

# Yes, We Can!



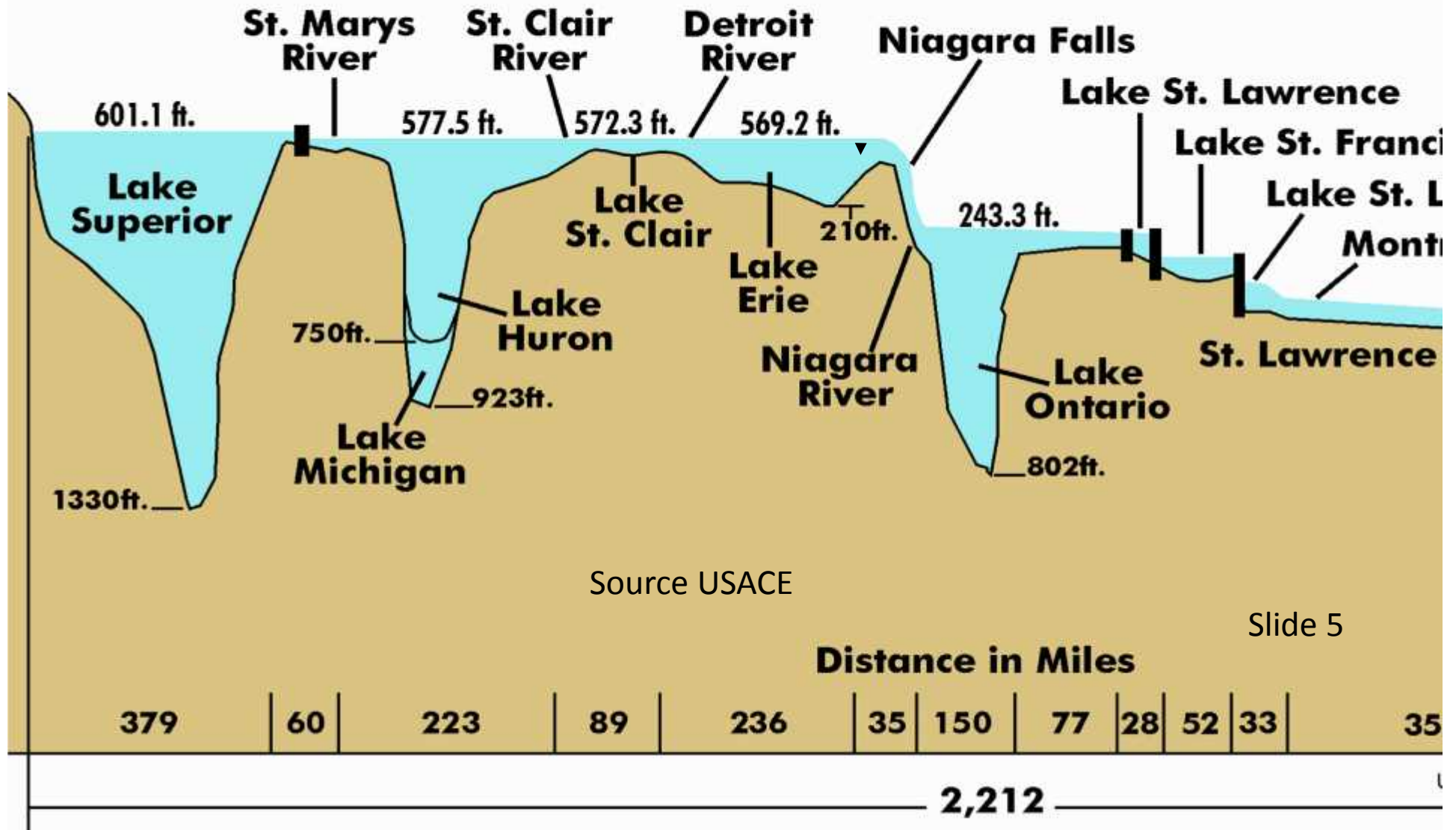
*Restore Our Water International*

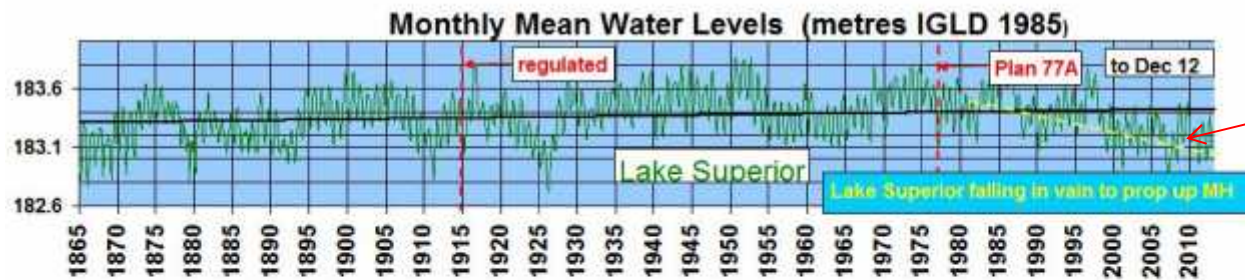


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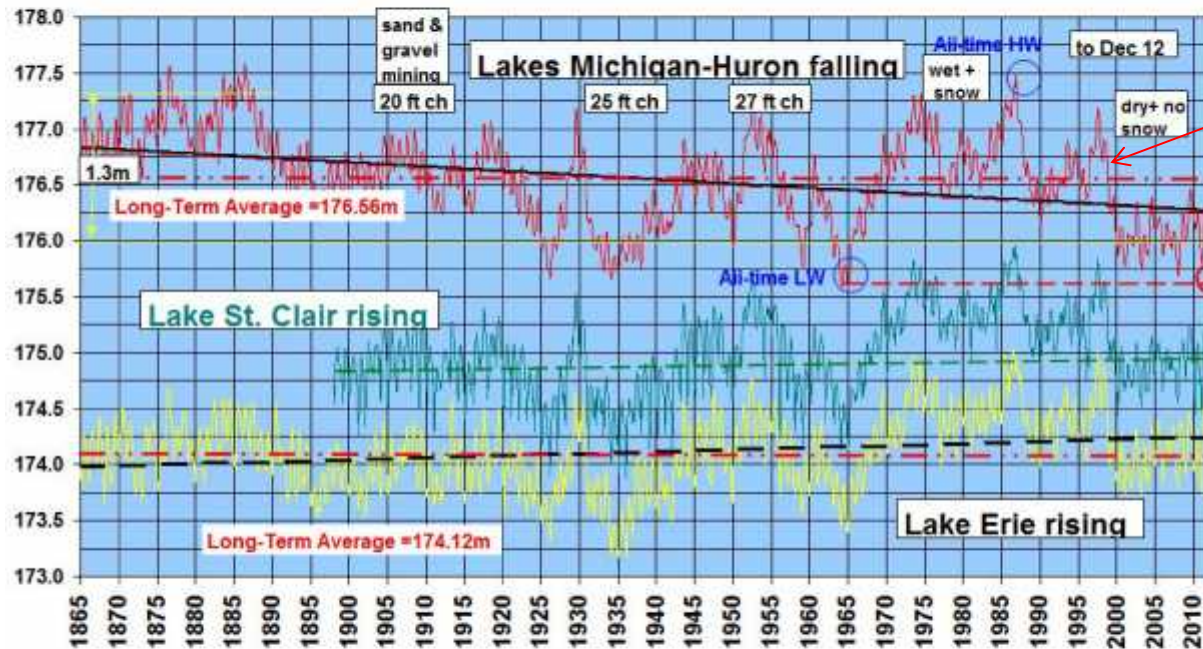
Mary Muter, [marym@sierraclub.ca](mailto:marym@sierraclub.ca)  
905 833 2020

