

Submission to

**The Panel on the**

***Future of the Trent-Severn Waterway***

From the

**Koshlong Lake Association**



Submitted  
September 26, 2007



## Executive Summary

Koshlong Lake is one of the reservoir lakes in Haliburton County. This submission was prepared by the Koshlong Lake Association (KLA), and represents the vision and priorities of the residents and cottagers of that lake, regarding the future of the Trent Severn Watershed.

We have read the Ecoplans Report and agree with the recommendations that were presented in that report, particularly the governance recommendations. As a member of the Coalition for Equitable Water Flow (CEWF), we also support the recommendations of that group. This submission is not designed to duplicate their work or the recommendations from other submissions. It is meant to clearly state our vision, to emphasize a set of priorities that have not been articulated sufficiently in other submissions and are significant to the members of our lake association, and to provide a set of recommendations that will address those priorities.

### **Vision:**

*Our vision is that all stakeholders in the Trent-Severn Watershed are treated equally and fairly, so that all may mutually benefit from the water resources in this watershed.*

All waters in the Trent-Severn Watershed should be managed in such a way that the needs and desires of one group do not have priority over those of any other group. The navigational safety, economic benefits, enjoyment and rights of one group should not be subordinate to those of other stakeholders.

### **Priorities:**

The following list represents the main priorities of the KLA, but does not encompass all of the needs and wishes of our members. Those concerns and requirements have already been stated in the Ecoplans Report and the CEWF submission and need not be duplicated here. Our high-level priorities are:

- 1) All waters in the TSW watershed be managed in such a way as to minimize waste and maximize benefits to all stakeholders*
- 2) The allocation of water among users be done by establishing an annual water budgeting process involving all the stakeholders*
- 3) The terms of reference for managing the water in the TSW watershed be established on the basis of current realities rather than historical precedence*
- 4) Funding for the TSW watershed be sufficient to properly maintain and enhance the infrastructure needed to manage the water resource*
- 5) New ideas be explored so that untapped resources are realized and additional benefits for all stakeholders are shared*



## **Recommendations:**

These recommendations are specific to the priorities stated in the preceding section:

- a) *Waters in the TSW Watershed be managed as a finite reoccurring resource, rather than an unlimited renewable commodity,*
- b) *The target date for maximum drawdown from reservoir lakes be extended from mid-September to mid-October*
- c) *An oversight entity be established that would define operating parameters for TSW operations and have quasi-judicial powers to hear all ideas that may effect the management of waters in the TSW watershed and all complaints regarding the management or operation of these waters.*
- d) *All existing dams be enhanced to incorporate three essential features:*
  - *real-time monitoring of lake levels, rainfall and weather conditions,*
  - *remote management of water flow,*
  - *micro-hydro or mini-hydro electrical generation facilities implemented, with revenue shared between the developer, TSW Operations and the county in which the generating facility resides.*
- e) *The Federal government allocate funds that are necessary to address safety concerns that have been identified in the Ecoplans Report (Observations and Conclusions, sections 2.7 Condition of Infrastructure), particularly those that need construction in the 1 – 5 year timeframe, and that federal and provincial funding be provided to enhance all dams to meet the features identified in recommendation item (d).*
- f) *Studies be commissioned to explore new ideas for the:*
  - *management of existing water resources*
  - *exploration of ways of bringing additional water resources into the managed TSW watershed,*
  - *reduction of water losses and wastage and,*
  - *improvement of the natural state of waters.*



## Koshlong Lake Submission

### **Preamble:**

Koshlong Lake is one of the 41 reservoir lakes in Haliburton County. There are more than 275 properties on this lake. Although most of these are seasonal properties, there are a growing number of property owners who have decided to establish their permanent residence on this lake. Our members' needs and dreams are similar to those of waterfront property owners in the more established areas of the watershed and they should be addressed in a similar manner.

### **Vision:**

*Our vision is that all stakeholders in the Trent-Severn Watershed are treated equally and fairly, so that all may mutually benefit from the water resources in this watershed.*

Since the development of the TSW canal system and the construction of dams at reservoir lakes, this kind of treatment has not been the case.

