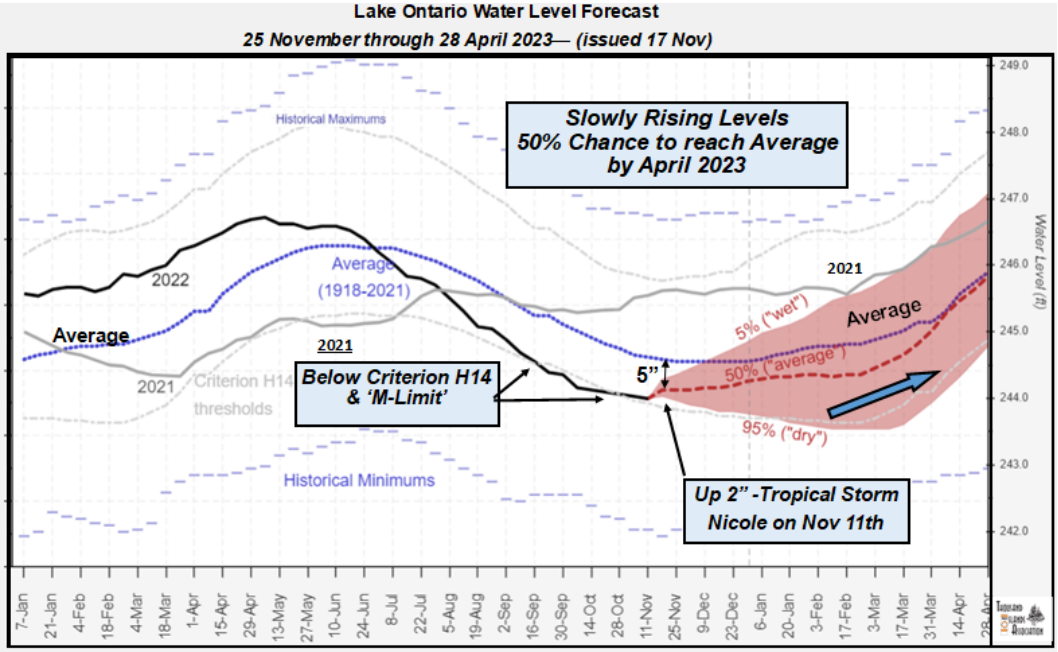
## Water Levels – Going UP & Slowly Rising For The Next 6 Months

*TIA Water Levels Committee (12/07/22 updated) – by Barton, Stewart & White*




https://ijc.org/en/loslrb/watershed/forecasts Edits by TIA

## Observations, Data & Perspectives – Levels ARE FINALLY IMPROVING

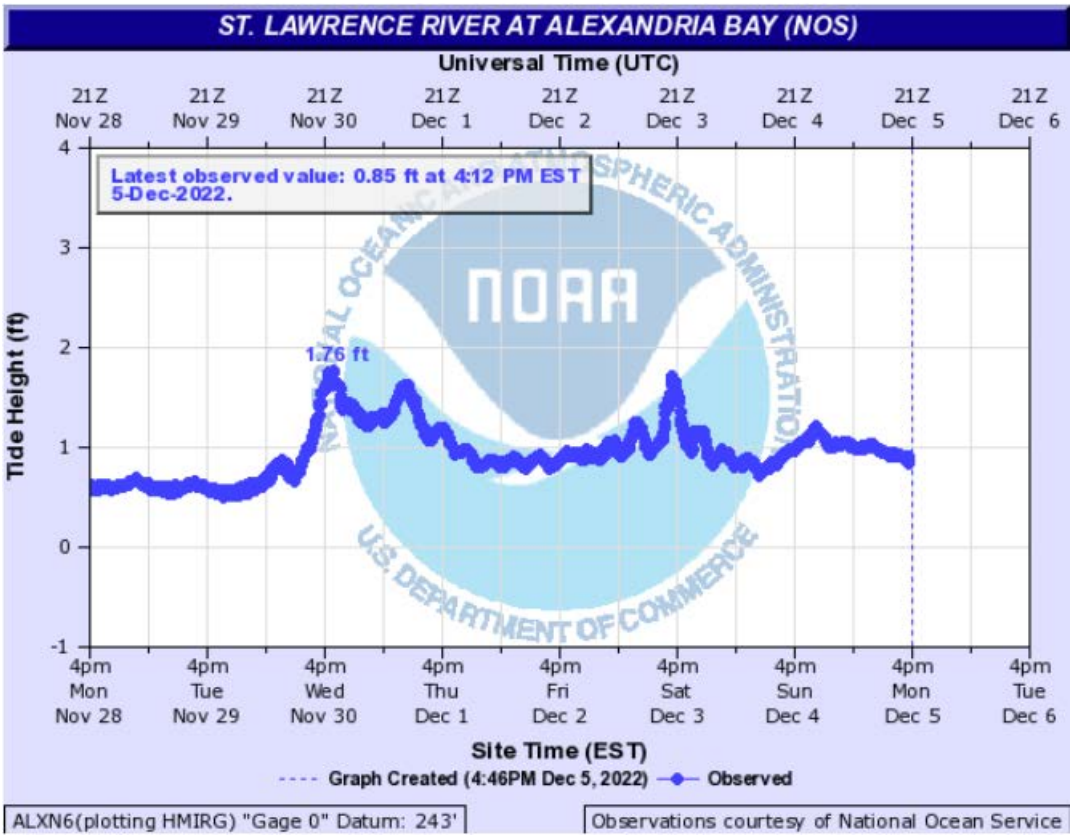
- **Now less than 5" below the 100-year average *(for this time of year)***
- River levels have held at + ~0.5 feet above datum for about 4 solid weeks
- Lake Ontario was at **244.16'** on November 19th. **It sure *feels extremely low***… but for comparison's sake, here are some levels on November 19th over the last 25 years:

  **2014** – 244.19' **2002** – 243.96'
  **2012** – 243.73' **1999** – 244.16'
  **2007** – 243.70' **1998** – 243.90'
- Over the last 25 years levels were lower or about the same – ***nearly one quarter of the time***! ***These painfully low levels are NOT UNUSUAL***
- Levels are **now** up to near 1 foot above chart datum, their **7th largest November rise.**
- **Outflows** since October 7th have varied from 6,380 m3/s to 6,840 – far lower than the 8,000 m3/s and higher we saw in July and much of August. This is good news!
- For the FIRST Time since January 2016 (that's almost 6 years), the monthly outflow from Lake Ontario and the River in October 2022 was just slightly below average
- Recent outflows from Lake Ontario have been set mostly by the L-Limit in Plan 2014

- **What kind of impact can a single really big storm have?** Tropical storm Nicole dropped a full 1.00" of rain across the Lake Ontario basin on November 11th – as a result, Lake Ontario rose approximately 1 ¼" from November 11th to the 12th!
  - **Until Nichole, fall 2022 has been unusually dry throughout our region**
  - All Great Lakes received below average precipitation with Lakes Erie and Ontario experiencing roughly half of their October historical averages!

**Full Article UPDATE: December 7, 2022**

***The River water is now deeper than when you closed up for the winter!***



https://water.weather.gov/ahps2/hydrograph.php?wfo=buf&gage=alxn6&refresh=true Alexandria Bay NY

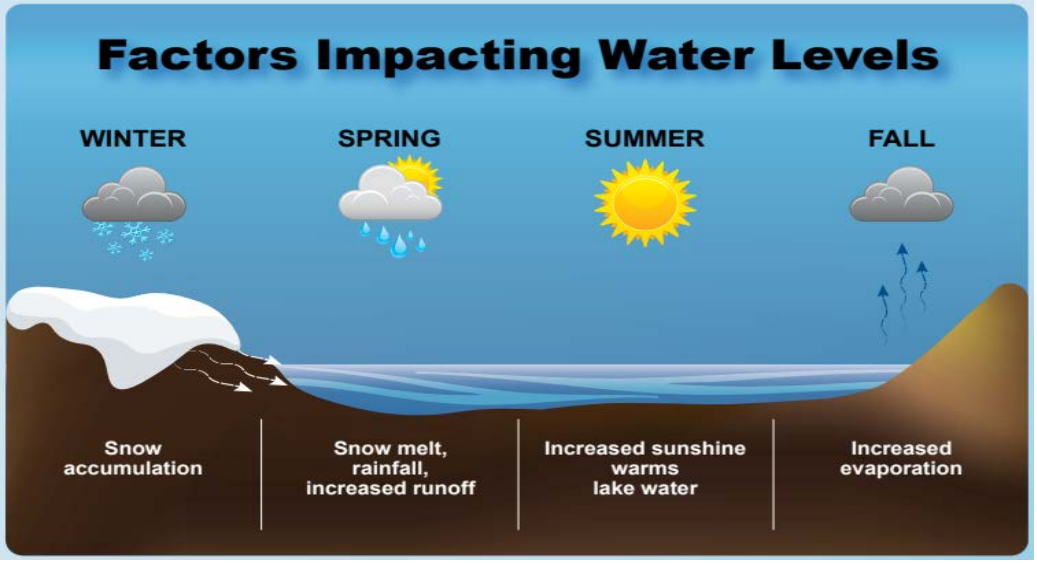
**Evaporation – Focus on the Lake Ontario Basin in the fall & early winter.**