# Great Lakes System Profile





Sup declining as Plan 77A attempts to correct for low MH level too

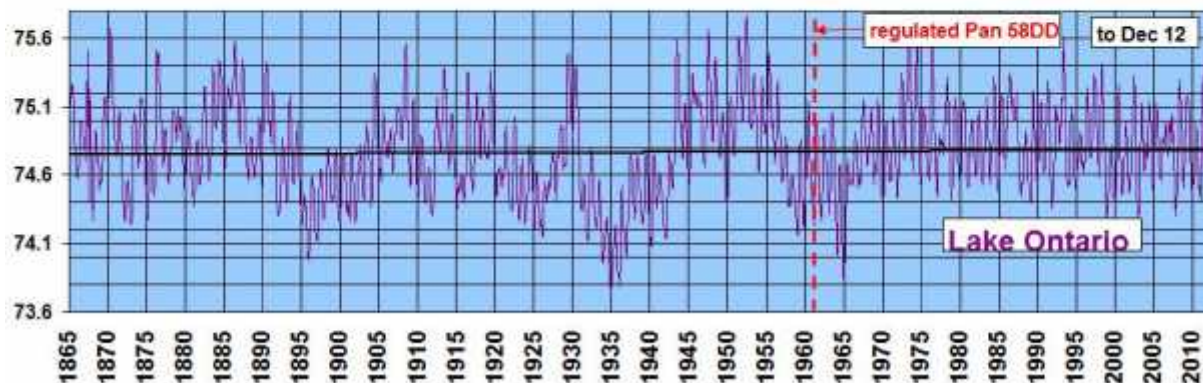


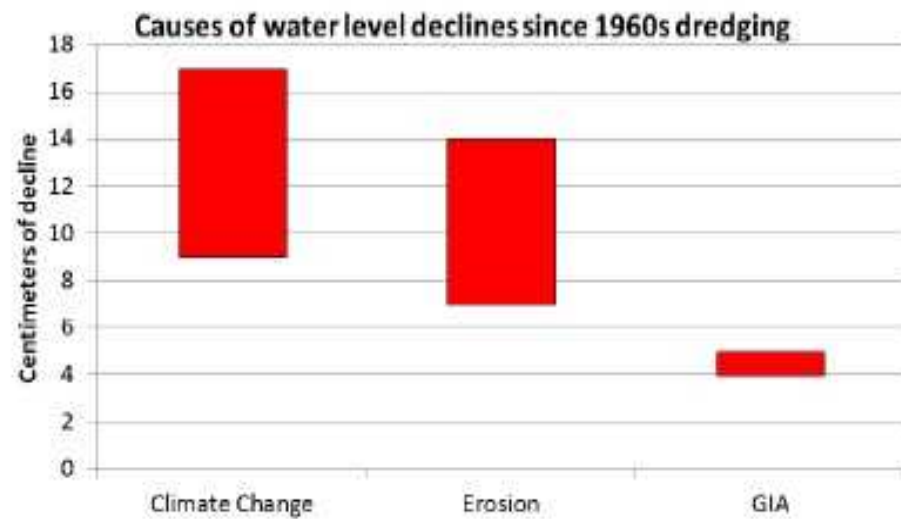
MH declining due to 100 years of dredging and recent climate shift.

At ~176 m since 1999

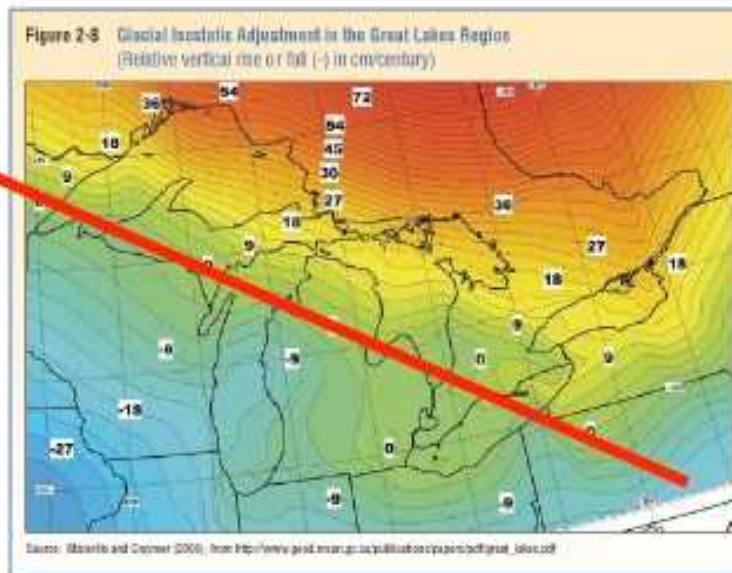
MH now at All-Time Record Low & falling

SC & ER rising



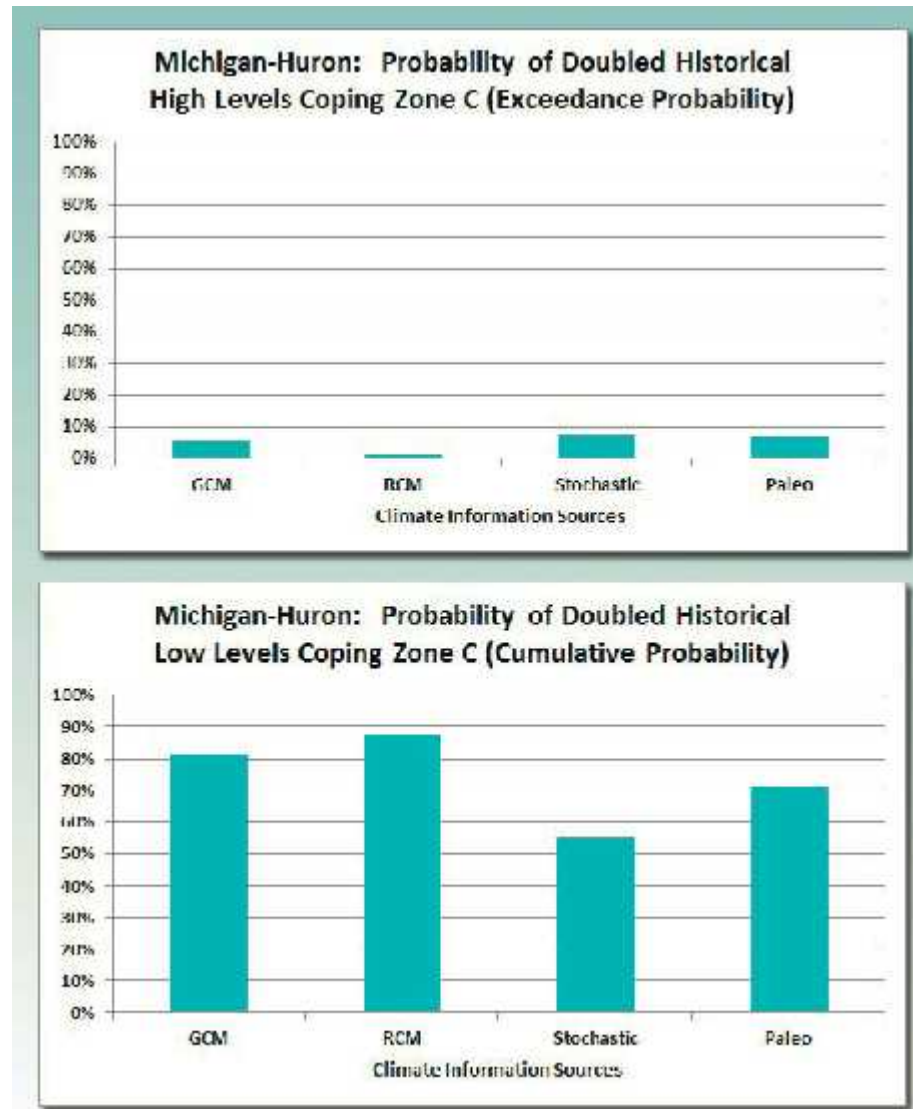


- a) The tilt line shown on the map below indicates the rebounding of the earth's crust which does affect the water lowering in M-H Great Lakes - this was the smallest reason for receding water levels;



**The Probability of High Water is only 5% Low water is 85%**  
**There is nothing to stop the enlarged SCR to continue to lower MH in**  
**the face of Climate change**

**Figure 9-5 IUGLSB final report;  
Example of Plausibility  
Estimates for High and Low  
Water Level  
Zone C Occurrences for Lake  
Michigan-Huron  
from International Upper  
Great Lakes Study Final  
Report, March 2012**



## **Is Climate Change to blame? The Climate Change debate continues**

In April, a spokesman for the International Joint Commission stood in front of floor-to-ceiling windows in a Concordia University conference room on a bluff above Lake Michigan and assured a group of lakeshore property owners there was little to worry about.