When the TSW system was inaugurated, the water in the reservoir lakes was considered to be an unlimited resource that could be used, without considering the impact of varying the water levels in those lakes and without evaluating the changing usage of either the TSW canal system or the reservoir lakes. The result has been a situation where the needs and rights of one group of TSW stakeholders have been considered to be more significant and important than those of another group of stakeholders.

However, one of the basic premises of our civil society is that everyone be treated equally and justly, and that the basic needs and desires of one group of citizens should not have priority over those of any other group of citizens. As such, the navigational safety, economic benefits, enjoyment and rights of one stakeholder should not be subservient to those of other stakeholders.

### **Priorities:**

The following list represents the main priorities of the KLA, but does not encompass all of the needs and wishes of our members. The Panel is well aware of the concerns, desires and recommendations as expressed by cottagers and residents of other reservoir lakes. Since our list is similar, there is no need to duplicate what has already been stated in other submissions. However, it is felt that insufficient emphasis has been placed on several issues and this report will focus on those points that require further explanation.

- 1) All waters in the TSW watershed be managed in such a way as to minimize waste and maximize benefits to all stakeholders.*



Unlike many jurisdictions in the world, Canadians have regarded water as an unlimited and renewable resource. In Ontario, droughts and floods have occurred, but they have usually been manageable and have not been a significant concern. However, a new reality is developing, based on the effects of global warming. This reality is exemplified by the images of widespread flooding in places in Asia coupled with increasing arid regions in Africa and Australia.

Canada is not immune to droughts and floods. Farmers in our prairie provinces have had to adjust their crop selections and irrigation methods to accommodate changing climate conditions. So far, Ontario has been quite fortunate. With the recent exception of Peterborough, flooding has not been a major issue, but it is unrealistic to assume that this province will not be affected by the vagaries of climate change.

Therefore steps must be taken to deal with not only shortages but also overabundances in rainfall. This can and must be done by changing the way that waters are managed, so that it is conserved when there is a lack of rainfall and controlled more promptly and accurately when there is an oversupply. Hurricane Katrina was not only a natural disaster, but also a wakeup call to all organizations that are managing water. It is folly not to plan for the unexpected.

An article in the Globe and Mail on September 24<sup>th</sup> stated:

*As all five of the Great Lakes shrink at an alarming pace, some people have begun to fear global warming is the culprit.*

*Environment Canada modelling indicates that under all the scenarios used, global warming will cause water levels in the Great Lakes to drop, possibly by as much as 1.2 metres by 2050, although he also says these simulations show precipitation will rise, which hasn't occurred.*

*Computer model projections generally show that the Great Lakes will shrink as climate changes cause air temperatures around them to rise. Not only will the lakes themselves become warmer, leading them to lose more water to evaporation, but the land is likely to become drier, reducing the supply of groundwater to streams that feed the lakes.*

If these dire predictions are valid for the Great Lakes, is it not unreasonable to assume that the same scenario will hold true for the lakes and rivers in the TSW watershed?

The benefits of knowledgeable and timely water management are not only the mitigation of issues, like too little or too much rainfall, but also better usage of water resources for the benefit of all inhabitants in the TSW watershed. By minimizing waste (i.e. spillage from leaking dams and controlled releases when dams are at capacity), there will be more water in the reservoir lakes. This can provide safer navigation in those lakes as well as an extension of the boating season. It can also mitigate situations where inadequate rainfall has occurred.

The issue of better water management, by all watershed communities, will be addressed in the other priorities.



**2) *The allocation of water among users be done by establishing an annual water budgeting process involving all the stakeholders.***

Until now, the water needs of the TSW canal and the downstream lakes have been the primary consideration of TSW Water Control Engineers. This is clearly not sufficient to address the vision of equality for all stakeholders in the TSW watershed.

A comprehensive study is needed to determine the water budget needed by all stakeholders. These stakeholders include each individual lake (both downstream lakes and reservoir lakes), all elements in the canal (both passageways and locks), each power generating facility (including new micro and mini generation systems at each dam) and each village and city that relies on the watershed for its water and sewage needs.

Without this water budget, it will be impossible to meet the needs of the various stakeholders and provide a model for water resource management in the TSW watershed. Similar to good fiscal control, the water budget should be reviewed and adjusted on an annual basis.