Arriving water flowing INTO the Lake Ontario Basin is supplied 85% by inflow from Erie and upstream Great Lakes, and 15% by Precipitation & Runoff within our Lake Basin.

**Did you know** that 95% of the Outflow from the Lake Ontario Basin exits through the Moses-Saunders dam, passes Montreal and then flows NE to the Atlantic Ocean? For an average year, the remaining 5% of outbound water, exits the lake **by evaporation**!

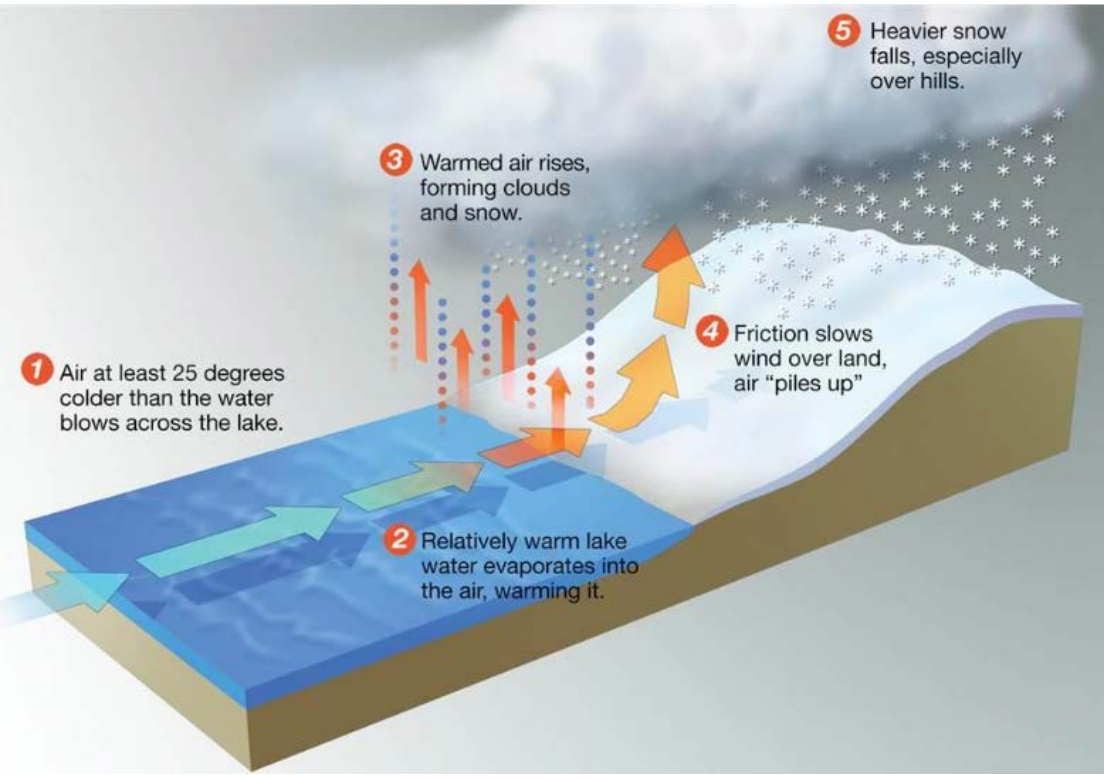
The greatest amount of evaporation occurs in the fall into early winter repeatedly, driven by the right weather conditions. In well-known regions downwind of the Great Lakes, substantial amounts of moisture ends up on land within the lake's drainage basin, only to return again as temperatures warm during thaws or in the spring. Lake Enhancement can further boost precipitation inside a larger storm system

**Lake Effect ingredients** are 1) an open stretch of water; 2) unfrozen surface; 3) cold air & warm water; and 4) wind speed (energy) to drive convection transport.