**"That water level that you see out there,"** said John Nevin, a public information officer for the Joint Commission, **"is not the new normal."**

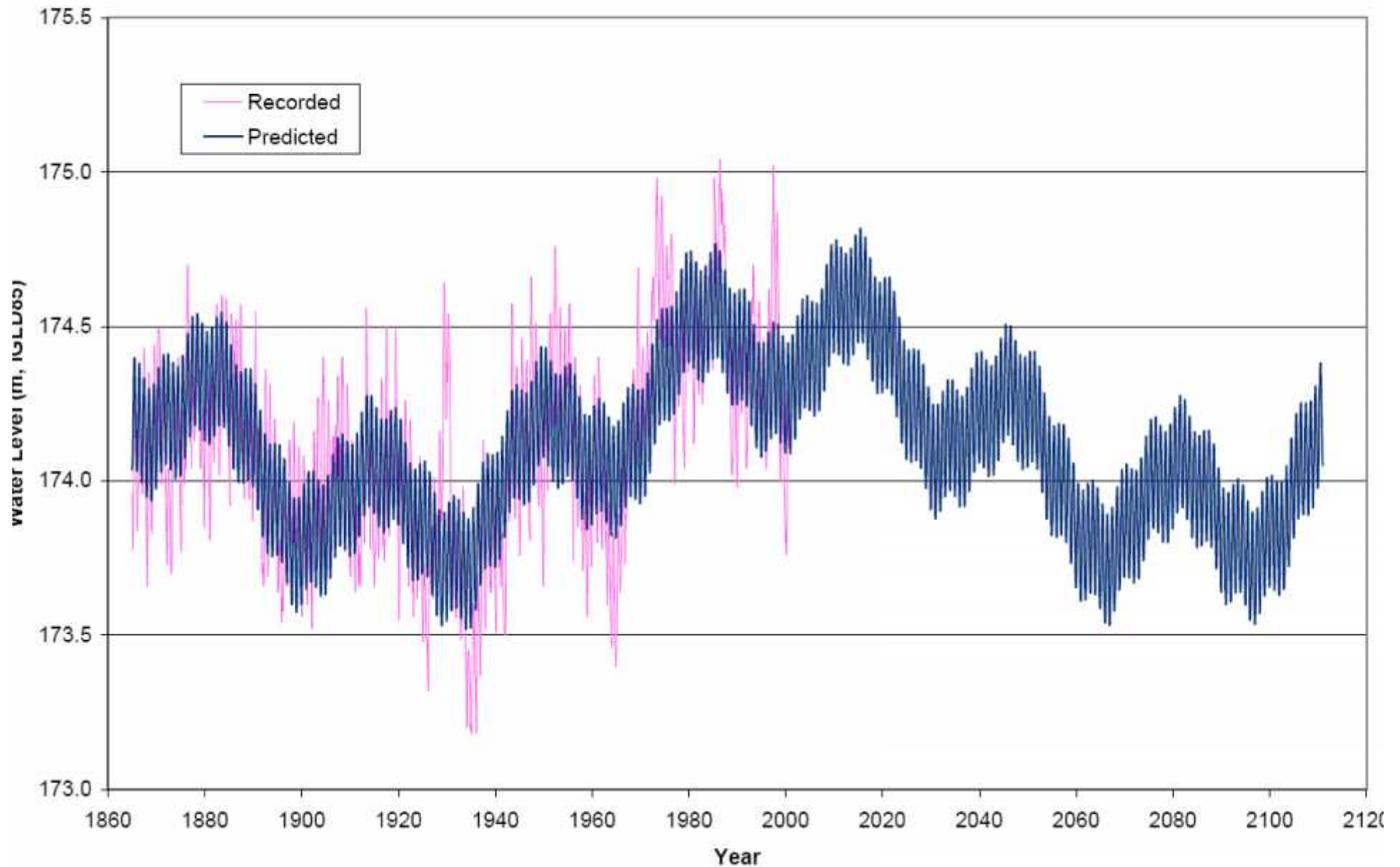
Warmer temperatures might mean slightly lower-than-average water levels going forward, but **"we're going to see levels generally in their historic range,"** he said.

But Paul Roebber, a University of Wisconsin-Milwaukee meteorologist and associate dean of its School of Freshwater Sciences

**"I don't think you can say that with any certainty, and I think available evidence suggests that it's the opposite,"** said Roebber, the UWM meteorologist and mathematician.

**"The last 15 years essentially really prove that point. You can see it: above-normal precipitation and lake levels dropping substantially — with a loss of ice."**

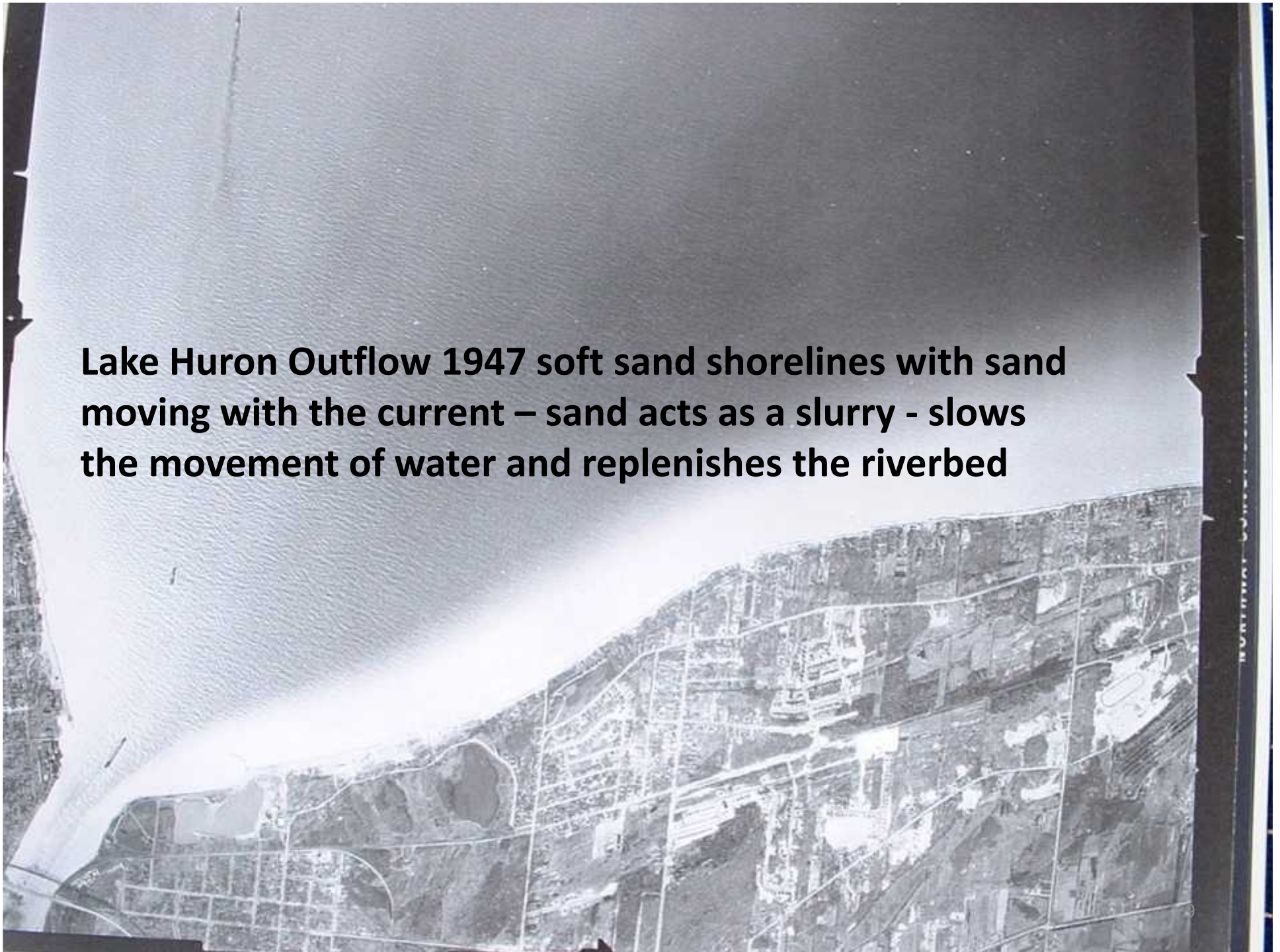
# Possible Future Water Levels






**Outflow of Lakes Michigan/Huron/Georgian Bay into the St. Clair River— unregulated width and depth and sediment load determines Outflow – now over 100 years of uncompensated human activities have altered forever the natural river channel**

**Lake Huron Outflow 1947 soft sand shorelines with sand moving with the current – sand acts as a slurry - slows the movement of water and replenishes the riverbed**



