

The Coalition for Equitable Water Flow, the Trent Severn Waterway and Crystal Lake

Presentation to Crystal Lake Cottagers' Association

June 7, 2015

Ted Spence – Catchacoma Lake, CEWF Chair

cewf.ca

Presentation Overview



Coalition for
Equitable
Water Flow

- What is CEWF?
- Overview of TSW
- Recent Crystal Lake water level management
- Preferred Water Levels (PWL) initiative of CEWF
- What are CEWF's Priorities for 2015?
- How can CEWF work more effectively with the CLCA ?

What is the Coalition for Equitable Water Flow (CEWF)?



Coalition for
Equitable
Water Flow

- The Coalition is a Volunteer Organization
- Formed in 2006 to input to **Panel on the Future of the Trent Severn Waterway** in 2007
- Represents interests of 35,000+ shoreline property owners in “Haliburton Sector” of Trent watershed with regard to water management issues
- Includes “Reservoir” and “Flow-Through” (RaFT) lakes and our 32 Member Lake Associations represent over 90% of the TSW’s reservoir lake storage capacity
- Sub-watersheds included:
 - Gull, Burnt & Mississagua rivers plus Nogies, Eels & Jacks creeks
- Crystal Lake is a member of CEWF

Member Lake Associations

Represents 90% of Reservoir Capacity: 6% no known LA



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- Anstruther
- Big Bob (South)
- Canning
- Cavendish Ratepayers (Mississagua, Catchacoma et al)
- Crystal
- Drag & Spruce
- Eels
- Esson
- Fortescue
- Glamor
- Gull
- Haliburton
- Halls & Hawk (Big and Little)
- Horseshoe
- Jack's
- Kashagawigamog
- Kennisis
- Koshlong
- Kushog
- Little Glamor
- Loon
- Maple/Beech/Cameron
- Miskwabi
- Moore
- Mountain
- Percy
- Redstone
- Salerno/Devil's
- Soyers
- Twelve Mile/Little Boshkung
- White

CEWF Objectives



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- To promote an **Integrated Approach to Water Management at the Watershed Level** that will improve water conservation while recognizing the environmental, public safety, social and socioeconomic constraints of managing the water resource.
- To maintain **dialogue with TSW management** to ensure improved understanding of local issues and management of water levels and flows in the RaFT lakes (includes Preferred Water Levels project).
- To promote **shared information and understanding** of water management issues and practices watershed wide across the Canal lakes, and the RaFT lakes.
- To promote approaches to ensure safe navigation, access to waterfront property, economic sustainability and the avoidance of negative environmental and economic impacts for residents on the RaFT lakes.

The Trent-Severn Waterway Watershed

Legend

- Navigation Channel
- Georgian Bay Islands National Park
- Developed Area
- Wooded Area



Reminder of a Few Facts about the TSW Today



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- Waterway Stretches 386 kms from Georgian Bay to Lake Ontario and includes 45 locks from #1 Trenton to #45 Port Severn
- Flows west to Lake Simcoe and on to Georgian Bay, and Southeast to Lake Ontario with the divide in the area of Kirkfield just west of Balsam Lake
- Eastern section includes the Kawartha Lakes and the Trent River system as well as 41 Reservoirs and more than 20 Flow-Through lakes (RAFT Lakes)

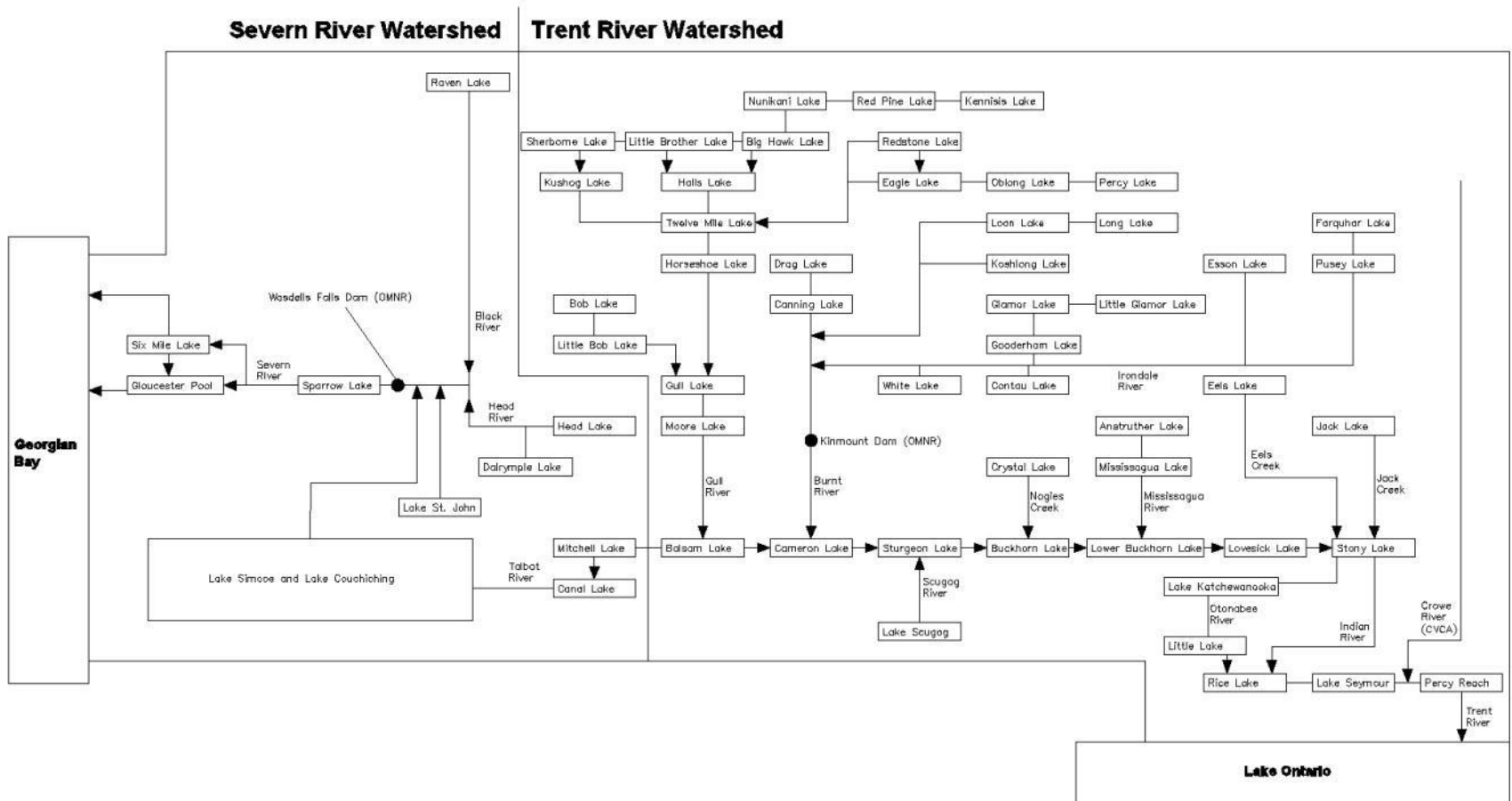
Reservoir & Flow-Through (RAFT) Lakes



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- In the “Haliburton Sector” (Haliburton County and Northern Peterborough County) there are 35 reservoirs - 17 in the Gull River system outlet to Balsam Lake, 13 in the Burnt River System outlet to Cameron Lake, and 5 in the central area including the Mississagua chain of lakes, Anstruther , Eels, Jack’s and Crystal lakes. There are also 6 reservoirs in the Crowe River basin.
- The reservoir systems are very complex to manage with seasonal water level changes of up to more than 10 feet (3.4 m) combined with severe flow constraints at some points (eg Minden)
- There are also challenges to maintaining navigable water levels on connecting rivers and flow-through lakes in the reservoir area (e.g. Shadow, Mountain, Maple) .

