creek to protect fish habitat as required by Federal Department of Fisheries. Taken together, losses due to evaporation and water required for stream flows for fish, means that 60% of the summer season supply cannot be conserved, leaving approximately 40% of the supply that is then available to be used by both the North Salt Spring Waterworks, by the much smaller Fernwood-Highland Water District, for water used for firefighting, for water system losses, and for use by lakeside residents and farmers who get their water directly from the lake, rather than from a water district.



One way to judge the limits of supply is by the lowest level that the lake reaches at the end of the summer season. How close does the water get to the 40.0 metre level at which no more water can be withdrawn? In an average year, 70 million Imperial gallons remain in the lake at the end of the summer season. That is quite a bit. However, in 2009, which was a very dry summer, the level of

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*The photo above shows an example of a V-notch weir, with a small flow of water running downstream towards the culvert in the background.*



## North Salt Spring Waterworks: Balancing Supply and Demand: Part One cont'd

continued ... St. Mary Lake went down to 40.09 m - only 0.09 m above the minimum level. That 0.09 m of water (9 cm or 3.5 inches) over the entire lake amounts to about 36 million Imperial gallons, or barely more than half the usual average of 70 million Imperial gallons.

This low level has been pointed out by former Waterworks Manager, Mike Larmour, as a significant cause for concern. We know that climate change is likely to produce longer, hotter summers, meaning greater evaporation and less rainfall. At the same time, a larger population may well increase demand. The Waterworks is legally obligated to serve 400 additional future homes and possibly new commercial development in Channel Ridge, as well as many undeveloped and yet to be subdivided lots within the Waterworks service area.

The Waterworks has recognized this concern and has consequently proposed raising the weir by 0.3 m or 12 inches which, according to their website, would allow

the capture of about a million extra gallons.

As with any artificial change to the lake, this action has its critics. We share the concern that raising the lake level will not be allowed by lakeside property owners because it would inundate some of their property.

An additional concern, raised by some, though discounted by others, is that raising the weir may exacerbate the present ongoing blooms of cyanobacteria, that have been so problematic in recent years. (The St. Mary Lake Management Plan estimates that it takes 15 years to replace 95% of the lake water, meaning that St Mary already has quite a low rate of flushing.) There has not been a need to raise the weir because demand for water has held relatively steady for the past few years. But this could change if construction and development speed up on the island once again.

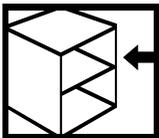
**Next Issue** - Maxwell Lake (the Waterworks' other supply!) and how to balance supply and demand into the future.

## North Salt Spring Waterworks District Hires Water Quality Specialist

This spring the Waterworks hired **Meghan McKee** as the District's Water Quality Specialist. Meghan has lived on SSI for 8 years and used to work for the CRD where her exceptional technical and communications skills were greatly appreciated by commissioners on local water districts. Among other tasks, Meghan will take over managing the water-quality tracking program that Bob Watson was previously managing on a volunteer basis. WPS congratulates Meghan and the Waterworks on creating this position and incorporating the water-quality tracking program into their regular work program.



## We Reeeally Need Your Country Grocer Receipts!



That little slip of paper - your **Country Grocer** receipt - may seem unimportant, but it is **vital** to our financial picture for WPS. Our donations from this source, which are significant, have recently reduced by about a third. WPS needs these funds for regular expenses such as insurance and this newsletter, as well as for special projects, for example the recently-installed public information sign on the St. Mary Lake watershed lands at Channel Ridge, and all our work to restore disturbed areas on the WPS nature reserve land. So, please remember to drop that slip into **Box 73** at Country Grocer on your way out. It only takes a moment and costs you nothing, but it's a **big, big** help to the work of WPS. **Thank you all** for supporting your society in this way.



**OUR EXECUTIVE**

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**CONTACT US**

E-mail [ssiwps@gmail.com](mailto:ssiwps@gmail.com)

Online [ssiwaterpreservationsociety.ca](http://ssiwaterpreservationsociety.ca)

**COUNTRY GROCER RECEIPTS**

Please put your tapes in box #73

**MEMBERSHIP**

We'll soon be at the end of the membership year. Membership dues received in November and December will go towards your 2014 membership. It's a 'can't-be-beat' value at only \$15 for individuals, or \$30 for a family/couple.

**Due to increased expenses, the board has voted to raise the fees for the first time in many years. We hope you will understand and continue to support us.**

**Additional donations** are very gratefully received, and help to keep WPS active, effective and working hard to protect our island waters. Tax receipts are issued.

Current members - Please mail membership fee to:  
SSI WPS, Box 555, Ganges PO, SSI, BC, V8K 2W3.

New members - Please request an application form to fill out & return to us.

**Thanks everyone.**



*SSI Water Preservation Society*  
Box 555, Ganges PO  
Salt Spring Island, BC  
V8K 2W3