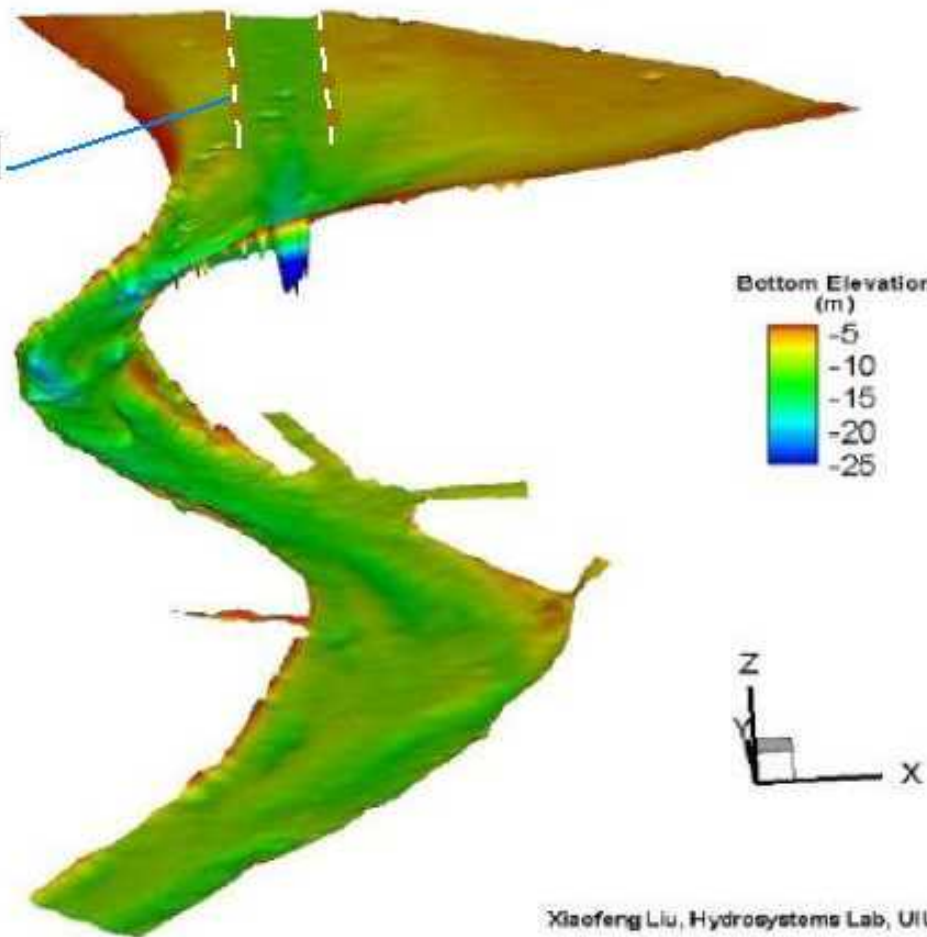


1987— shoreline hardened —sand gone from outflow  
2004 Baird Report “sand supply significantly reduced”  
1954 = 10,500m<sup>3</sup>/y      1998 = 500m<sup>3</sup>/y

**the dredged approach channel - the depth outside the channel was off the scale - less than 5 meters – they removed the natural sand and gravel bar - opened up the gates and did not consider the impact**

3D View of the Bathymetry in the Upper St. Clair River  
(Data from 2008 Multi-beam Scan, Prof. Jim Best, UIUC)

