Introduction

The Coalition (CEWF) is aware of several examples of unique challenges facing individual Reservoir and Flow-Through (RAFT) lakes that cause significant hardship in terms of habitat, water access or safe navigation. We believe that it is time for the Trent Severn Waterway (TSW) to reflect the most serious of these challenges in a revised water management model.

As a first step we believe that efforts should be made to **conserve water** so as to protect the environment and **reduce the magnitude of water level fluctuations**.

As part of this process we believe it would be appropriate for the TSW to:

- review **the 'extent' of the drawdown** and the **winter-set levels** on each lake;
- review the **timing of the draw-down**, especially in 'wet years'; and
- be prepared to make allowances for lake-specific navigation and access issues if these can be clearly established by the appropriate lake communities.

CEWF is promoting the concept of a lake-specific *"Preferred Water Level Range"* during the principal navigation season from mid-May to mid-September.

CEWF believes that the identification of preferred water level ranges will help the TSW understand the impact of their operations on local waterfront property owners. It is understood that significant operational changes in water management may require simulation studies by TSW to ensure that the overall impact of any changes will provide a net benefit to the overall system and its stakeholders.

The current 'equal percentage draw-down' approach used by the TSW would remain the underlying water management operating principle but with some enhancements. For example, in early spring it might be appropriate initially to have a linear drawdown on all lakes in order to achieve the upper limit of the preferred range as evenly and as quickly as possible in order to minimize shoreline erosion.

In **wet years** the subsequent drawdown would be designed to **take only the water needed** for TSW to meet its mandate, to provide adequate flows through the flow-through lakes, and to protect the RAFT lakes from shoreline flooding and erosion.

In **dry years** the drawdown would be designed to incorporate appropriate **conservation measures throughout the system** while maintaining adequate flows for the TSW to meet its mandate and to protect public health.

Principles

CEWF agrees that any changes to the water management model should be guided by the following principles:

- acceptance of the need for integrated water management at the watershed level;
- a focus on water conservation and protection of fish and wildlife habitat;
- respect for the legislated mandate of the TSW;
- flood control including protection of shorelines from erosion;
- adequate water flows to sustain water quality;
- safe navigation and access to waterfront property on all navigable watercourses including the reservoir, flow-through and canal lakes by seeking to maintain the historic navigation water levels established over the past 20 years; and
- an equitable approach whereby all stakeholders are required to share the burden of constraints on the system.

Proposed Process for Implementing Change

1. Engage individual CEWF Member lake associations to identify lake-specific water level issues and preferred water level ranges;
2. Transmit this information to the TSW in order to provide them with a better understanding of the impact of their operations and guidance regarding changes that will enhance their water management practices;
3. Continue to consult with TSW and provide advice to the TSW Water Management Advisory Council with a view to continuous improvement of an integrated water management regime at the watershed level.

Considerations for individual Lake Associations

Recognizing that the current 'equal percentage draw-down' approach used by the TSW would remain an underlying water management operating principle, CEWF is asking individual Member Lake Associations to consider the following questions:

1. **Do you support the overall approach being taken by CEWF, especially as it relates to the water management principles outlined above?**
2. **For your lake(s) are there are specific navigation and/or access issues that can be documented and which could be used to characterize an upper and a lower limit of 'preferred water levels' during the navigation season and which you believe need to be brought to the attention of the TSW?**

CEWF would like to hear from all Member Lake Associations regarding these two questions. A general summary of some of the negative impacts of fluctuating water levels and flow rates is attached.

For question #2 lake-specific information is required that documents measurable criteria and supports defined upper and lower "preferred water levels" during the navigation season from mid-May to mid-September.

A 'preliminary draft for discussion' for Kennisis Lake is attached.

The Impact of Fluctuating Water Levels & Flow Rates

The following table identifies some of the negative impacts when water levels or flow rates fluctuate, and especially when they fall outside the normal seasonal range.

CEWF's conclusion is that a water management approach that embraces water conservation and minimizing water level fluctuations is to be encouraged.

Water Levels "too high"

- Low-lying cottages flooded
- Shoreline erosion greatly increased
- Ice damage more likely
- Wetlands swamped – nests flooded, habitat degraded
- Clearance at bridges reduced
- Unmarked navigational hazards hidden
- Difficult to install and access certain styles of dock

Water Levels "too low"

- Access to 'water access' properties restricted
- Inability to navigate between some lakes due to low water
- Inability to remove boats from boat lifts
- Inability to trailer boats at boat launches
- Water intake lines prone to freezing and/or 'suck air' – especially in areas with shallow shorelines
- Unmarked navigational hazards created
- Wetlands dry out
- Damage to exposed shoreline, especially on shallow lakes, leading to barren zone between high and low water marks

Flow rates "too high"

- Boating becomes unsafe
- Shoreline erosion increases
- Inability to navigate between lakes

Flow rates "too low"

- River and flow through lake depths decrease and navigation becomes difficult
- Shorelines on shallow and flow-through lakes become exposed
- Access to water and to 'water access' properties restricted
- Fish habitat is degraded e.g. for spring-spawning pickerel
- Stagnant water and algae blooms can occur
- Water quality degrades

Lake Levels rising in June (after normal seasonal high)