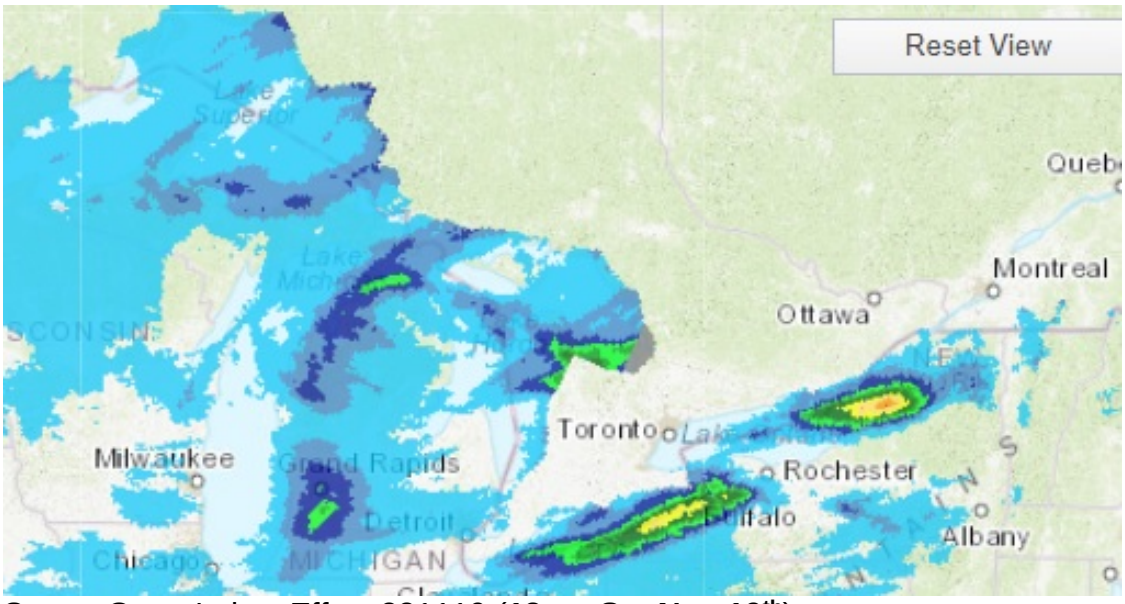
https://www.ijc.org/sites/default/files/ILOSLRB-Newsletter-Fall-2021.pdf

Cold air of late fall blowing across the relatively 'warm' unfrozen Great Lakes waters produces "lake effect" snow or even rain showers. Temperature differences ≥ 23 degrees F or more transfer relatively warm moisture into the lower atmosphere through convection driven evaporation. The Lake Effect 'snow machine' process follows steps 1 to 5 below. The **Tug Hill Plateau** region at the east end of Lake Ontario just east of Interstate 81 squeezes moisture out in intense snow bands.(See item 4 below)



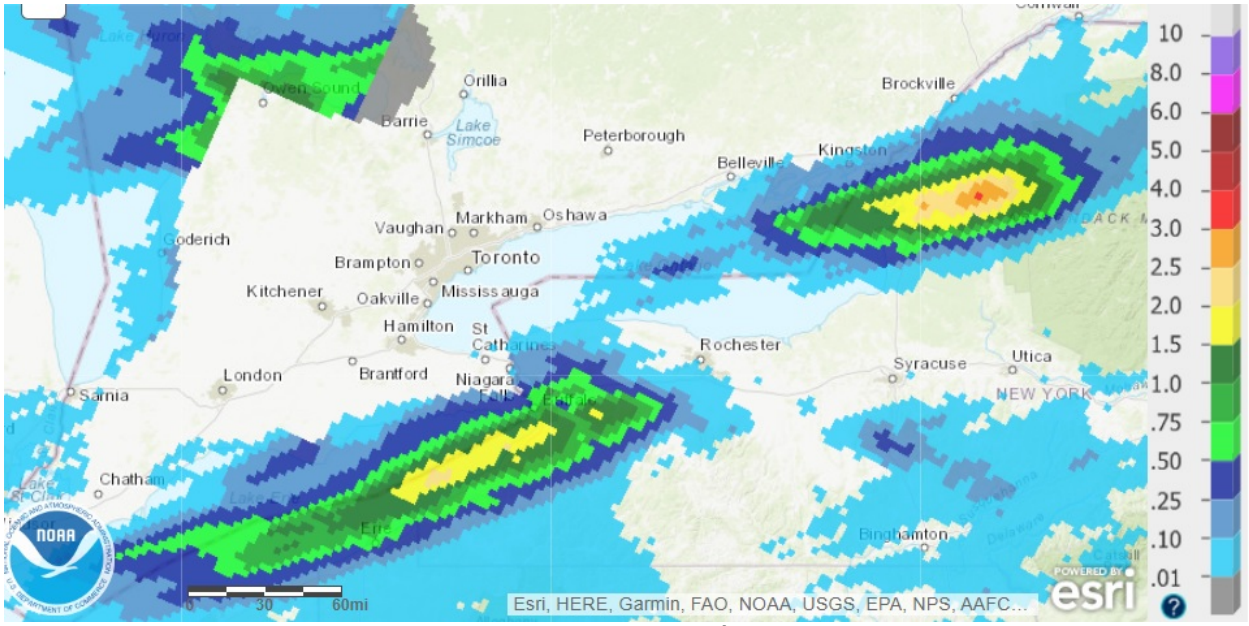
https://www.aopa.org/news-and-media/all-news/2018/february/flight-training-magazine/weather-lake-effect-snow