approach channel



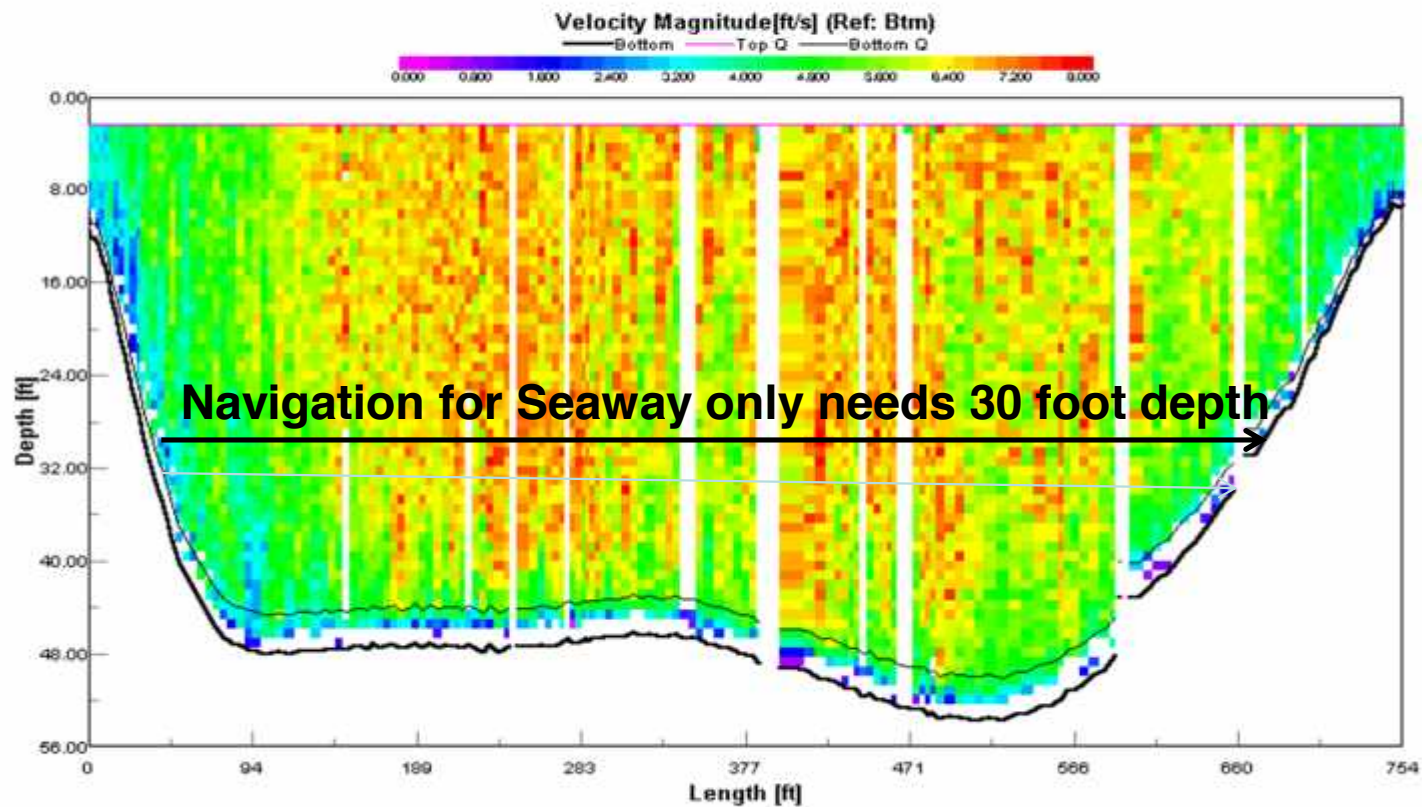
Xiaofeng Liu, Hydrosystems Lab, UIUC

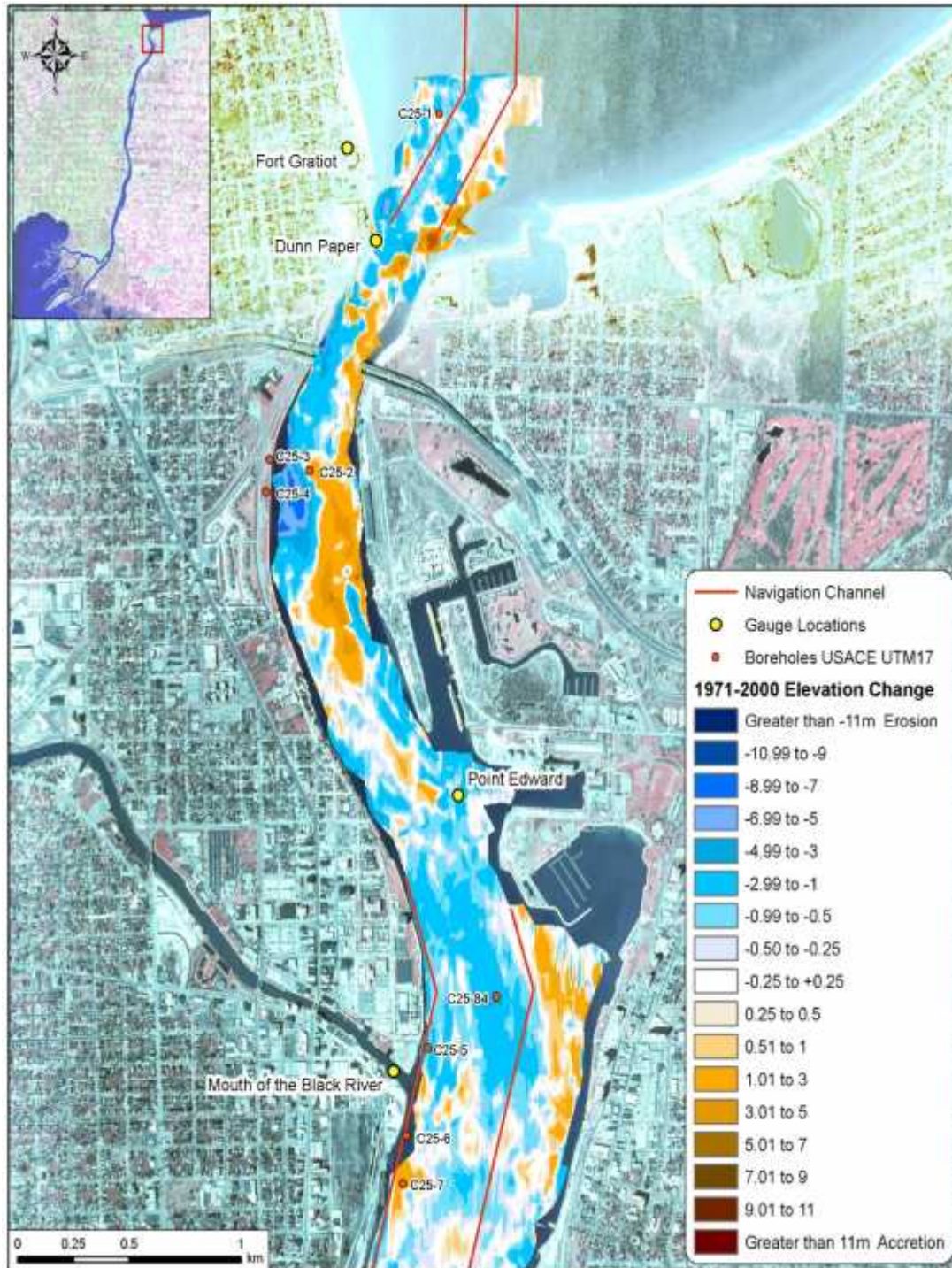
# St Clair River Profile

September 14, 2001

Transect 009

measurement made between the two bridges at Pt. Huron/Sarnia; downstream side of the old span (the one most upstream); view looking *upstream*





St. Clair River  
depth  
measurements –  
now over 60 feet  
deep in blue  
scour holes –  
ships only need  
30 feet to transit

# St. Clair River Conveyance

The St. Clair River relative conveyance shows roughly a 15% increase between 1930 & 2008

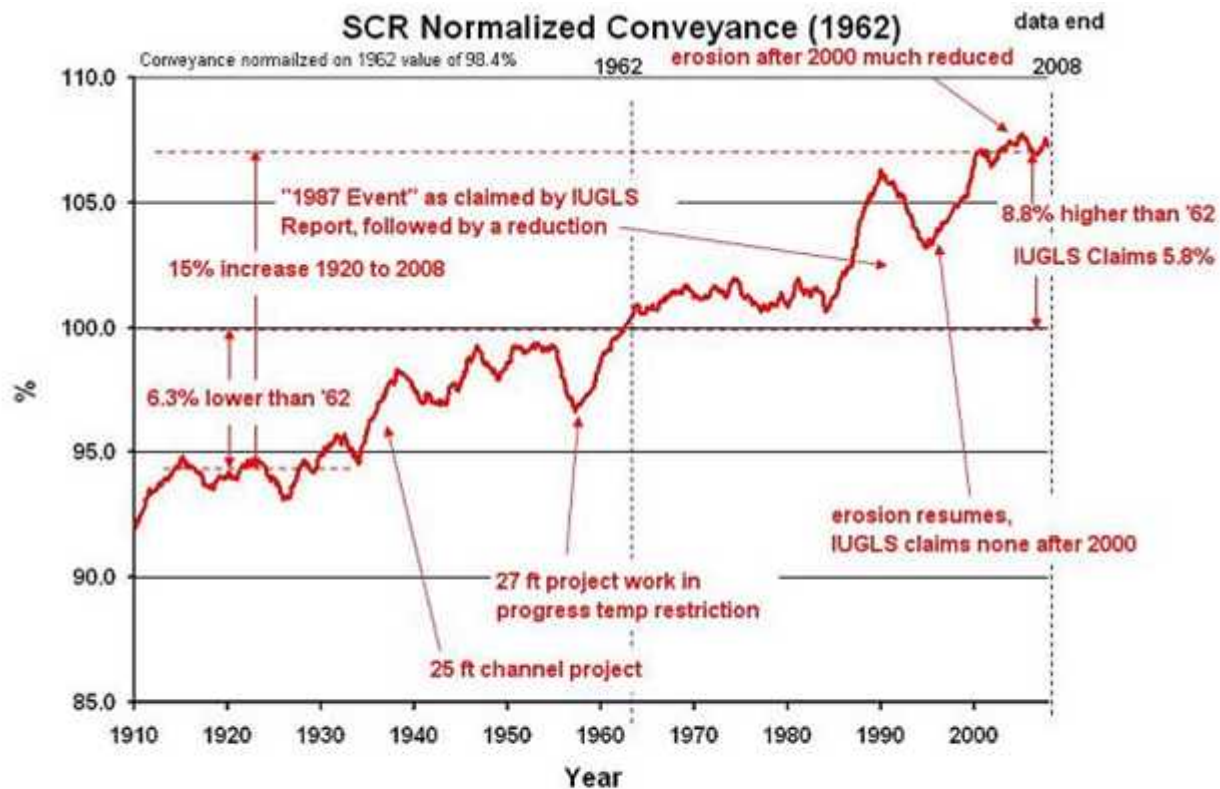
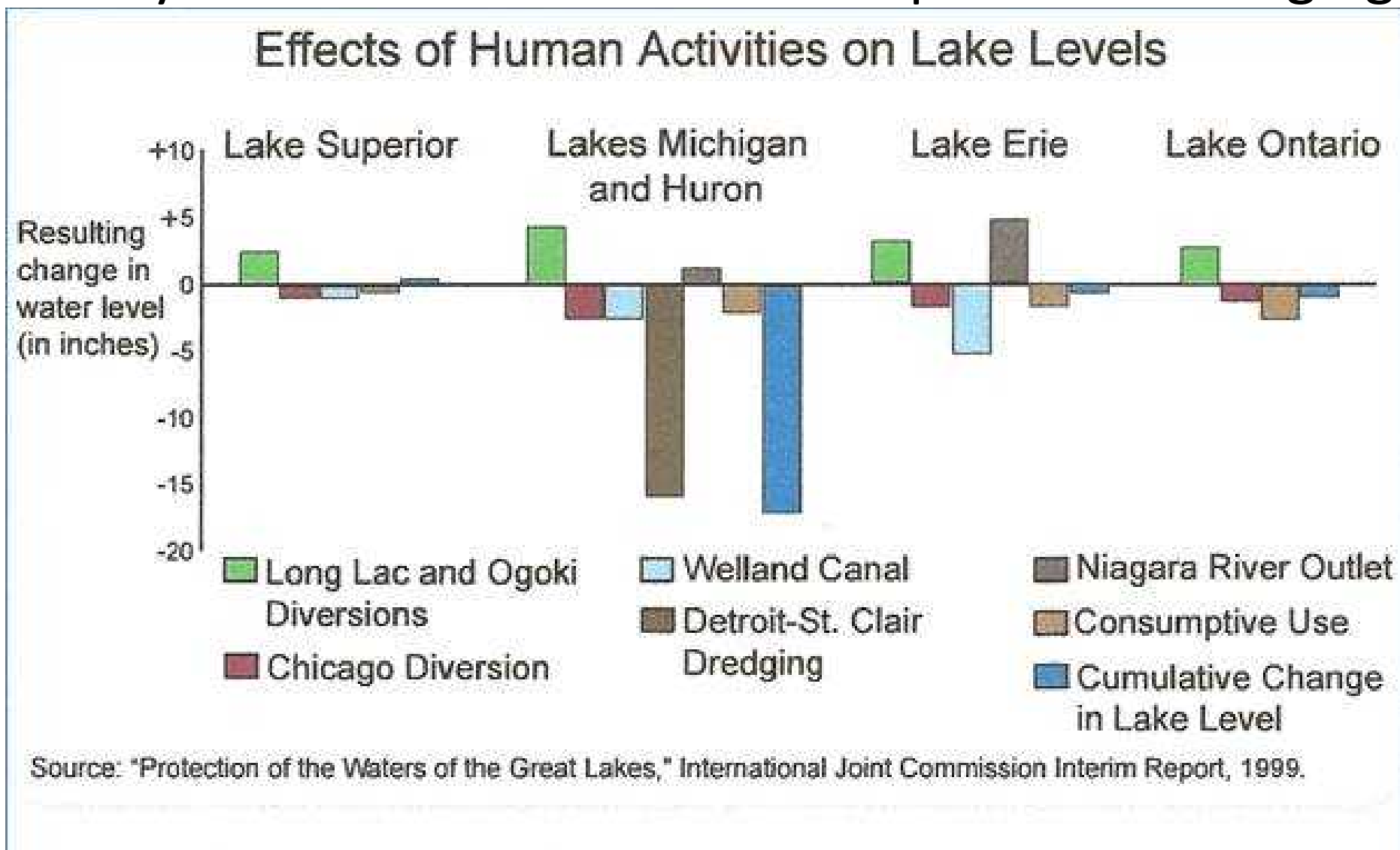