**3) *The terms of reference for managing the water in the TSW watershed be established on the basis of current realities rather than historical precedence***

When the TSW canal system was developed, the view was that this it could become a major commercial waterway. Reservoir lakes were, for the most part, uninhabited.

But times have changed. The canal system has become a recreational waterway and the reservoir lakes have become more and more populated. The economies of regions like Haliburton have also changed. They are no longer based on forestry, mining and agriculture, but are now reliant on a vibrant tourist industry, that is based on healthy lakes and lush forests.

Unfortunately, the focus of management of the watershed has not changed. The primary objective is still to maintain a constant water level in the canal system and in the downstream lakes. There has been very little appreciation for the needs of people in the reservoir lakes regions.

Global warming has also meant that there is more evaporation in all of the lakes. Even the Great Lakes are experiencing water decline. There may not be enough water in the current TSW watershed to maintain existing target water levels. Waters must be managed more diligently and the possibility of including additional reservoir lakes should be explored.

**4) *Funding for the TSW watershed be sufficient to properly maintain and enhance the infrastructure needed to manage the water resource***

Weather and age have taken their toll on existing dams in the TSW watershed. Some are in need of replacement. Most are in need of enhancement. Yet inadequate funding has prevented much of this work from occurring.



There is an immediate need for repairs and enhancements to existing dams. The following paragraph has been taken directly from the Ecoplans Report (Observations and Conclusions, section 2.7 Condition of Infrastructure).

*Anecdotal reporting by stakeholders and the TSW suggests that several dams are leaking. The amount of water either being wasted from the system or unavailable for local power generation by these leaks is significant. It has been suggested that reducing or eliminating this wastage would allow for the retention of more water in the system and help in better accommodating stakeholder interests. For example, the 10 cms leakage that is reported at Dam 1 spills an amount of water equivalent to 2,592 hectare meters of water per month. To understand what this number means, it leaks an amount equivalent to 6 percent of the available water in the reservoir lakes in one month or 24 percent in 4 months. It has also been suggested that reducing or eliminating leakage at other dams in the system could make more water available for power production, thus raising more revenues for the TSW.*

*A 2006 dam asset condition assessment determined the condition and urgency ratings for the structures. The overall urgency rating is given in Table 2-1. A total of 42 assets fall within the 1-2 year (8.6%) and 3-5 year (19.2%) urgency categories (Table 2-2). Public Works and Government Services Canada estimate the capital cost of these repairs at \$32.2 million for civil construction work, exclusive of investigation, design, procurement, project management and project supervision costs.*

*Parks Canada has a legal obligation to maintain these dams and must put in place and fund an ongoing recapitalization program. The TSW lacks a proper management information system that would support proactive asset management. This should be implemented.*

The Koshlong Lake Association wholeheartedly agrees with this position. The cost of not maintaining the existing infrastructure will probably be much higher than the cost of repairing and enhancing the dams.

Although the Federal government should be held responsible for the funding of dam repair and enhancements, the funding model for TSW operations should be reviewed. This review should consider cost sharing by both the Federal and Provincial governments as well as additional revenue from canal usage fees and small hydroelectric generation.

**5) *New ideas be explored so that untapped resources are realized and additional benefits for all stakeholders are shared***

Two concepts that should be explored are:

- the addition of new waters that could be added to the current TSW watershed, and
- better use of waters (both current and new) in the watershed.

There are many lakes in the reservoir lakes region that have not been utilized by the TSW system. Although studies have been done on the viability of bringing additional lakes into the reservoir lake system, most of these studies were conducted more than 100 years ago. This is an opportune time to initiate a comprehensive analysis of the viability, costs, benefits and issues of bringing new lakes into the TSW watershed.



These new sources may be the only way of addressing potential water shortages, after all improved water management practices have been implemented.

There is a tremendous amount of water flowing out of the reservoir lakes and through the TSW canal system. However, only a small percentage of the potential hydroelectric power is being tapped. By promoting and developing micro-generation and mini-generation facilities at each lake and along the major rivers, the new clean and renewable hydro electric power can be used to augment the current power available in the Ontario grid and also provide a new revenue source for TSW operations, municipalities and the developers of the hydro electric power. *See Appendix A for additional information on this concept of small hydroelectric generation.*

### **Recommendations:**

These recommendations are specific to the priorities stated in the preceding section:

- a) ***Waters in the TSW watershed be managed as a finite reoccurring resource rather than an unlimited renewable commodity.***

After establishing a TSW water resource budget, a model must be developed to best utilize the available waters in an equitable manner. This model will then be used as the basis for a real-time computer system that will be used to assist in the management of the available waters on a daily basis.