As the **weekend of November 19-20** approached, warnings were issued for a variety of Great Lakes downwind shores. Snowfall predictions for Orchard Park, just south of Buffalo, NY on the Lake Erie shore were in the 5 feet range. As a result, the Buffalo Bills Sunday football game was moved to Detroit (shoveling out the stadium in time would have been impossible). Similar warnings were issued for the Watertown, NY area of Interstate 81 on the east end of Lake Ontario. The US National Weather Service (NWS) radar graphic shows multiple lake effect bands for the Great Lakes.



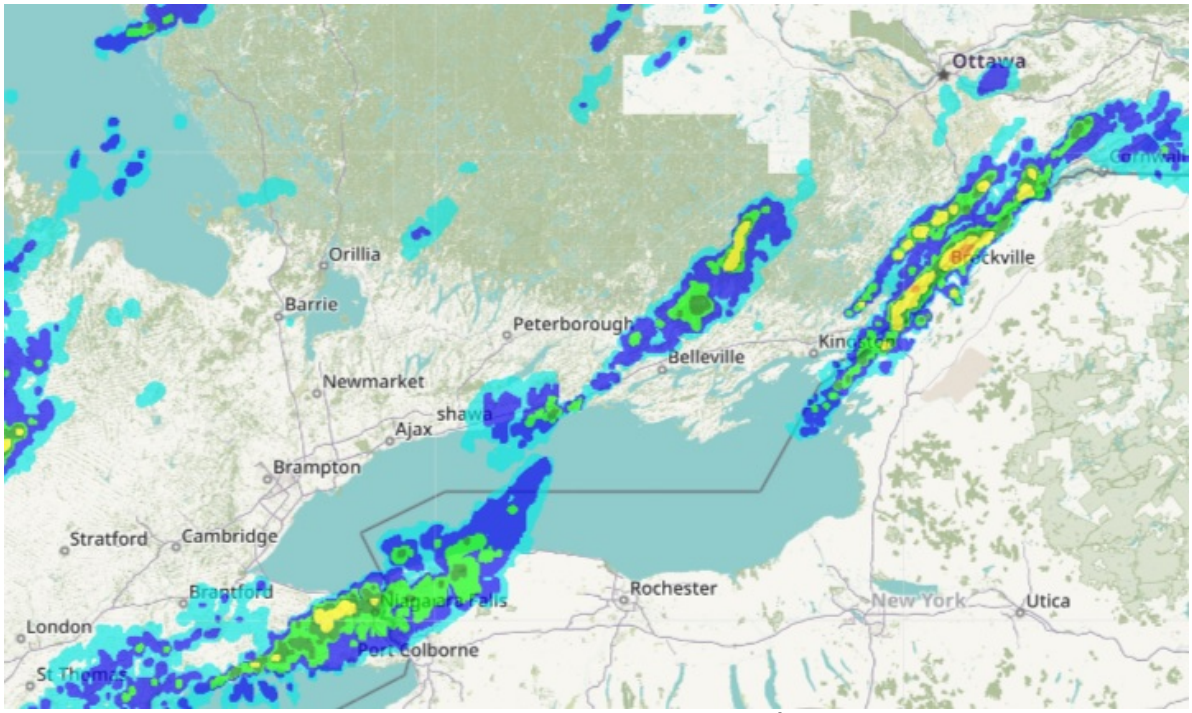
Strong Great Lakes Effect 221119 (**12pm Sat Nov 19th**)