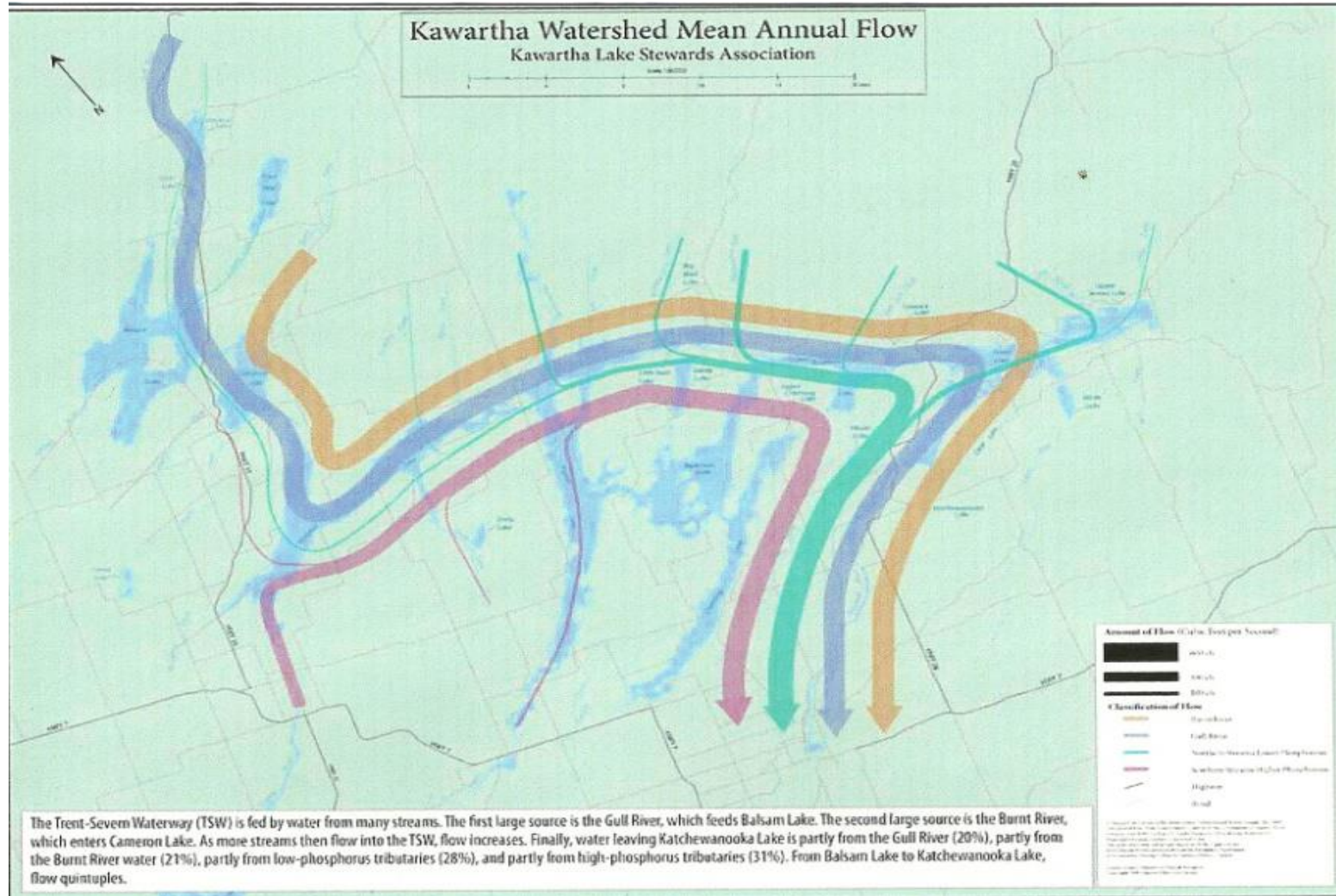
Trent-Severn Waterway, Water Management Program - Flow Chart



Kawartha Lakes Annual Flow

(20% Gull R, 21% Burnt R, 28% Central Reservoirs, and 31% from the South)

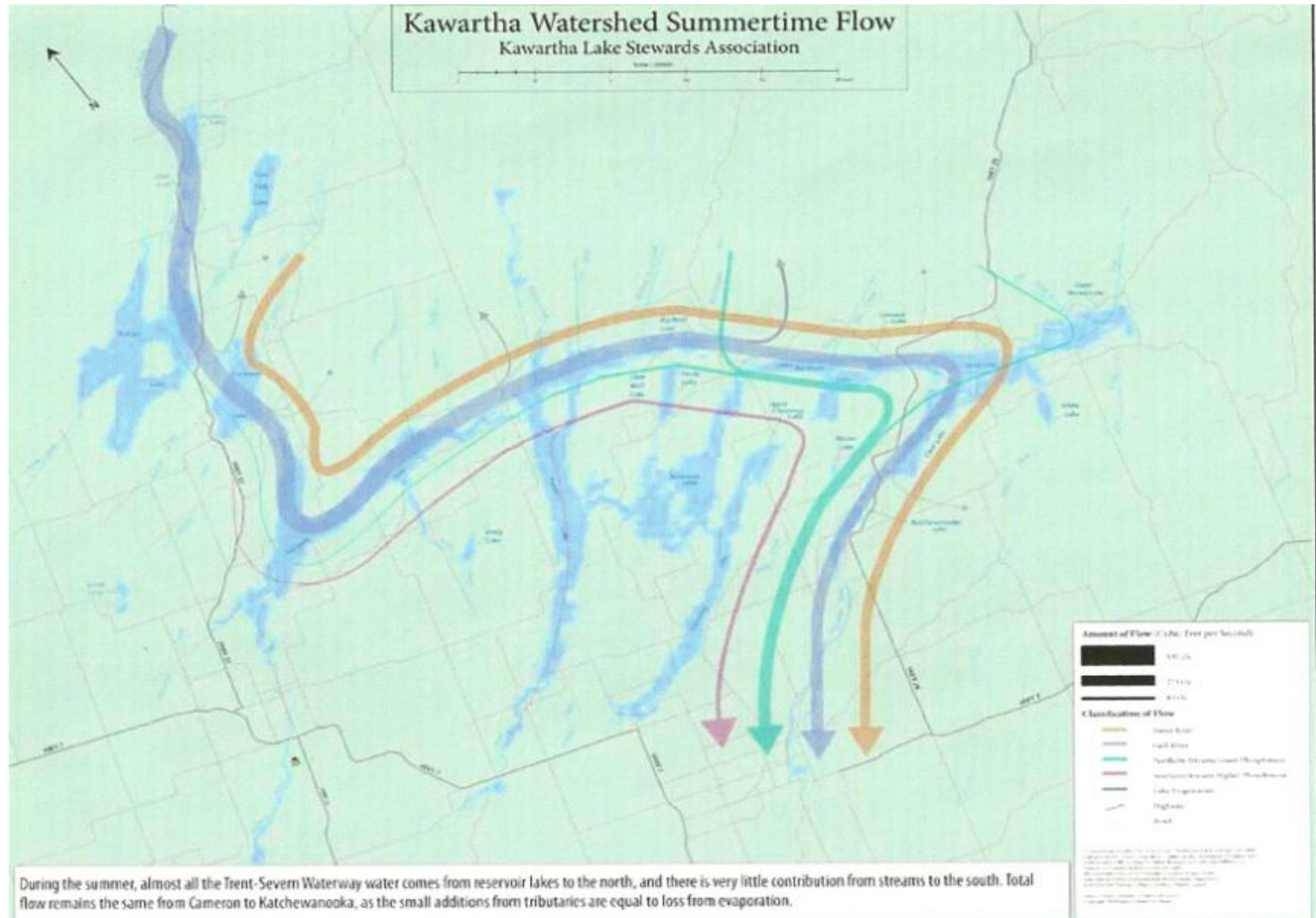
Source KLSA 2009



Kawartha Lakes Summertime Flow

Over 90% of Summer Flow is from the Reservoirs

Source KLSA 2009



Key Water-Flow & -Level Constraints



- **TSW priorities public safety** (flood management and water supply) and canal navigation;
- **Minimum flow at Peterborough** for water supply and sewage treatment;
- Maintaining the **Canal Regulations draught limits** is understood to govern the drawdown from the reservoirs;
- It is also understood that **leakage** through dam #1 in Trenton exceeds all other constraints for extended periods.
- **MNR Fisheries constraints** in spring (walleye) and fall (lake trout) based on limited data for many lakes;
- **The reservoirs are not a flood control system** particularly in late spring!

Statistics for the Largest Reservoirs

Reservoir	Storage Vol ha-m	Rank by Storage Volume	Max Storage Depth m	Rank by Storage Depth	Drainage Area sq km	Lake Surface Area ha	Ratio of Drainage Area to lake Surface Area
Mississagua	5021	1	2.44	5	218	2061	10.58
Kennisis	4657	2	2.9	4	174	1641	10.60
Redstone	4121	3	2.9	3	169	1422	11.88
Eels	2983	4	3.66	2	104	815	12.76
Hawk	2748	5	4.04	1	62.5	842	7.42
Oblong	2169	6	1.98	8	77	1094	7.04
Jack	2008	7	1.60	11	83	1296	6.40
Drag	1919	8	1.83	10	121	1102	10.98
Kushog	1722	9	1.98	9	111	915	12.13
Twelve Mile	1666	10	1.52	12	29	1161	2.50
Anstruther	1422	11	2.29	6	93	621	14.98
Canning	1287	12	1.07	13	168	1274	13.19
Crystal	956	14	2.13	7	50	449	11.14

Statistics for the Largest Reservoirs

Reservoir	Number of Logs in Operating Spillway	Max Storage Depth m	Rank by Storage Depth	Winter Set Number of Logs	Number of Operating Logs	Rank by # Operating Logs
Mississagua	8	2.44	5	2	6	6t
Kennisis	9.5	2.838	4	3	6.5	4t
Redstone	12	2.898	3	4	8	2t
Eels	12	3.66	2	4	8	2t
Hawk	14.5	4.039	1	5	9.5	1
Oblong	10	1.983	7	4	6	6t
Jack	6.5	1.549	10	2	4.5	9
Drag	7.5	1.741	9	5	2.5	12
Kushog	10.5	1.882	8	4	6.5	4t
Twelve Mile	6.5	1.523	11	3	3.5	10
Anstruther	7.5	2.29	6	2.5	5	8
Canning	5	1.01	12	2	3	11
Crystal	6	2.13	14	3	6	6t

Possible Impacts of Climate Changes on TSW Water Management For 30 Year Period 2041-2070

- **Spring freshet: Peaking 17 days earlier**
May require addition of stop-logs earlier during winter months, or modification of winter stop-log settings
- **Summer through fall runoff volume reduction of ~7 %**
May lead to difficulties feeding the waterway with current reservoir lakes storage capacities
- **More frequent extreme events**

Recent Water Level History: No Two Years the Same!