Figure A2-2.3.2 shows the mapping of the SCR conveyance changes between 1920 and end of data in 2008, all normalized to the 1962 value (100% in 1962). The total change from 1920 to 2008 is 15%.

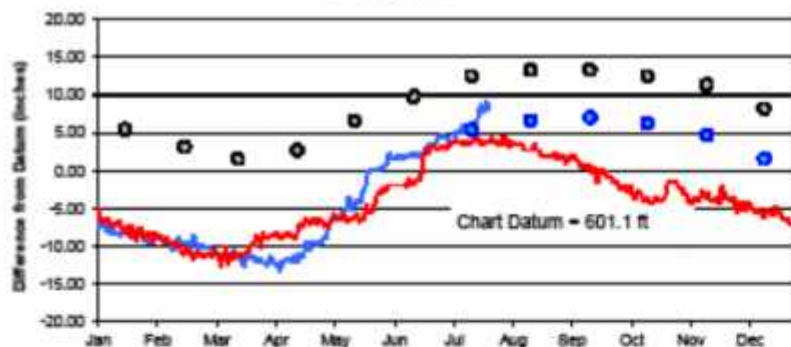
This is an IJC graph: restoring Michigan/Huron water levels is the only responsible action following over 100 years of St. Clair River uncompensated dredging



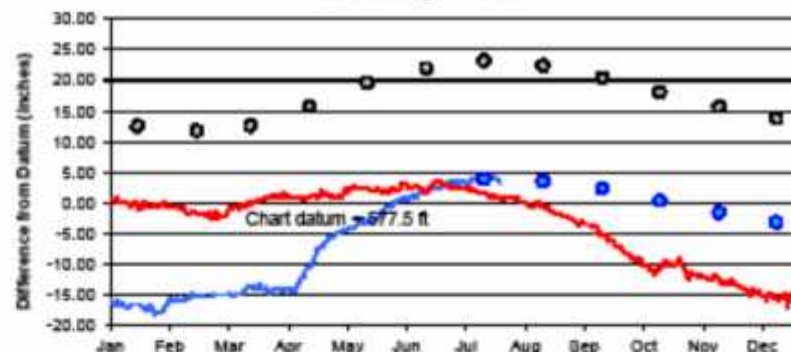
# Michigan Huron/Georgian Bay Low Levels History

1860 1861 1862 1863 1864 1865 1866 1867 1868 1869  
1870 1871 1872 1873 1874 1875 1876 1877 1878 1879  
1880 1881 1882 1883 1884 1885 1886 1887 1888 1889  
1890 1891 1892 1893 1894 1895 1896 1897 1898 1899  
1900 1901 1902 1903 1904 1905 1906 1907 1908 1909  
1910 1911 1912 1913 1914 1915 1916 1917 1918 1919  
1920 1921 1922 1923 1924 **1925 1926** 1927 1928 1929 Channel dredged to 20 ft.  
1930 1931 1932 **1933 1934 1935 1936 1937** 1938 1939 Dredged to 25 ft.  
1940 1941 1942 1943 1944 1945 1946 1947 1948 1949  
**1950** 1951 1952 1953 1954 1955 1956 1957 1958 1959  
1960 1961 1962 **1963 1964 1965** 1966 1967 1968 1969 Dredged to 27 ft.  
1970 1972 1972 1973 1974 1975 1976 1977 1978 1979  
1980 1981 1982 1983 1984 1985 1986 1987 1988 1989  
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999  
**2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 No “official” channel changes**  
**2010 2011 2012 2013 - 14 years of unprecedented sustained low levels**