Parks Canada should not merely hope that the snowfall and rainfall will be sufficient to meet the needs of all stakeholders. It must manage the resources that are available in the most effective manner in order to meet the needs of all stakeholders.

- b) ***The target date for maximum draw down from reservoir lakes be extended from mid-September to mid-October.***

On August 8<sup>th</sup>, 2007, two 12-inch logs in the Koshlong Lake dam were removed. Water began rushing through the dam, without any benefit to the inhabitants of Koshlong Lake. No power was generated from this water, because there is no hydroelectric generating facility at the dam. It took several weeks for drawdown to be completed. Then on September 19<sup>th</sup>, the final log was removed and the winter low water level was slowly established. Starting in mid-August, most property owners had to adjust their docks to the new water level and this often meant moving the mooring position of their boats so as not to have them resting on rocks that had become hazardous.

Although this process is not new to the Koshlong inhabitants, the timing of the necessary adjustment (of docks and boats) process is not fixed. The final drawdown can start any time from early August to Labour Day and TSW Operations does not notify the Koshlong inhabitants when



the last log has been removed. Many inhabitants remove their boats from the lake before the end of August and almost all boats are removed before the end of September. For many waterfront property owners, the boating and cottaging season in the reservoir lakes is over by Labour Day weekend - unlike those who have their homes and cottages on the TSW waterway and the associated lakes, where water levels can even increase after labour Day.

By starting the drawdown one month later, the boating and cottaging season in the reservoir lakes would be extended to Thanksgiving. This would be a very significant economic benefit to those who rely on the summer cottagers and tourists, and a pleasure benefit to the property owners who could enjoy their boats and cottages well into October. Since Haliburton is one of the poorest counties (if not the poorest) in Ontario, any increase in economic potential is very significant.

This delayed drawdown would not interfere with the trout spawning, since this usually starts in mid-October, when the water level would reach its low point. It is therefore a win for the county of Haliburton and a win for the tourists and cottagers, with no downside – except that TSW Operations would have to retain the crew that removes the logs for one additional month.

- c) ***An oversight entity be established that would define operating parameters for TSW operations and have quasi-judicial powers to hear all ideas that may effect the management of waters in the TSW watershed and all complaints regarding the management or operation of these waters.***

This is a major recommendation in the Ecoplans Report and is heartily supported by the Koshlong Lake Association.

This Board or Commission should also develop an education plan that encourages (and perhaps mandates) water conservation practices by all communities that use the waters in the TSW watershed.

- d) ***All existing dams be enhanced to incorporate three essential features:***
- ***real-time monitoring of lake levels, rainfall and weather conditions,***
  - ***remote management of water flow,***
  - ***micro-hydro or mini-hydro electrical generation facilities be implemented, with revenue shared between the developer, TSW Operations and the county in which the generating resides.***

Ideally, water levels in each of the reservoir lakes would be monitored and adjusted on a real-time basis, in order to minimize waste and maximize overall benefits. However, this is not what happens. Although monitoring is done in the TSW watershed, it is performed on a regional basis rather than at each lake. This is haphazard and wasteful, in that water from local unmonitored rain showers is spilled over the dams and sent flowing into the TSW canal system where it may not be needed. Even when rainfall is monitored at a lake, it takes a while for crews to react and replace logs in dams, so that water is not spilled unnecessarily.



Technology exists to provide remote monitoring stations at strategic checkpoints on each lake, so that real-time information can be provided to the TSW Water Engineer. Similarly, modern water control systems have been developed to replace logs in dams, so that lake levels can be adjusted in increments of a few centimetres instead of 15 or 30 centimetres and leakage is minimized.

The current system of employing crews to remove or replace logs in dams (particularly when some dams are not accessible in winter) is not only time consuming, slow and archaic, but also wasteful of manpower and water resources.