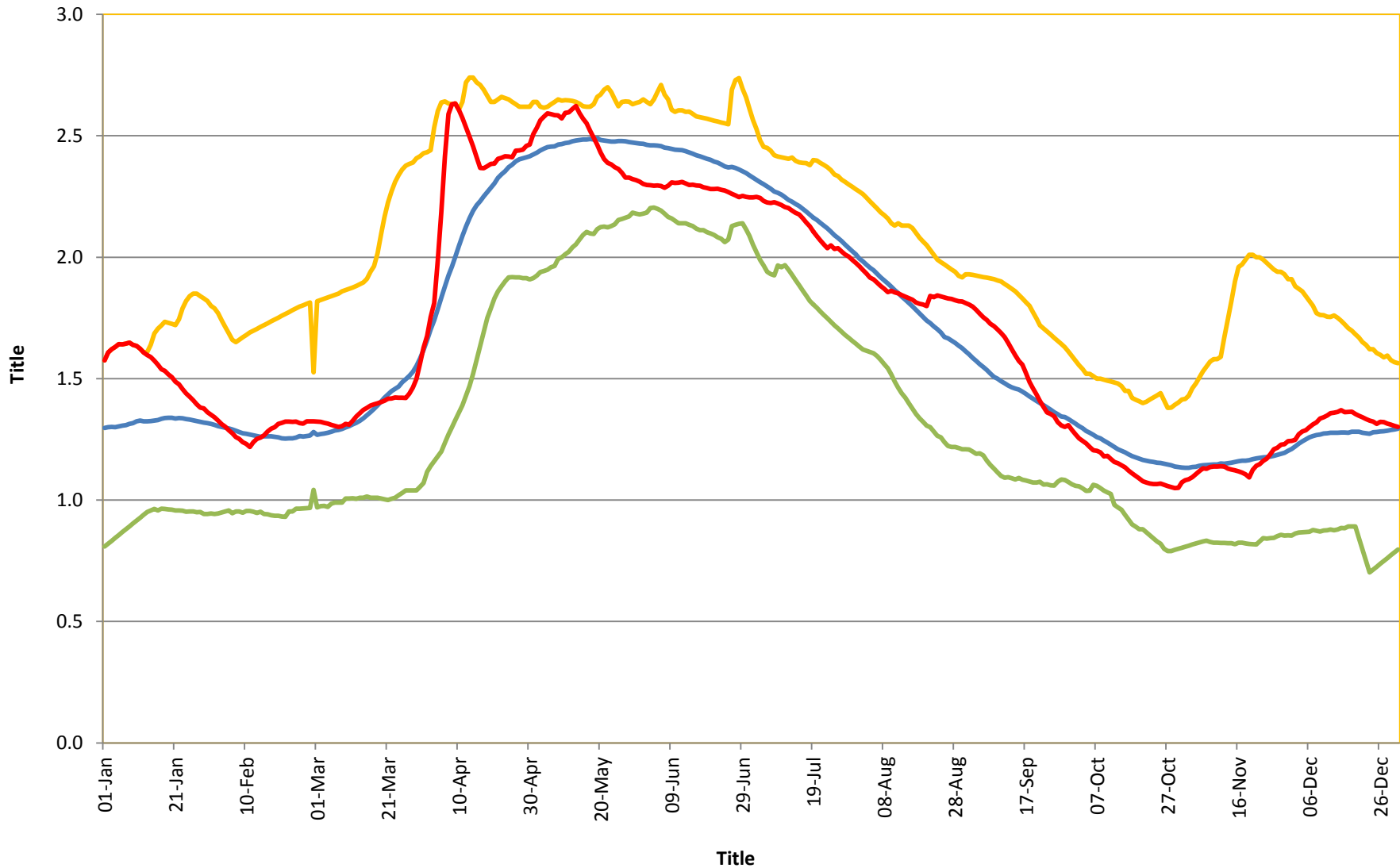


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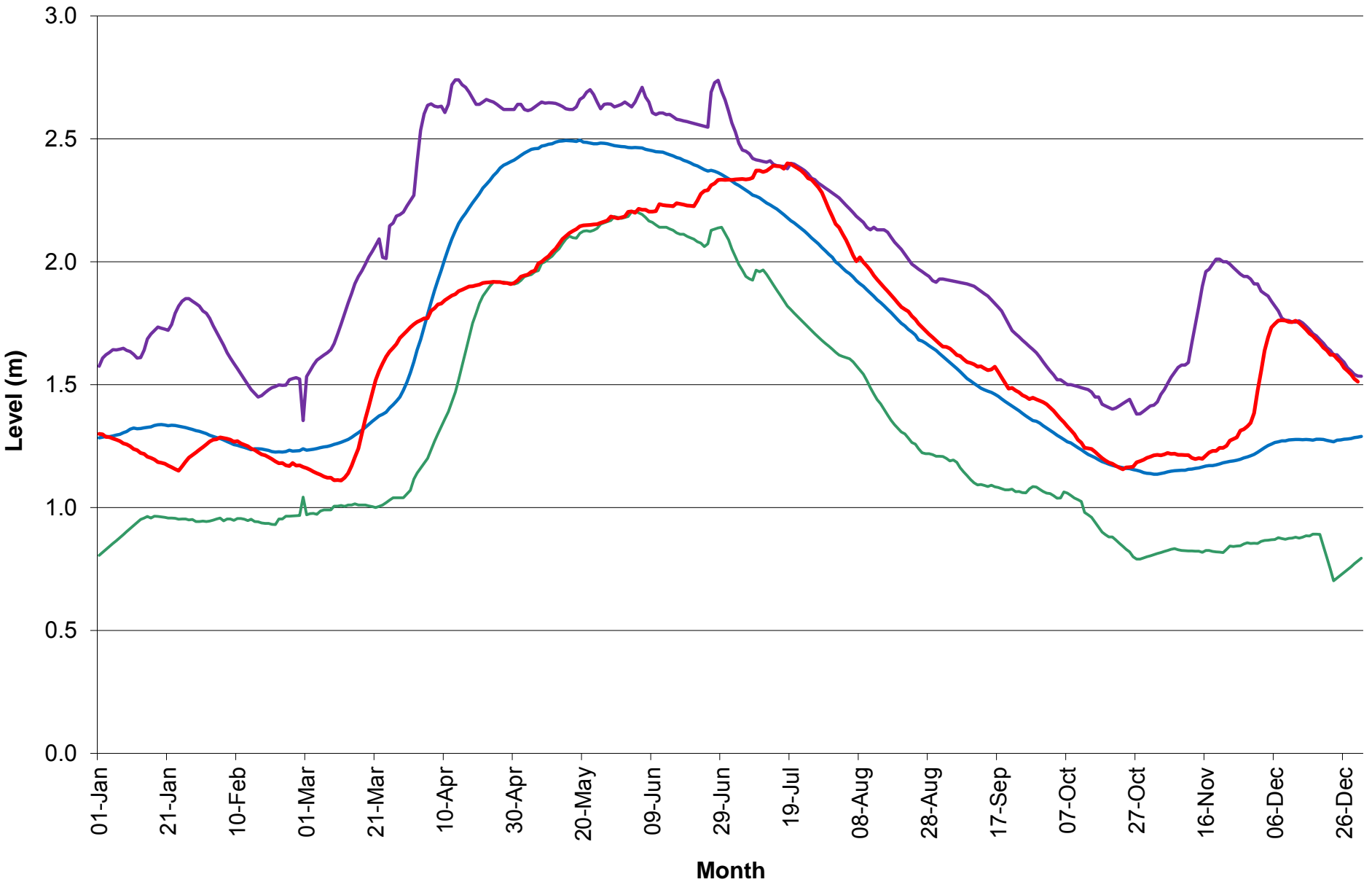
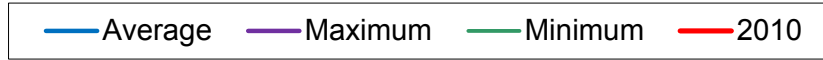
- 2009 - normal year except for very high water as ice went out causing shoreline and crib damage
- 2010 - very little spring runoff and reservoirs did not fill until late July or early Aug.
- 2012 - much lower than average water levels beginning at end of June
- 2013 very high spring levels and flooding and seasonally very high November/December levels resulted from extreme rainfall events.
- **2014 late ice out, high water in May followed by extreme rain in late June and above average levels throughout summer and into fall - issues with shoreline damage, loon nests and lake trout spawning.**
- **2015 very low levels in February with extreme cold and light snowpack followed by dry spring and very slow filling of southern reservoirs.**