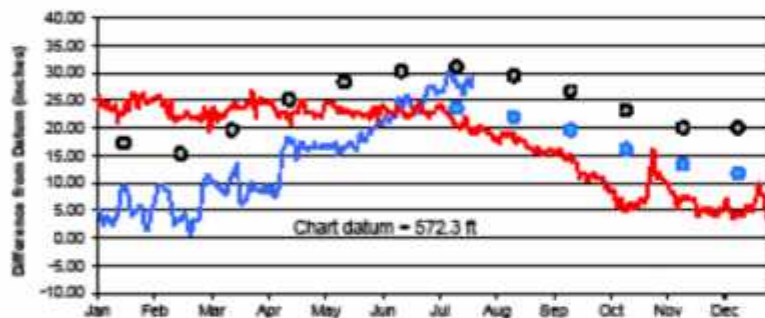
Lake Superior



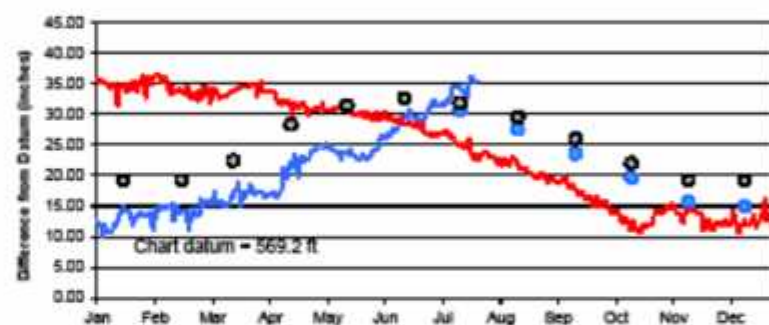
Lake Michigan-Huron



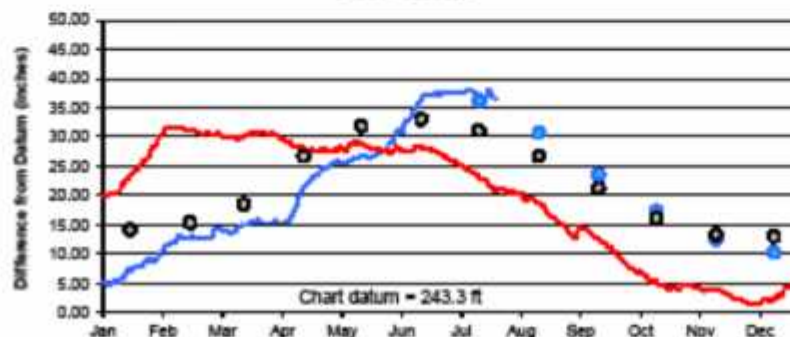
Lake St. Clair



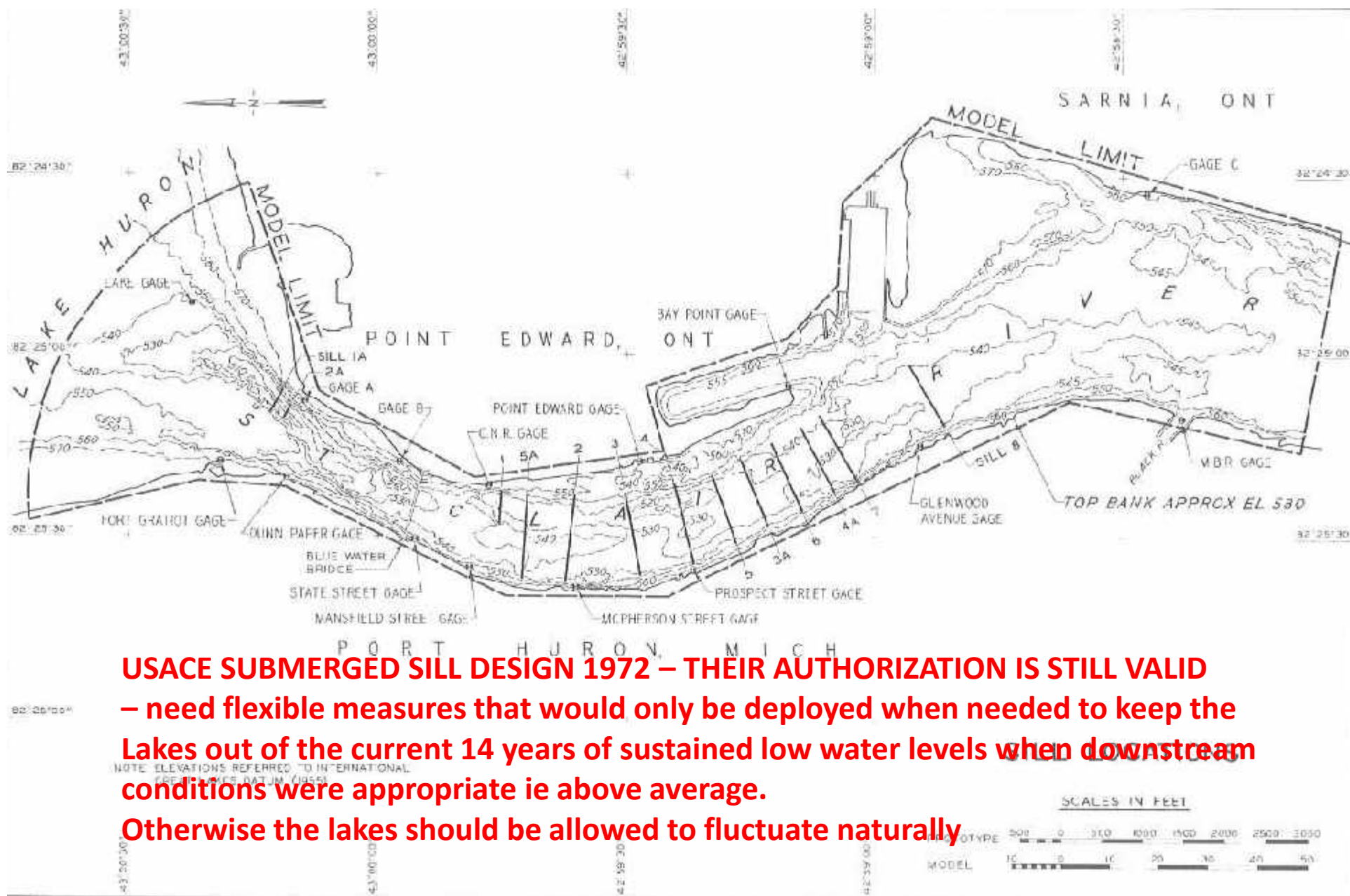
Lake Erie



Lake Ontario



U.S. Army Corps of Engineers  
Detroit District  
<http://www.lre.usace.army.mil>



**Roger Gauthier, Lead Hydrologist, former US Army Corps of Engineers staff – recently retired – now Chair, Restore Our Water International - ROWI**

- **“The historic changes and dredging of the St. Clair River over the years have resulted in changes to the riverbed that have increased the amount of water going down the river, carrying more and more water out of Lakes Michigan and Huron, through the lower lakes, and out to the ocean. This water is irreplaceable,” explained Roger Gauthier**
- **“It has reached a point where the damage is profound. It is now threatening the hydrological integrity of the entire upper Great Lakes.”**

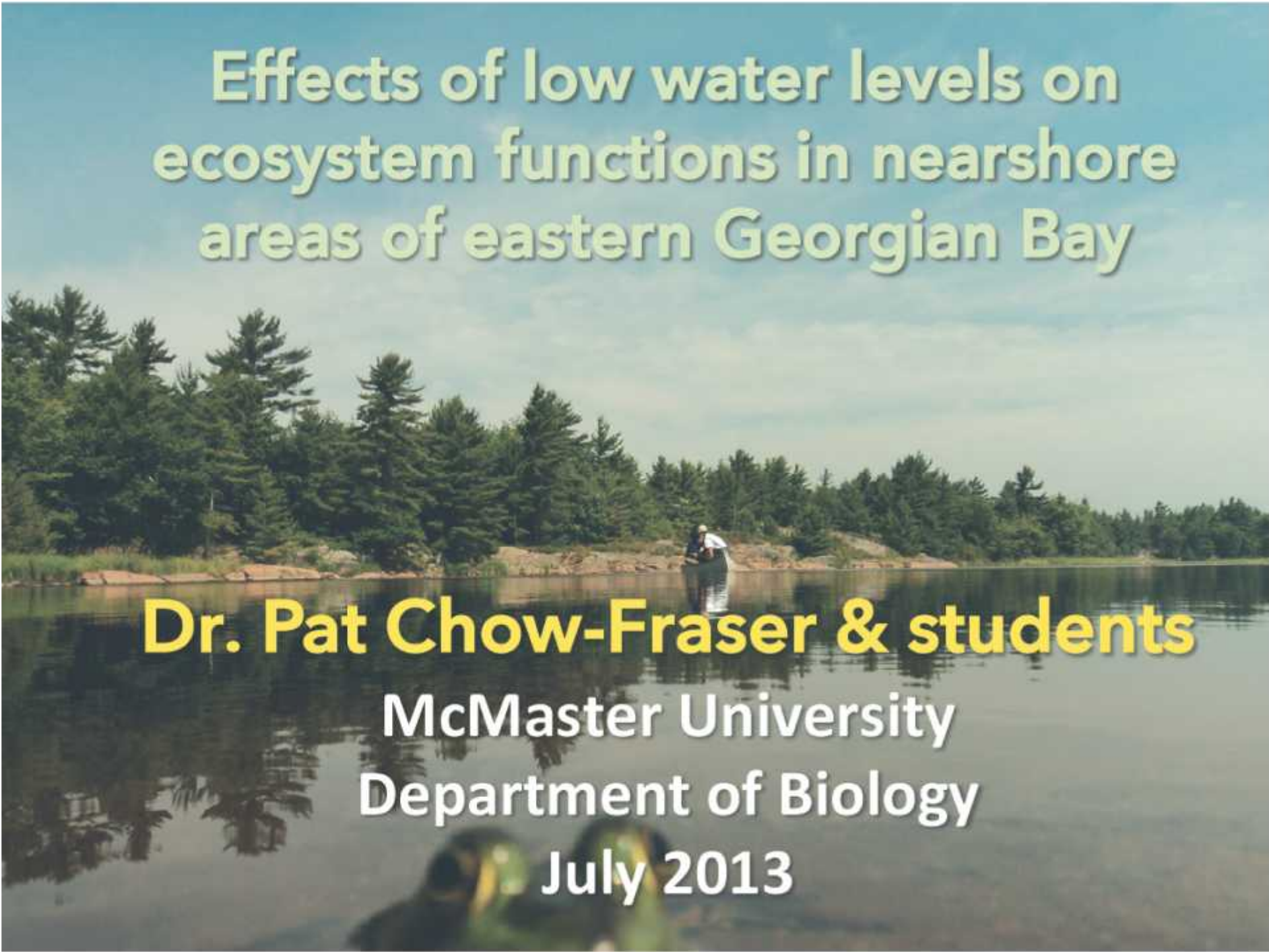
# Ice Jams slowing ships in the St. Clair River that leads to further scouring of the riverbed

Saturday, January 15, 2011 Sarnia Observer



## 2 Game Changers May 2013

- IJC rejects do nothing recommendation from their \$17M Upper Lakes Study;
- instead recommends review of St. Clair River compensation options to restore Lake Michigan/Huron/Georgian Bay levels
- IJC once again rejects multi lake regulation or system wide management as an option
- US Army Corps confirms it has authorization to proceed with St. Clair River compensation but needs go ahead from US State Department