It is also a shame to see untapped water merely leaking or spilling over dams and down rivers without being harnessed as a source of clean and renewable energy. Our forefathers were able to harness water energy to run mills and provide mechanical power to drive machines. There are numerous hydroelectric generators readily available that can be used to harness this energy from run-of-the-river sources without the need to build new dams or channels. All existing dams should incorporate one or more hydroelectric generators to extract energy from the water that flows through the dam. All water should flow through these generators instead of spilling over the logs or sills - except when flood conditions require controlled spillage.

Micro-generators should be placed at strategic locations in rivers. These generators should be completely submerged and positioned so that they do not interfere with river traffic, should be caged so that they are not harmful to fish and other aquatic life, and will be hidden from sight. There is tremendous potential hydroelectric energy in the rivers that is being overlooked.

People are becoming used to the concept of a wind farm, but just imagine the concept of hydro farms developed in the main rivers in Haliburton and in the rivers of the TSW canal system. These hydro farms would only utilize flow-of-the-river energy, with no need for additional dams. They would be benign from a visual, navigational and environmental perspective.

The Ontario Waterpower Association has estimated (in their submission) that renewable energy production can be increased by 50% from the TSW watershed. This estimate is probably low, in that it may not have considered hundreds or even thousands of generators placed throughout the rivers.

All power from mini-hydroelectric generators should be fed into the Hydro One grid. Some individuals or corporations may even decide to install micro-hydroelectric generators to meet their individual needs. All that is needed is the will and some incentives.

The TSW Board or Commission should not be asked to fund these generators, but it should encourage the installation of them.

The revenue produced from these generators should be split among three stakeholders; the company or individual that implements the generator (as a return on their investment), TSW Operations (for properly managing the water flow) and the county in which the generators reside



(for providing the water). This revenue sharing is essential in order to maintain a strong working relationship between the three stakeholders.

- e) *The Federal government allocate funds that are necessary to address safety concerns that have been identified as needing construction in the 1 – 5 year timeframe, and that federal and provincial funding be provided to enhance all dams to meet the features identified in recommendation item (d).*

As usual, funding is a critical issue that must be resolved. The Federal government has a legal obligation to maintain the dams in the TSW watershed so that they are safe. That funding requirement must be met.

Parks Canada has the mandate to manage the water flow in the TSW watershed. The remote monitoring and control facilities, noted in recommendation item (d), and the funding for that technology should also be borne by the Federal government.

Both Federal and Provincial governments have a moral obligation to reduce greenhouse gas emissions. And the province has a requirement to decommission hydroelectric generating plants that use fossil fuels, as well as reducing its reliance on nuclear energy. Therefore, both levels of government should provide funds necessary to enhance all dams, in order to extract the maximum hydroelectric power from the reservoir lakes.

- g) *Studies be commissioned to explore new ideas for the:*
- *management of existing water resources*
  - *exploration of ways of bringing additional water resources into the managed TSW watershed,*
  - *reduction of water losses and wastage and,*
  - *improvement of the natural state of waters.*

Sufficient time and expertise is needed to ensure that all of the waters in the TSW watershed are managed properly and effectively, for the benefit of all stakeholders in the TSW watershed. It is paramount that a study be commissioned to conduct the research needed to ensure that all viable options are considered before establishing the policies, procedures and technologies that are needed to manage the TSW watershed. The TSW Board or Commission should ensure that this is given a high priority at the beginning of its mandate.

Since water in the current TSW watershed may not be sufficient to meet the needs of all stakeholders, another study should be initiated to explore the possibility of bringing additional lakes into the watershed. This study should note and accommodate all of the issues raised by members of the existing reservoir lakes, so that inhabitants of these additional lakes do not face the same unresolved issues.



The TSW Board or Commission should request that each of the cities, towns and villages that are connected to the TSW waterway produce a report on how much water they are currently using, how much water is being captured and treated in its sewage systems, how much water is being lost or wasted and what conservations measures could be taken to ensure that water losses are minimized.

Finally, the Board or Commission should request that each of the towns and villages that are connected to the TSW reservoir system produce a report on what measures are being taken to encourage waterfront property owners to restore waters to a natural and pristine state. This includes the periodic review of septic systems and the implementation of bylaws that eliminate the use of pesticides, herbicides and nutrients.