- Loon nest become inundated
- Wetland habitat degraded in prime breeding season for aquatic wildlife

Lake Levels falling in October

- Trout spawning beds can dry out (applies to shallow- spawning trout lakes)

PRELIMINARY DRAFT FOR CONSULTATION

Kennisis Lakes – Preferred Water Levels

Key lake and Dam statistics:

Drainage area: ..... 174 sq. km.
Lake area: ..... 1641 ha.
Full control level of dam: ..... 2.90 m
Target Full Level %:..... 98%
Sill or Deduction: ..... 0 m
Maximum storage depth:..... 2.838 m
Maximum storage volume:..... 4,657 ha-m
Log number & dimension:..... 9 @ 0.305 metres plus one metal 'half-log' 0.15m
Normal winter-set:..... 3 logs left in (0.9 m)
Water Level Fluctuation:..... Effectively 1.98 m

Most significant Impacts of fluctuating Water Levels:

Water Levels "too high"

- Low-lying cottages flooded
- Shoreline erosion greatly increased
- Ice damage more likely
- Clearance at bridges reduced

Water Levels "too low"

- Access to 'water access' properties restricted
- Inability to navigate between lakes due to low water
- Inability to trailer boats at boat launches
- Water intakes lines prone to freezing in areas with shallow shorelines
- Unmarked navigational hazards created
- Wetlands dry out

Lake Levels rising in June (after normal seasonal high)

- Wetland habitat degraded in prime breeding season for aquatic wildlife

Lake Levels falling in October

- Shallow Trout spawning beds would dry out (known beds are deep on Kennisis)

Upper preferred water level limit

To minimize shoreline erosion and local flooding of low-lying cottages an upper preferred water level limit of 2.8 metres above the sill plate is proposed.

Lower preferred limit of water level

Navigational hazards and challenges increase significantly when the water level of the lake drops below 1.6 metres and become severe at 1.2 metres above the sill plate.

KLCOA thus supports a preferred water level range of 1.6 – 2.8 metres during the navigation season (or between 5 and 9 logs).

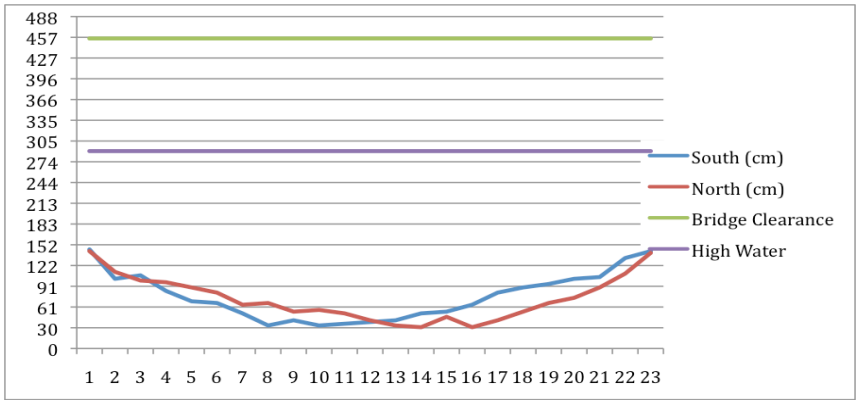
Winter-set Level

KLCOA understand that the traditional winter-set level at the Kennisis dam is 0.9 m (3 logs in). To achieve this level before mid-October trout spawning season typically requires the lake to be drawn down below the lower preferred water level limit during the navigation season. A review of the winter-set level may therefore be appropriate.

Worked example: Navigation under the Bridge between Big and Little Kennisis Lakes
Of the 1047 waterfront properties on the Kennisis lakes, 286 are located on Little Kennisis Lake. Navigation between the only marina on the lake and Little Kennisis Lake requires passage under a road bridge. The channel is shallow and there is limited clearance under the bridge. If the water level is too high, some boats do not have sufficient clearance. If the water level is too low there is inadequate draft.

An analysis of the channel profile plus an evaluation of boat characteristics has been conducted. The following is a summary of the findings:

- the bottom of the centre of the channel is 0.3 m above the sill plate
- the channel profile is a regular 'shallow-saucer' shape
- assuming the navigational channel occupies 60% of the overall width of the channel there are high-spots that are 0.8 m above the sill plate.
- The underside of the bridge roadbed is 4.6 m above the sill plate
- Most boats could pass under the bridge if there was a minimum clearance of 1.8 m
- There is thus sufficient clearance at a water level of 2.8 m (close to TSW's full condition)
- Most boats require a draft of less than 0.8 m
- There should therefore be sufficient draft if the water level is greater than 1.6 m
- This allows TSW an operating range during navigation season of 1.2 m (1.6 to 2.8 m or between 5 & 9 logs in).



An environmentally acceptable approach to dredging the channel to remove 'erratic' rocks would be desirable and would allow for greater fluctuation in water level without impacting navigation.

Paddy's Bay Bridge
A second bridge providing access from the main lake to Paddy's bay has been profiled as well. Although the channel is about 1.0 m above the sill plate and the underside of the roadbed is 4.2 m above the sill plate, it is typically smaller boats that use this channel. No additional water level constraints are therefore deemed essential. Although dredging of the channel would certainly improve access.