Mississagua Lake Levels 2009

Average Maximum Minimum 2009

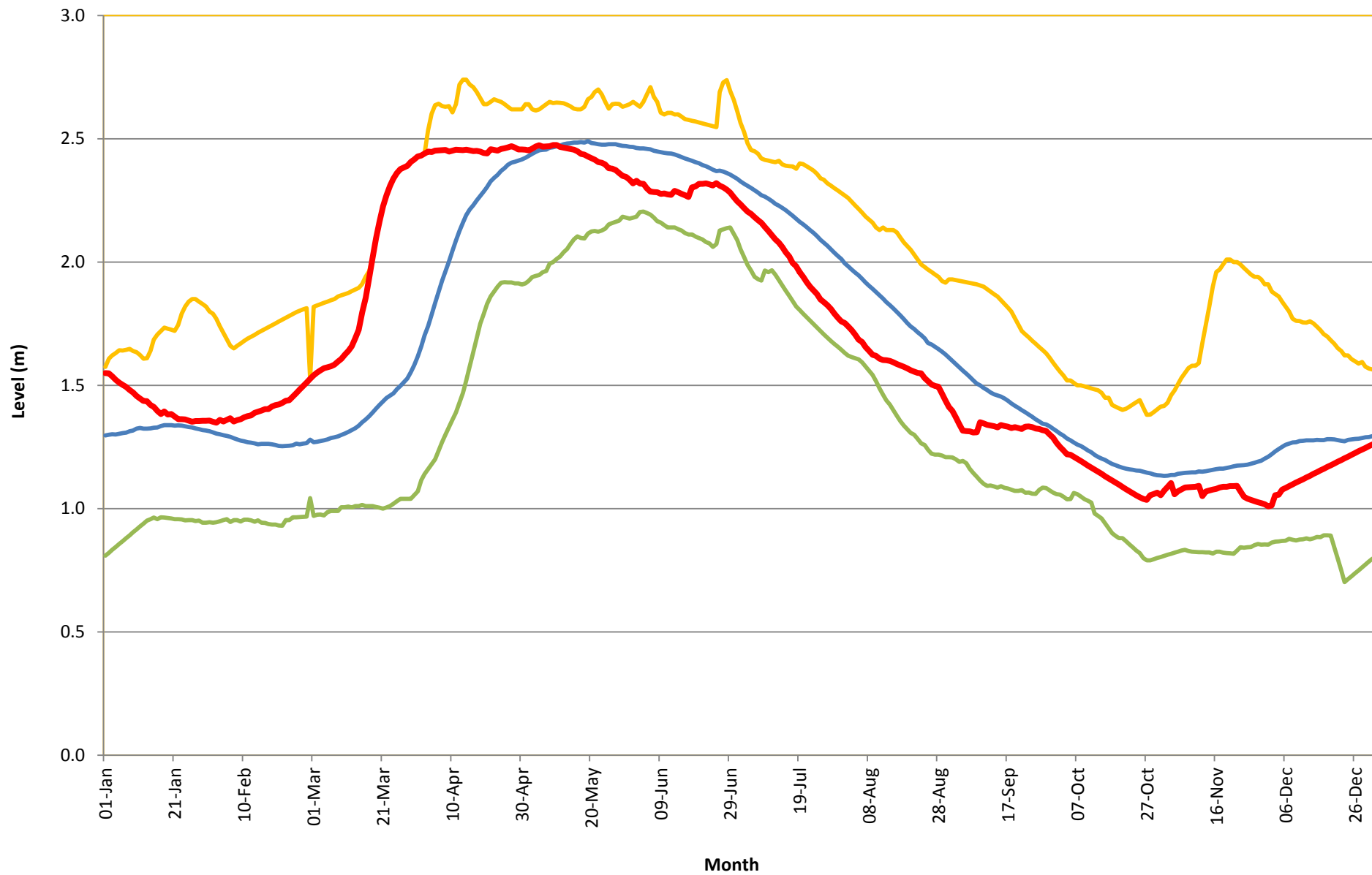


Mississauga Lake Levels



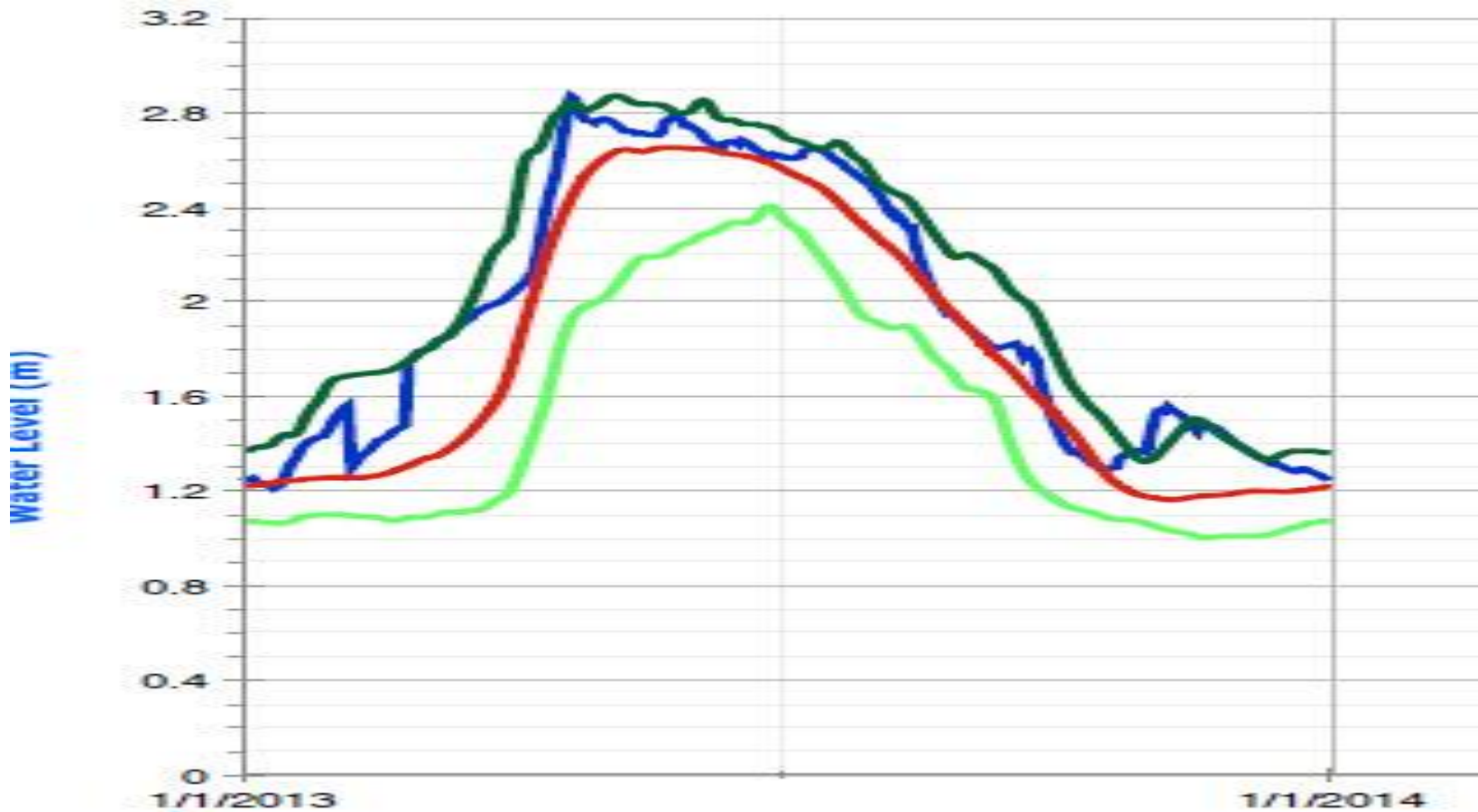
Mississauga Lake Levels 2012

Average Maximum Minimum 2012



Crystal Lake Water Levels 2013

Average — Maximum — Minimum — 2013 —

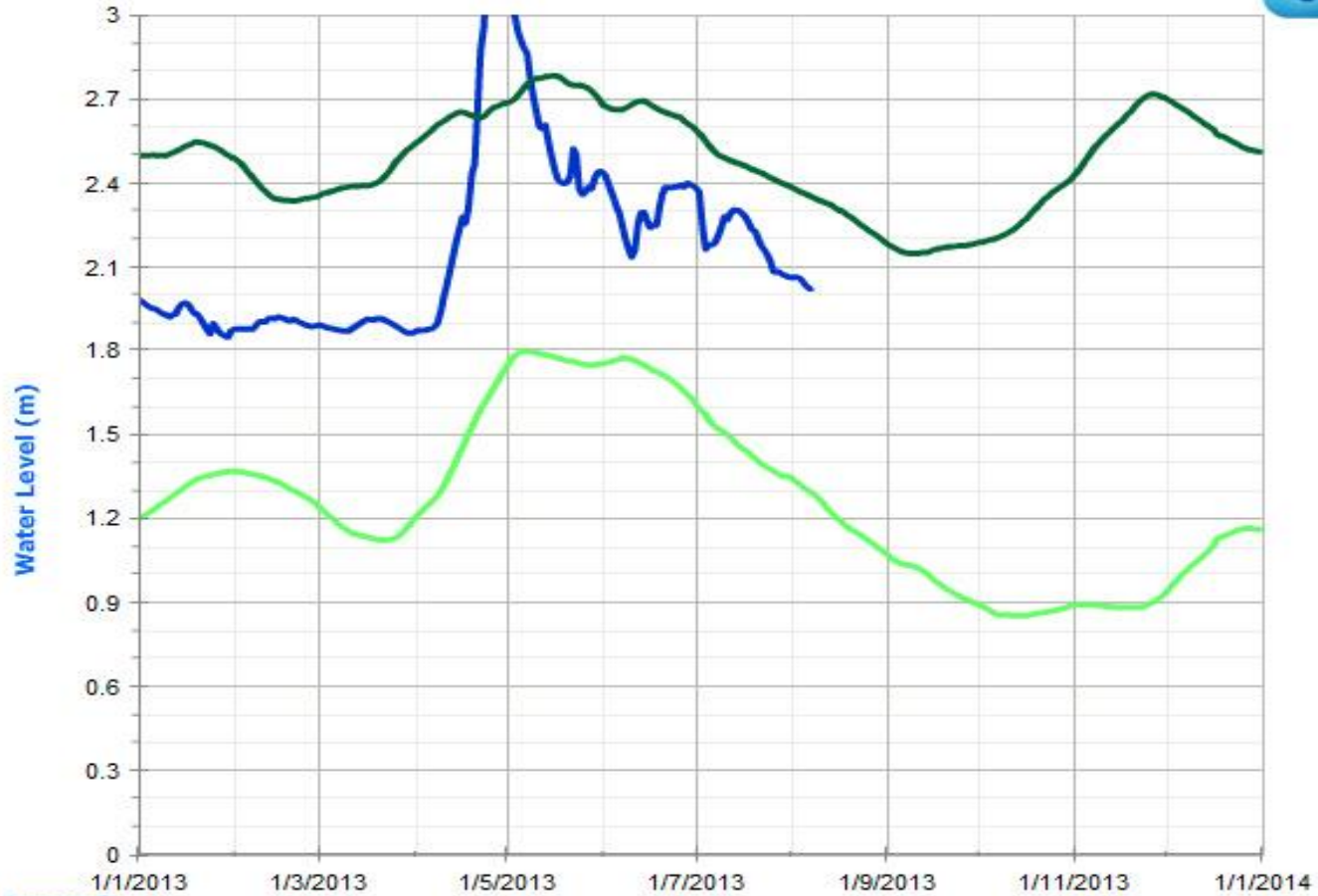


Minden Flooding April 2013



2013

Horseshoe Lake (Mountain Lake) Water Levels



Legend:

	Historic High Water Levels		Daily Water Levels
	Minimum Water Levels		

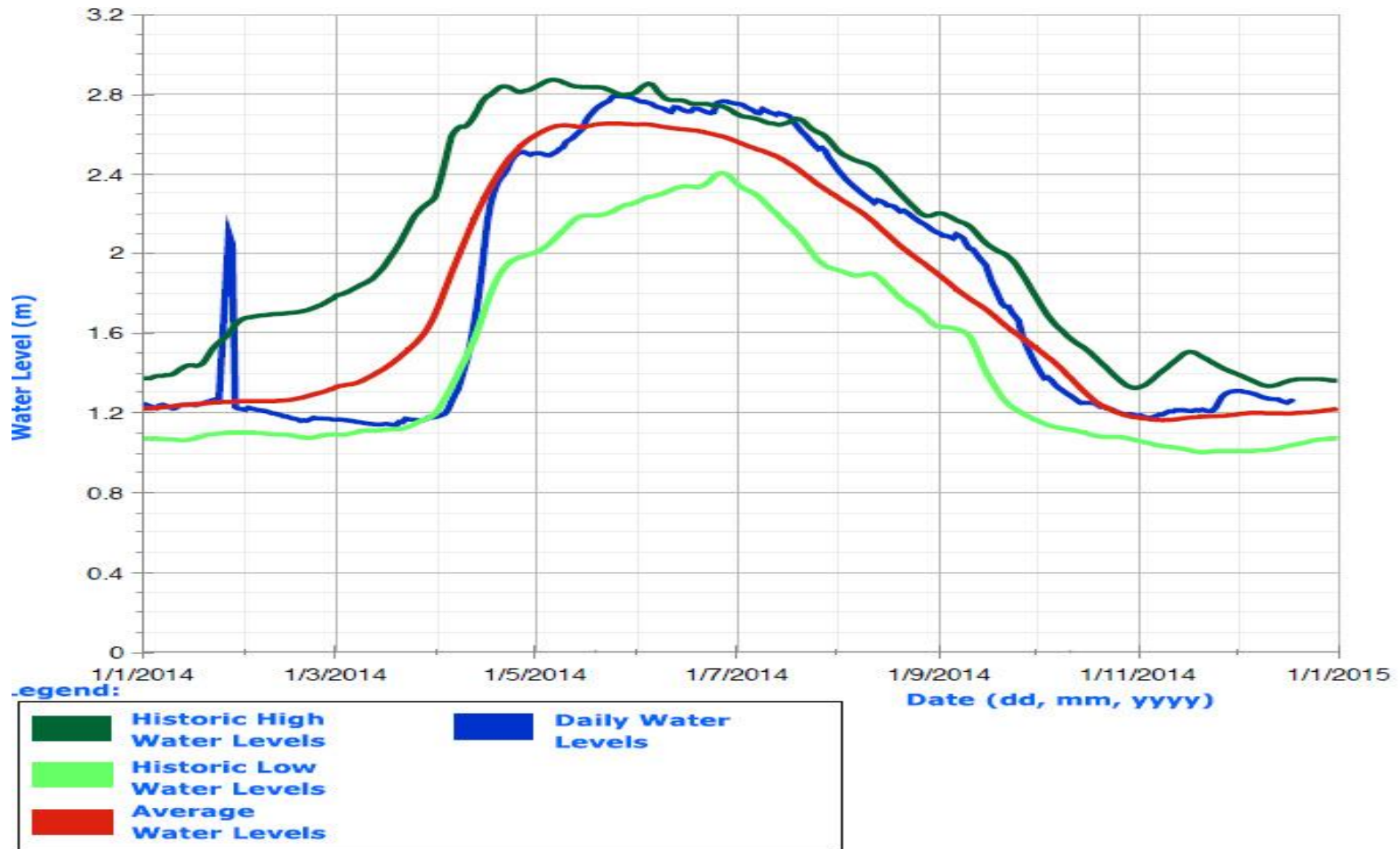
Date (dd, mm, yyyy)

[Check other water levels](#)

Horseshoe Lake April 2013



Crystal Lake Levels 2014



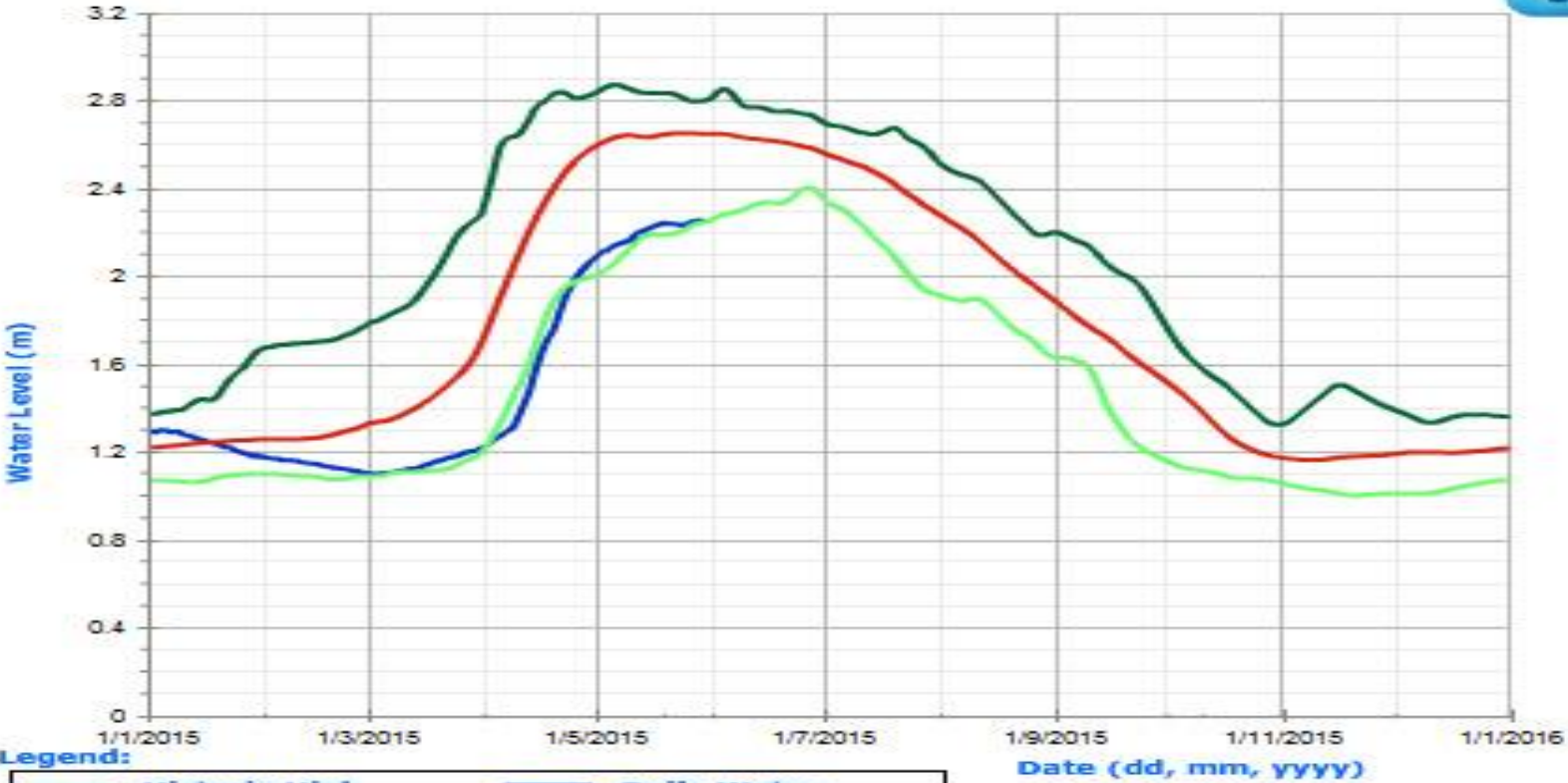
2014 – Water Levels







- Very heavy snowpack in southern reservoir area in Winter 2014,
 - rapid runoff in April,
 - logs removed to avoid flooding with ice,
 - dry May and slow filling through May and June.
- A wet summer
 - Northern reservoirs full by end of May ... but water levels continued to rise on several lakes through June putting Loon breeding at risk
 - June was extraordinarily wet in Haliburton: 241mm compared to average of 81 mm; June 30th had a single day with 77 mm – flooding.
 - Many lakes remained at above average levels through July & August
- Drawdown delayed by about a month
- Wet fall resulted in late minimum levels on many lakes possibly impacting trout spawn.