In conclusion, water is a basic and essential element that is needed for healthy bodies, healthy communities and a healthy and safe environment. The communities that are located in the reservoir lakes areas that provide water for the TSW system, and the downstream communities that use this water must be shown to be parts of the solution of providing clean and renewable waters instead of parts of the problem. Each community must therefore ensure that it manages and uses water in a responsible, effective and equitable way.

Awareness and co-operation are needed so that all stakeholders see the issues from the other's perspective. Hopefully this will raise an understanding of ways to better balance the needs and requirements of the various TSW communities.

However, a major concern is the need for a shift from the view of water being an unlimited resource, to one in which future water supplies may not meet the needs of all stakeholders.

Proper planning, resourceful management and knowledgeable co-operation are needed in order to address any shortfalls and provide continuing benefits to all stakeholders.

Implementing all of these recommendations will go a long way to realizing the vision of Koshlong Lake waterfront property owners.



## APPENDIX A - Micro and Mini Hydroelectric Generation



Micro Hydro is defined as the application of hydroelectric power sized for small communities, single families or small enterprise and encompasses generating systems capable of delivering up to 100 Kilowatts. Mini Hydro facilities will produce from 100 kW to 1,000 kW; however in Canada the upper limit can be as high as 30 Megawatts.

A term that encompasses both Micro Hydro and Mini Hydro is 'Small Hydro'. Small Hydro facilities are real and are becoming more and more popular. In the year 2005, Small Hydro development grew by 8% and raised the total world-wide Small Hydro capacity to 66 Gigawatts.

Two practical applications of small hydro facilities in Ontario are in Almonte, which produces 2400kW (enough for about 800 homes), and at Cordova Mines, which produces 800 kW of power. According to Natural Resources Canada –

*The Canadian small-hydro industry includes more than 20 equipment manufacturers and about 70 engineering firms employing a total of approximately 2,000 people. Over the last decade, the small-scale hydroelectric industry has contributed about \$150M per year to the Canadian economy in manufacturing and services and added about 100 to 150 MW yearly to Canada's power supply.*

See [http://www.canren.gc.ca/tech\\_appl/index.asp?CaID=4&PgID=27](http://www.canren.gc.ca/tech_appl/index.asp?CaID=4&PgID=27) for more details.

Another link from Natural Resources Canada is:

<http://www.small-hydro.com/view/library/cd/2007/technical/index.htm>

***Isn't it unfortunate that one department of the federal government is not benefiting from the research and development occurring in another department.***

## Koshlong Lake Association



An excellent overview of small hydro may be seen at the Wikipedia site:

[http://en.wikipedia.org/wiki/Small\\_hydro](http://en.wikipedia.org/wiki/Small_hydro)

Some quick facts about Hydro Power, according to:

[http://www.canhydropower.org/hydro\\_e/pdf/Quick\\_Fact.pdf](http://www.canhydropower.org/hydro_e/pdf/Quick_Fact.pdf)

- *Canada is the world's biggest producer of hydropower generating 350 TWh/year. Leading the United States, Brazil, China and Russia, Canada produces more than 13% of the global output of hydropower.*
- *There are 450 hydropower plants in Canada. 223 of these plants have a capacity of less than 10 MW. 227 hydro plants have a capacity of more than 10 MW.*
- *Every province in Canada, with the exception of Prince Edward Island, has some hydropower capacity.*
- *The installed capacity (production capacity) of all hydro plants in Canada is 66,955 MW (1998).*
- *Another 118, 000 MW of hydropower, twice the amount currently in operation, could technically be developed.*

Other web sites that provide more information on Small Hydro are:

<http://www.retscreen.net/ang/centre.php>

<http://www.energyalternatives.ca/SystemDesign/hydro1.html>

The following is a direct quote from the above web site:

*Our experience with micro hydro systems has demonstrated that water power will produce between 10 and 100 times more power than photovoltaic (PV) or wind for the same capital investment. One should not consider other options unless there is simply no stream available within two kilometres.*

For more information on several types of turbine generators, see this web site:

<http://www.elements.nb.ca/Theme/energy/micro/micro.htm>