Zooming in on Lakes Erie and Ontario shows the formation of their respective lake effect snow clouds on radar, driven by howling WSW winds



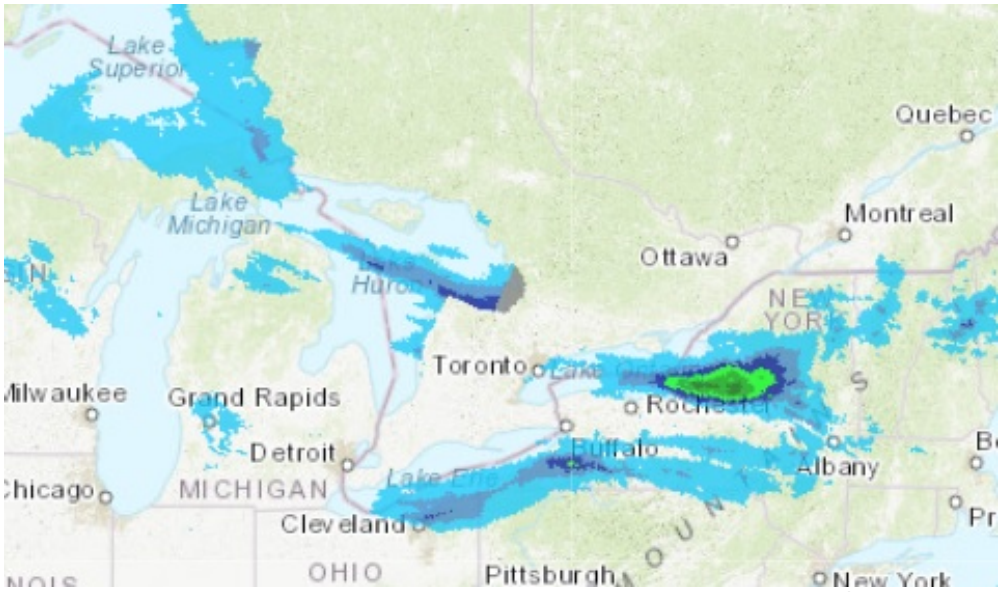
Strong Lake Effect NWS 221119 (**12p Sat Nov 19th**)

**Later on Saturday November 19th**, the *strong winds swung markedly to the SW* tracking distinctly northeast (NE) and no longer aligning with Lakes Erie and Ontario, It's rare to see such strong lake effect snow bands concentrating in the St. Lawrence River valley. Orchard Park and Watertown finally got relief and could begin digging out.



Strong Lake Effect R-Alarm 221119 (**later Sat Nov 19th**)

**Then On Monday November 21st**, the winds picked back up and returned to a more traditional westerly flow, with Lake Erie spraying snow across Central NY while Lake Ontario's intense lake effect snow bands took dead aim on Oswego at its eastern end!



Strong Great Lakes Effect NWS 221121 12p (**Mon Nov 21st**)

**International Lake Ontario – St. Lawrence River Board (ILOSLRB)**
**Fall Newsletter – 2021**

https://www.ijc.org/sites/default/files/ILOSLRB-Newsletter-Fall-2021.pdf

Although a year old, *this newsletter contains lots of useful information about phenomena and water control hydrology which impacts our fall water levels.*

For those with interest, we highly suggest taking a look at this interesting 8-page PDF document to widen your perspectives. We have used it as a source for several graphics in this RiverTalk Full Article issue.

**We hope you enjoyed this expanded Water Levels Full Article and found it useful.**

You are encouraged to pass on this link to others who could benefit and expand their perspectives on these important topics.

https://www.thousandislandsassociation.com/water-levels-nov-dec-2022-river-talk-full-article/

**We send joyous Holiday, Christmas Season and New Year's Greetings to you all.**

*And from Ross (our large "Tiny Tim")* ***…a 'Water Wish' …***

"While we never know what the weather will surprise us with, let's all hope for closer to average water levels in the New Year and well into the 2023 cottage season."

**Vince Barton – Ken White – Ross Stewart**