Crystal Lake Water Levels 2015

June 2, 2015 35 cms below normal



Legend:

	Historic High Water Levels		Daily Water Levels
	Historic Low Water Levels		
	Average Water Levels		

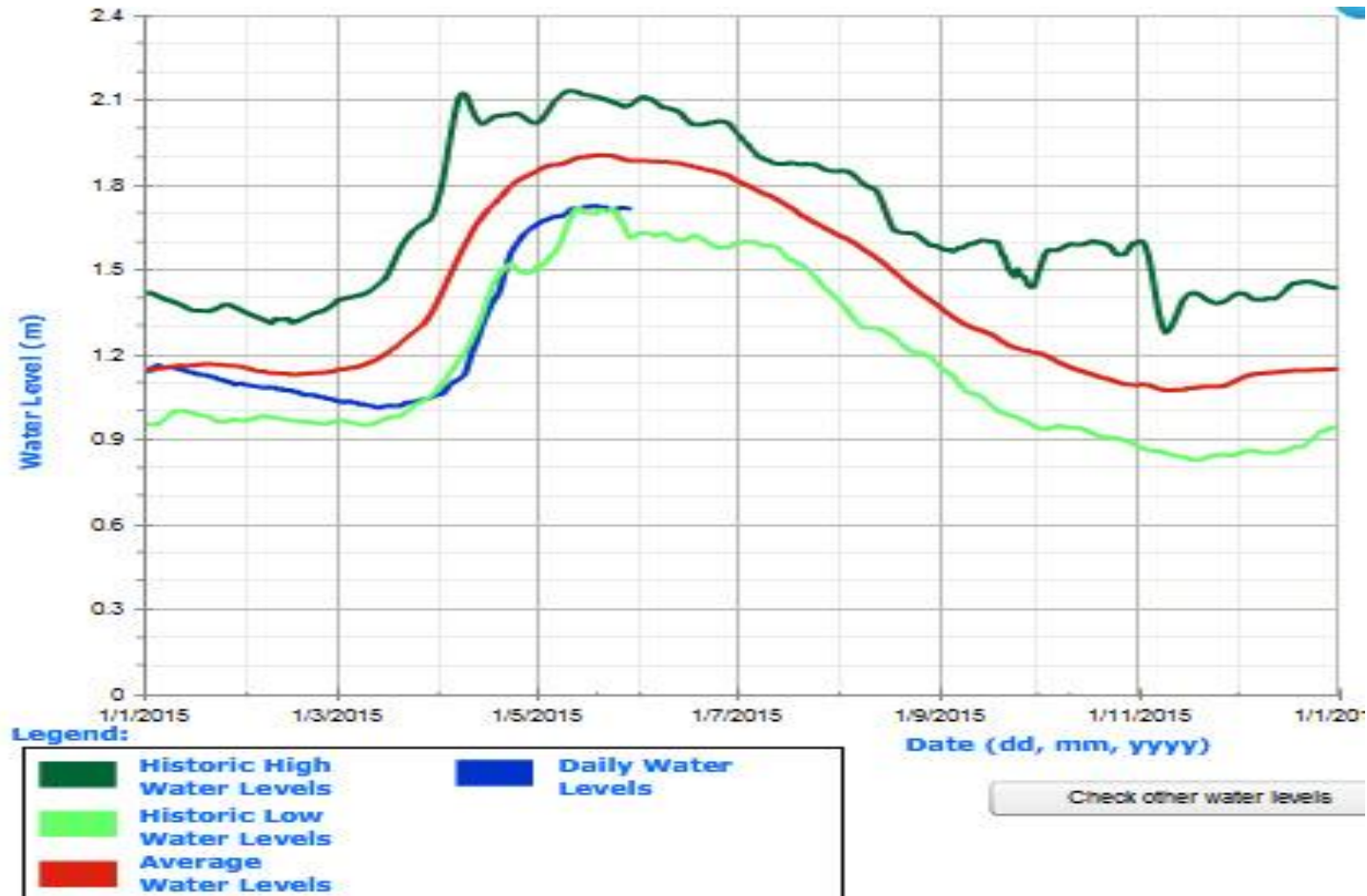
[Check other water levels](#)

Weather Spring 2015

- **Winter snowpack** was low in water content throughout the reservoir areas.
- **Extreme cold** and no winter melt led to record low lake levels in many reservoirs in February and March.
- **Haliburton spring rainfall - near normal**
 - April near normal 73mm vs 76 mm normal
 - May 64 mm vs 81 mm normal
- **Peterborough rainfall- very dry except for extreme local events**
 - April very dry except for 40 mm on one day the 20th , total for month 72 mm vs normal of 68 mm.
 - May very dry except for 35 mm on 30th and 31st, total 52 mm vs normal of 68 mm.
- **Southern reservoirs** way behind Northern reservoirs in filling.

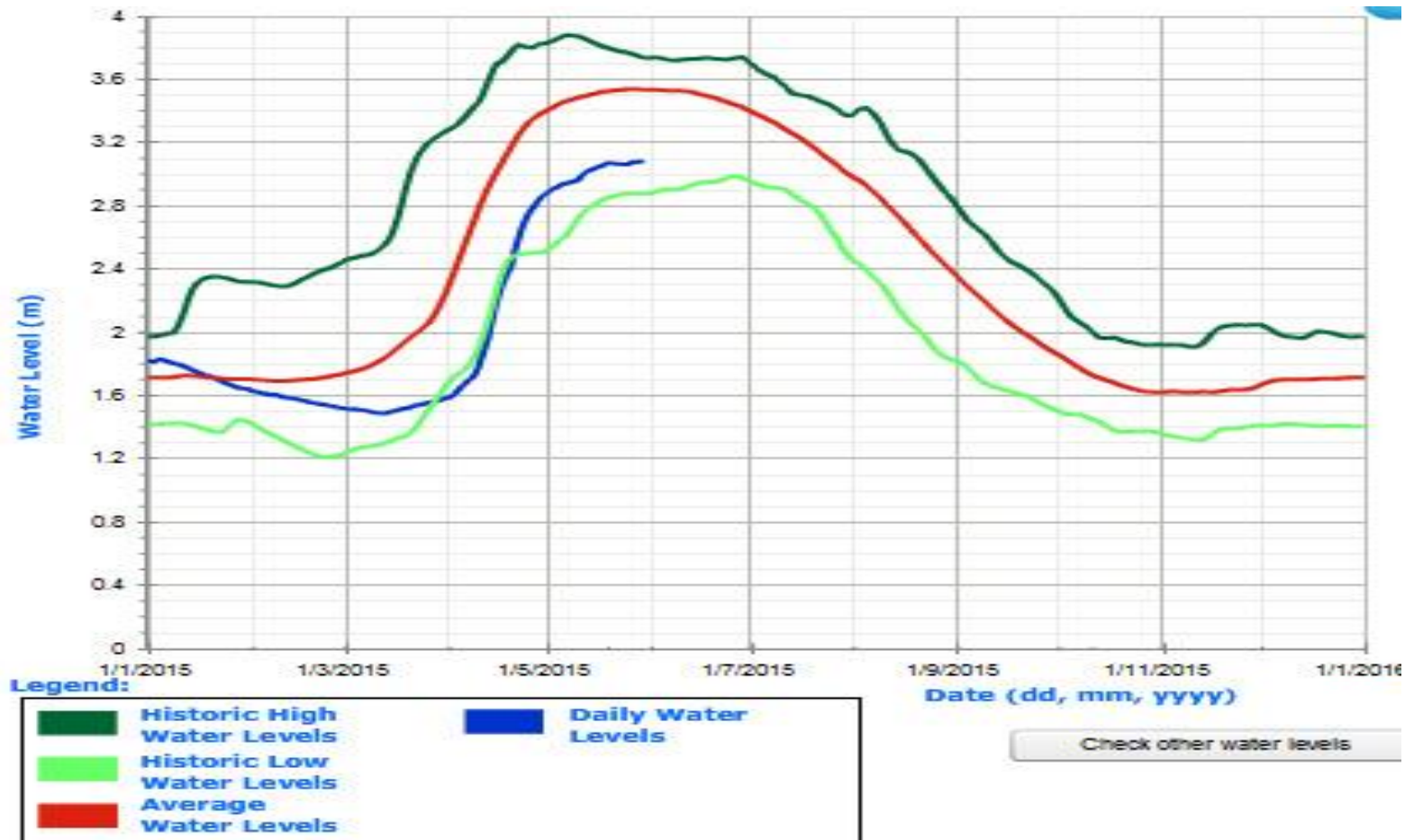
Jack's Lake Levels 2015

June 2, 2015 20 cms below normal



Eels Lake Levels 2015

June 2, 2015 40 cms below normal



Preferred Water Level Studies



The Coalition is promoting the concept of a lake-specific **“Preferred Water Level Range” (PWL)** during the principal navigation season from mid-May to mid-September based on constraint data that are unique to each lake - as provided for in the AECOM Study.

- **12 of 35 CEWF Reservoirs now have a PWL document.**
- CEWF believes that the identification PWL ranges will help the TSW understand the impact of their operations on local waterfront property owners on the reservoir lakes
- The current ‘equal percentage draw-down’ approach used by the TSW would remain the underlying water management operating principle at the start of the season in most cases.
- Impact of PWL is likely to be in wet years with no water shortages.

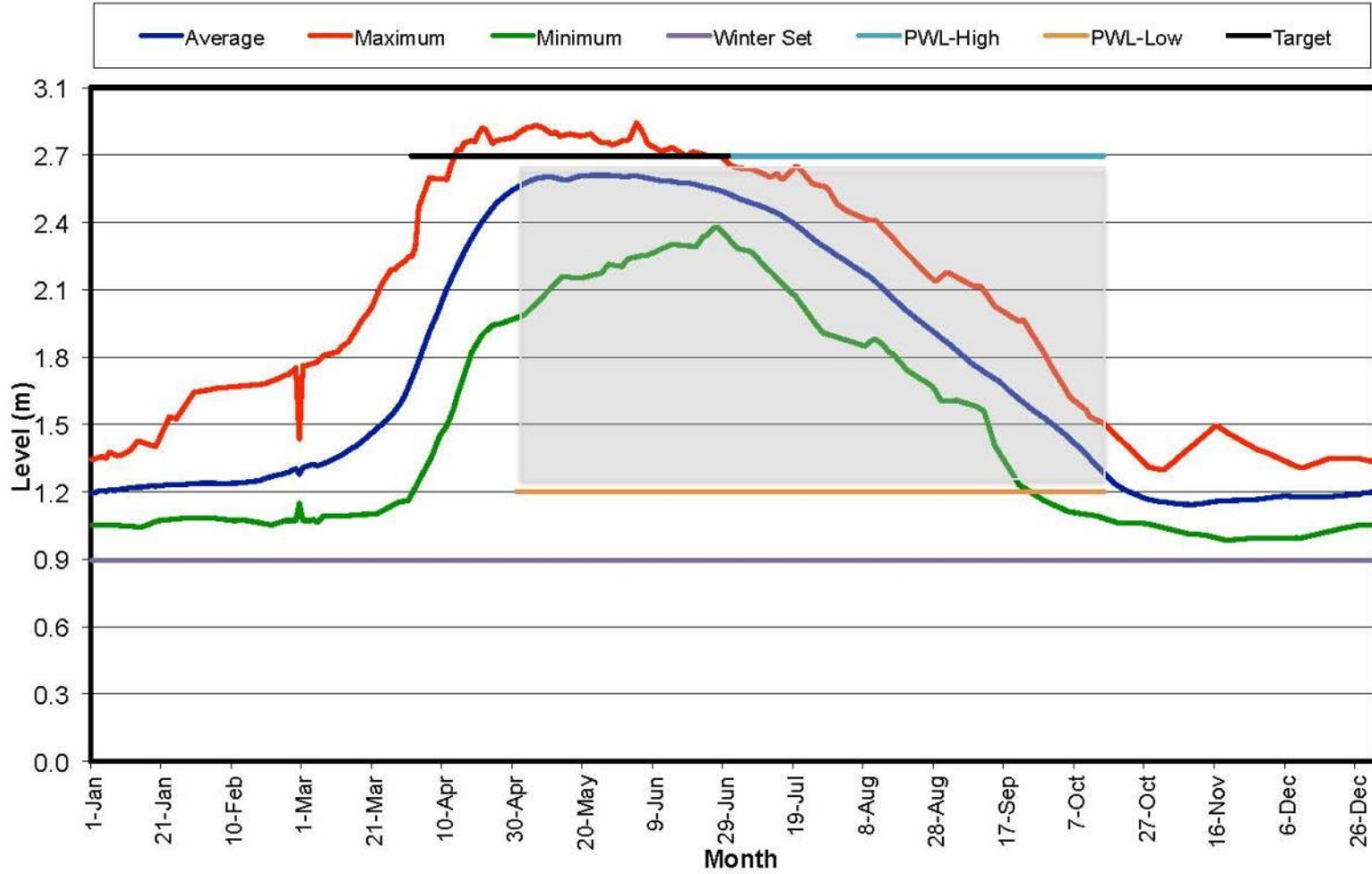
Status of PWL Project and TSW



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- TSW acknowledges they do not have good impact data for most reservoir lakes. What happens when lake goes too high or too low?
- PWL can not reduce total storage available when all reservoirs are full.
- PWL should not override fisheries constraints on trout lakes in fall.
- But TSW has responded to CEWF interventions in past when action does not conflict with Canal needs.
- TSW has referred this initiative to the WMAC but WMAC inactive now.

Crystal Lake Levels



Preferred Water Levels



- Twelve Reservoir Lakes have completed PWLs filed with the TSW
- Several Additional Lakes are 'in process' and will be forwarded to the TSW once complete
- To date PWL submissions have highlighted:
 - Spring multi-year average is generally acceptable as PWL – High
 - Any higher can result in flooding and erosion
 - For several lakes one additional log left in at winter-set would greatly ease fall navigation
 - Several lakes experience a significant 'dip' in the fall which the TSW may be able to reduce, especially in a wet year with a minor modification to equal percentage drawdown
 - Any alternative to the current E%DD will require modeling
 - Operations in a dry years remain a major challenge
 - Unique lake characteristics are an important factor in a constraint-based model

2015 – CEWF Priorities



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- **Continue advocating for an Integrated Approach to Water Management at the Watershed Level.**
- **Continue to work with TSW Management on behalf of the RaFT Lakes.**
- **Meet with new Municipal Councils in Haliburton and Northern Peterborough Counties.**
- **Continue to work closely with member lake associations to promote understanding of water management issues.**

2015 – CEWF and TSW Management



Coalition for
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- **CEWF will continue to work with TSW management** with a focus on:
 - **Greater understanding of RaFT lake issues** including preferred water levels, fisheries and other environmental constraints, winter set levels, and flood management issues and constraints.
 - Encouraging TSW to act on the recent AECOM Study recommendations with specific reference to the **acquisition of improved forecasting models.**
 - Encourage TSW to work with municipalities and Ontario to provide a **greater information base for effective water management in flood situations** with the objective of improving public safety and minimizing damage costs.
 - Encouraging TSW to reactivate the **TSW Water Management Advisory Council.**
 - Urging the public release of the results of the numerous **dam safety reviews** that have now been undertaken across the TSW system.
 - Ensuring opportunities for **public and municipal input on TSW capital project planning.**

2015 – CEWF and Municipalities and the Province



- **CEWF** intends to meet with the **new municipal councils in Haliburton and northern Peterborough Counties**
 - To expand understanding of the complexity of watershed wide water management issues and seek support for more integrated planning.
 - To initiate a conversation on the value of establishing a single entity to speak on watershed wide water management related issues for the entire RaFT lakes area not currently represented by a Conservation Authority.
- **CEWF** will attempt to engage **the Province of Ontario** to work with TSW and take action under the MOU with Parks Canada on Integrated Watershed Planning across the entire Trent Watershed, which is the largest watershed in Southern Ontario.

CEWF Believes We Need Integrated Water Management Planning at the Watershed Level



- We need federal, provincial and municipal collaboration under the 2011 Memorandum of Understanding.
- Who speaks for the reservoir area? (CEWF will be raising this issue with municipalities).
- What is the role of Conservation Authorities?
- In Peterborough County there is little focus on the reservoirs.

The CEWF Website

Cewf.ca


Your gateway to the latest information
and data from TSW in a changing
communications environment.

**Sign up for email updates and
notices!!**

Cewf.ca

Links to TSW and CEWF News, TSW Water Levels, and Level forecasts

Coalition for Equitable Water Flow



Coalition for Equitable Water Flow

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Background

- [CEWF 2015 Priorities](#)
- [Who We Are](#)
- [Mission & Objectives](#)

Communications

- [Concerns with Devolin Bill](#)
- [Letter to Prentice, MOE](#)
- [Politicians' Addresses](#)
- [Infrastructure Projects](#)
- [TSW in Throne Speech](#)

Member Communications

- [2013 AGM - Summary](#)
- [2013 AGM - Slides](#)
- [2012 AGM - Summary](#)
- [2012 AGM - Slides](#)

June 03, 2015

→ Water Management Update - end May 2015

As a result of very low water levels on most reservoir lakes heading into the spring runoff period and only a moderate snowpack, there was concern through the spring that it would be a struggle to fill the reservoirs. To a degree this was the case. The Trent Severn Waterway (TSW) captured what runoff existed with early placement of stop logs. While this captured water in the reservoir lakes, it did lead to low levels in flow-through lakes such as Maple and Beech. A heavy rain in April did contribute to the reservoir filling.

While May has been generally dry throughout the basin, reservoir volumes overall have reached 95% of full. Most lakes are at or just above their average levels for the end of May. There are exceptions.

[Continue reading "Water Management Update - end May 2015" »](#)

Posted at 08:45 AM | [Permalink](#) | [Comments \(0\)](#)

May 28, 2015

→ Pan Am Games Whitewater Events

The **Pan Am Games** will be running their whitewater events at the **Minden Wild Water Preserve** this July. There have been concerns raised whether this will have impacts on water levels in the TSW system. Parks Canada has responded that it will **not** have any appreciable impacts - the extra water released during the days will be replenished overnight.

To see **Parks Canada response** in Minden Times - [click here](#)

To read about the **Pan Am whitewater events** - [click here](#)

Enjoy the Games!

Posted at 04:00 PM | [Permalink](#) | [Comments \(0\)](#)

April 23, 2015

TSW Water Levels

- [Parks Canada Web Site](#)
- [2013 Water Levels Summary](#)
- [Historical Data \(1988-2013\)](#)
- [2014 Water Levels Summary](#)

Important Links

- [MNR Flood Alerts](#)
- [How the Water is Managed](#)
- [It's All About The Water](#)
- [The Panel on the Future of the TSW](#)

Reference Material

- [AECOM Water Management Study](#)
- [CEWF Flood Report](#)
- [AECOM Flood Report](#)
- [TSW 'Mandate'](#)
- [Nature Conservancy Canada - Watersheds](#)
- [Municipal Resolutions of Support](#)
- [CEWF Position Paper 2012](#)
- [Integrated Water Management](#)
- [Federal Provincial MOU](#)
- [WMAC Announcement](#)
- [Gov't Response to Panel Report](#)
- [TSW - the story](#)
- [Water Budget](#)
- [Navigable Waters Protection Act](#)
- [Sustainable Communities Response](#)
- [TSW Panel Submission](#)
- [EcoPlans Submission](#)

Link to Parks Canada Water Level Site

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Trent-Severn Waterway National Historic Site

Trent-Severn Waterway National Historic Site of Canada

Water Levels

What's New
[Visitor Information](#)
[Natural Wonders & Cultural Treasures](#)
[Activities](#)
[Learning Experiences](#)
[Site Management](#)
[How to Reach Us](#)

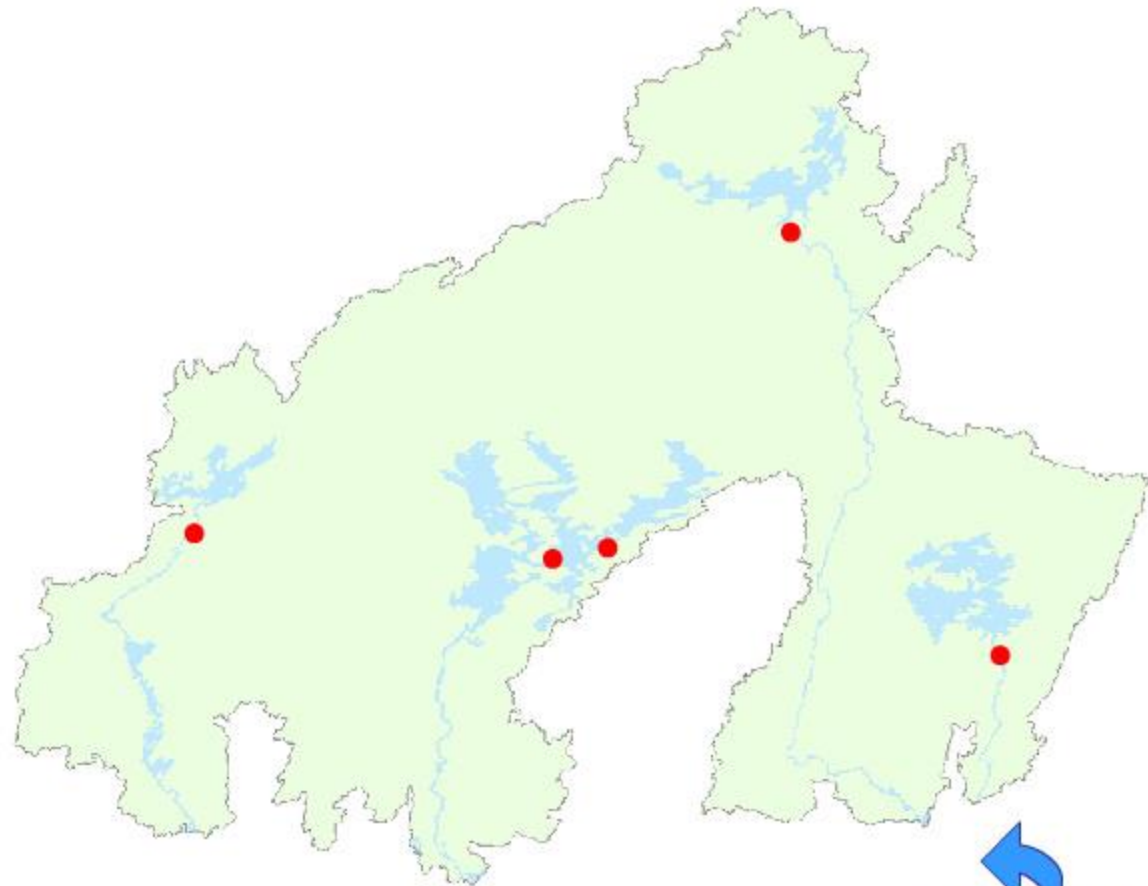
Severn River Watershed
Gull River Watershed
Burnt River Watershed
Nogies, Mississagua, Eels and Jack Watersheds
Kawartha Lakes
Rice Lake and the Trent River

Severn River Watershed
Gull River Watershed
Burnt River Watershed

- What's New
- Visitor Information
- Natural Wonders & Cultural Treasures
- Activities
- Learning Experiences
- Site Management
- How to Reach Us

Water Levels

Nogies, Mississagua, Eels and Jacks Watersheds




[BACK TO MAIN MAP](#)

Crystal Lake Water Level Screen June 4, 2015

Water Levels

**Trent-Severn
Waterway
National
Historic Site**

**Trent-Severn Waterway National Historic
Site of Canada**

What's New

Visitor Information

Natural Wonders &
Cultural Treasures

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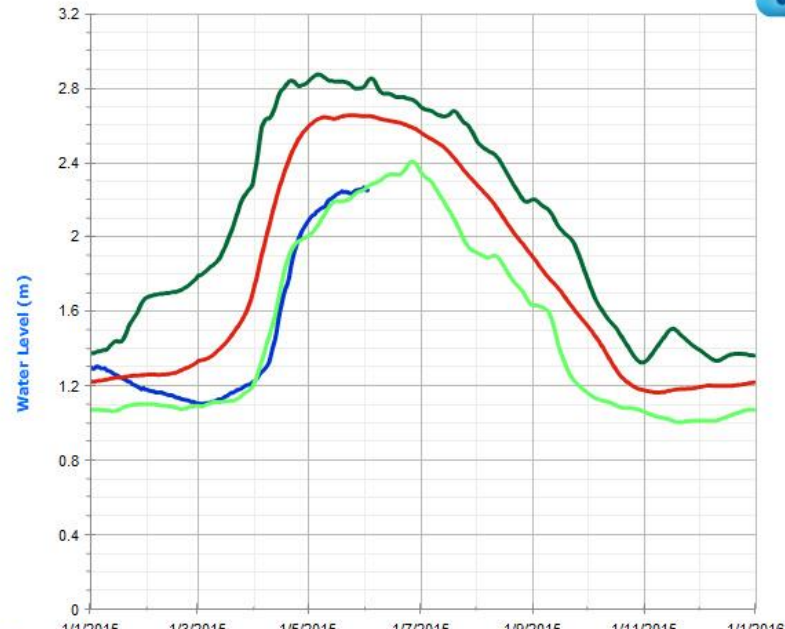
Experiences

Site Management

How to Reach Us

Water Levels

Crystal Lake (Swamp Lake) Water Levels



Legend:



Check other water levels

Example of Drawdown Forecast

Trent-Severn Waterway National Historic Site of Canada								
Water Management Program								
Forecasted Water Levels - Haliburton Area								
	Start Date: 13/08/2012							
	End Date: 27/08/2012							
Lake Name	Start Date		End Date (Target)		Target Differential		Full Level	
	Water Level (m)	Inches down (")	Water Level (m)	Inches down (")	metres (m)	Inches (")	metres (m)	Inches (")
Gull River Watershed								
Kennisis Lake	1.726	43.9	1.652	46.8	-0.074	-2.9	2.84	111.8
Redpine Lake	0.596	24.6	0.695	20.7	0.099	3.9	1.22	48.0
Nunkani Lake	1.206	72.6	1.208	72.5	0.002	0.1	3.05	120.1
Hawk Lake	2.930	58.7	2.683	68.4	-0.247	-9.7	4.42	174.0
Halls Lake	1.920	23.2	1.870	25.2	-0.050	-2.0	2.51	98.8
Sherborne Lake	0.760	29.9	0.760	29.9	0.000	0.0	1.52	59.8
Kushog Lake	2.402	27.5	2.348	29.6	-0.054	-2.1	3.10	122.0
Percy Lake	1.210	30.3	1.129	33.5	-0.081	-3.2	1.98	78.0
Haliburton Lake	2.245	31.7	2.199	33.5	-0.046	-1.8	3.05	120.1
Redstone Lake	2.475	46.7	2.305	53.3	-0.170	-6.7	3.66	144.1
Eagle Lake	1.459	32.7	1.503	31.0	0.044	1.7	2.29	90.2
Twelve Mile Lake	1.444	21.1	1.326	25.7	-0.118	-4.6	1.98	78.0
Horseshoe Lake	1.674	30.2	1.589	33.5	-0.085	-3.4	2.44	96.1
Big Bob Lake	1.800	43.3	1.653	49.1	-0.147	-5.8	2.90	114.2
Little Bob Lake	0.860	26.0	0.866	25.7	0.006	0.3	1.52	59.8
Gull Lake	1.754	14.8	1.739	15.4	-0.015	-0.6	2.13	83.9
Moore Lake	1.281	9.4	1.258	10.3	-0.023	-0.9	1.52	59.8
Burnt River Watershed								
Drag Lake	1.498	27.6	1.504	27.4	0.006	0.2	2.20	86.6
Canning Lake	1.193	10.9	1.066	15.9	-0.127	-5.0	1.47	57.9
Miskwabi Lake	1.596	27.3	1.434	33.7	-0.162	-6.4	2.29	90.2
Loon Lake	1.522	16.5	1.384	21.9	-0.138	-5.4	1.94	76.4
Koshlong Lake	1.570	28.3	1.568	28.4	-0.002	-0.1	2.29	90.2
Farquhar Lake	2.198	30.0	1.991	38.2	-0.207	-8.2	2.96	116.5
Grace Lake	1.510	20.1	1.367	25.7	-0.143	-5.6	2.02	79.5
Esson Lake	2.340	26.0	2.130	36.2	-0.210	-8.3	3.05	120.1
Little Glamour Lake	1.280	21.7	1.043	31.0	-0.237	-9.3	1.83	72.0
Big Glamour Lake	1.790	25.6	1.696	29.3	-0.094	-3.7	2.44	96.1
Gooderham Lake	1.590	9.4	1.305	20.7	-0.285	-11.2	1.83	72.0
Contau Lake	1.280	15.7	1.155	20.7	-0.125	-4.9	1.68	66.1
White Lake	1.170	26.0	1.043	31.0	-0.127	-5.0	1.83	72.0
Crystal Lake	2.010	28.7	1.824	36.1	-0.186	-7.3	2.74	107.9
Anstruther Lake	1.578	28.0	1.305	38.8	-0.273	-10.7	2.29	90.2
Mississauga Lake	1.602	33.0	1.391	41.3	-0.211	-8.3	2.44	96.1
Eels Lake	2.383	50.3	2.088	62.0	-0.297	-11.7	3.66	144.1
Jack Lake	1.295	25.0	1.264	26.2	-0.031	-1.2	1.93	76.0

CEWF and the Chrystal Lake Cottagers' Association?



Coalition for
Equitable
Water Flow

Discussion?
Questions?

Follow us throughout the year at www.cewf.ca

- Water level forecasts are posted weekly during drawdown