# Effects of low water levels on ecosystem functions in nearshore areas of eastern Georgian Bay

**Dr. Pat Chow-Fraser & students**

McMaster University  
Department of Biology  
July 2013



**Lake Huron  
productive wetland 1999**

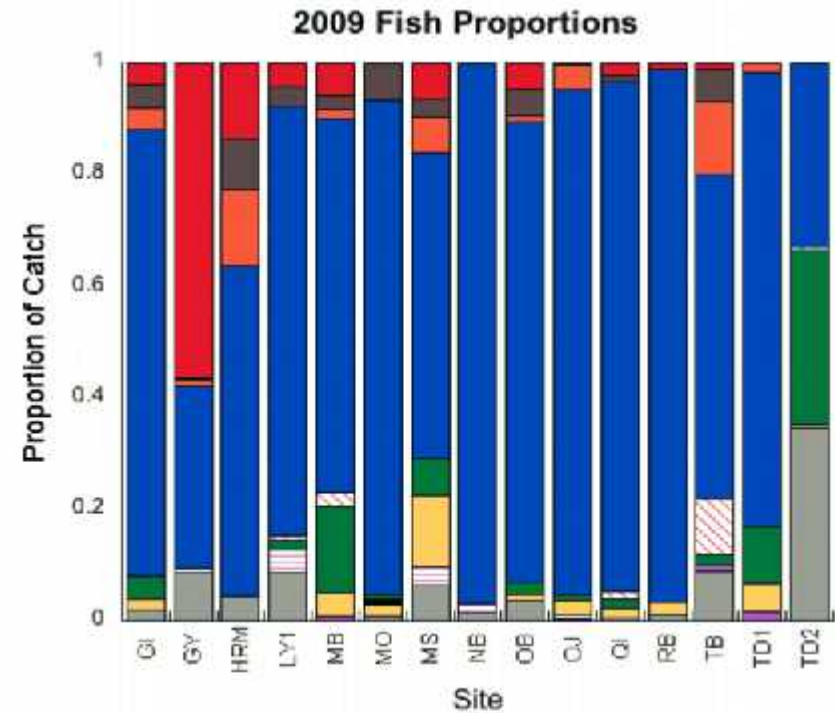
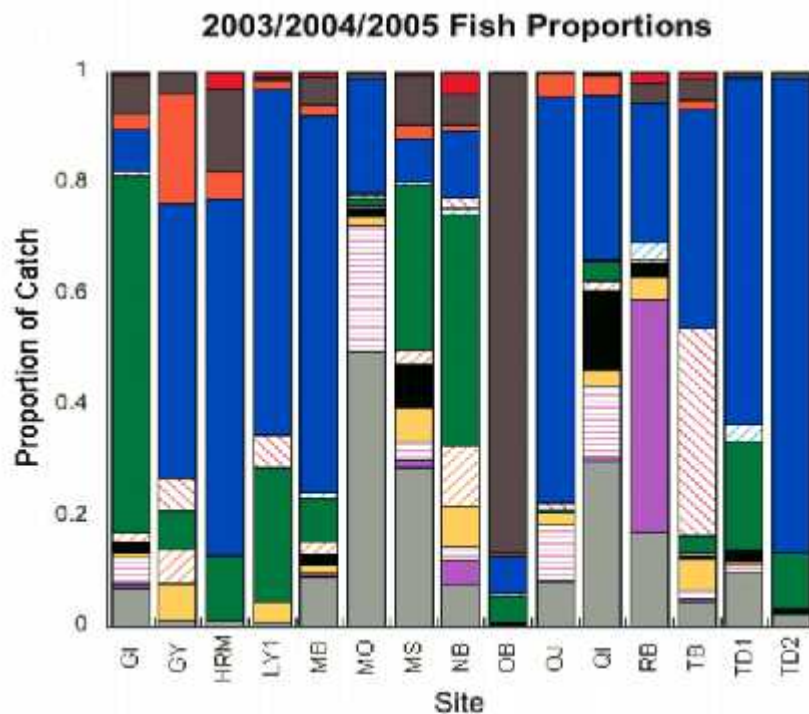
**Wetlands are needed by 80% of Great Lakes fish for spawning and or nursery habitat - where there is only adjacent granite shorelines the wetlands cannot migrate out**

**Ontario Ministry of Natural Resources  
have said at public meetings  
that every centimetre counts  
for fish spawning habitat**



**same wetland 2001-03  
Now converted to meadow with  
6 foot trees**

# Large-scale changes to plant and fish communities in GB coastal wetlands



## Five main effects on nearshore habitats

1. Hydrological stranding of high-quality wetlands throughout eastern GB
2. Large-scale changes to plant and fish communities in coastal wetlands
3. Loss of critical (nursery) habitat for pike and muskies, especially in Severn Sound
4. Facilitation of invasive *Phragmites* (Giant or common reed of Eurasia)—extent is not known
5. Increased prevalence of hypolimnetic anoxia in populated shallow embayments of eastern Georgian Bay



# **McMaster U's Dr. Pat Chow-Fraser wetlands research lab; Conclusions**

- 1. Low water levels have already reduced fish habitat from 30-80% in Severn Sound**
- 2. Further drop in water level will lead to further losses in wetland / fish habitat**
- 3. Overall 25% - 40% fish habitat loss for Georgian Bay**

# What has all this to do with tourism? A lot

- Decline of the main sport fishing species – pike and musky – the recreational fishery community will avoid Georgian Bay
- Dead smelly waterfowl and fish washing up on beaches does not encourage tourism
- Algal bloom outbreaks increased related to low water levels
- Dredging costs for marinas substantial - \$20,000 up to \$200,000







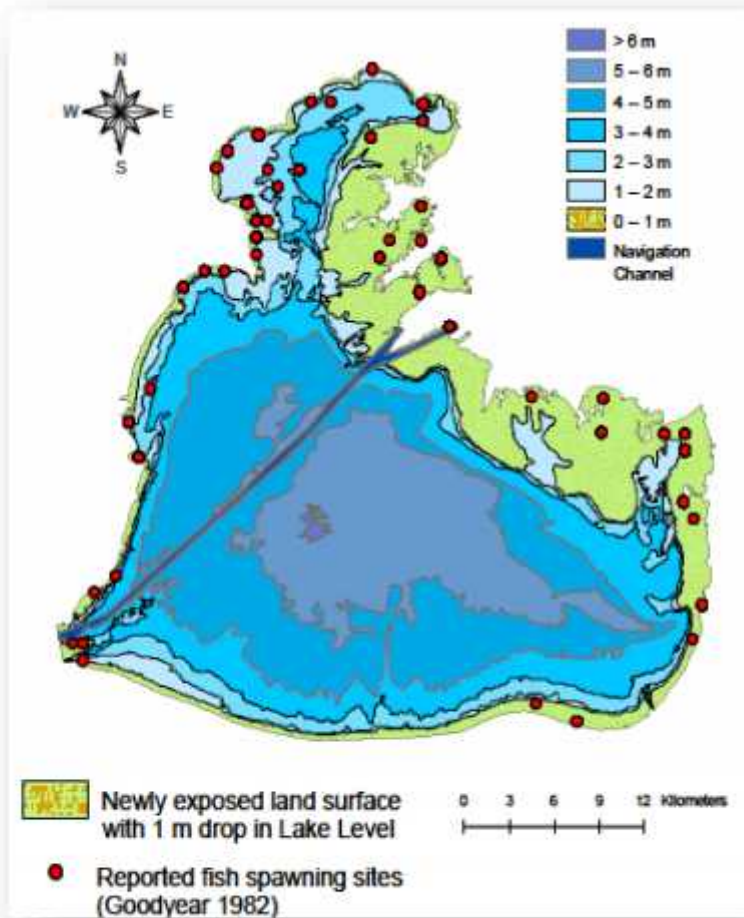


**IJC Midland Georgian Bay public meeting July 14, 2012**  
**Well over 600 in attendance + 300 at both Parry Sound and Collingwood:**  
**IJC Commissioner Lyall Knott “We hear you loud and clear – restore our water”**



## IUGLSB Fear Mongering at public meetings

### Shoreline Impacts from Restoration in Lake St. Clair



Lake St. Clair shoreline is exposed as water levels decline:

- Fish spawning sites are exposed
- Shoreline infestation of invasive species (*Phragmites*)
- About 46% of recreational fishing for Michigan is on Lake St. Clair

Slide from IUGLSB presentation – MH restoration shows a 1 Meter Lake St Clair decline!! Their own work determined a 7.5 cm temporary decline. This map was created for an unrelated project. The 1 M drop bears no relationship to their own model results

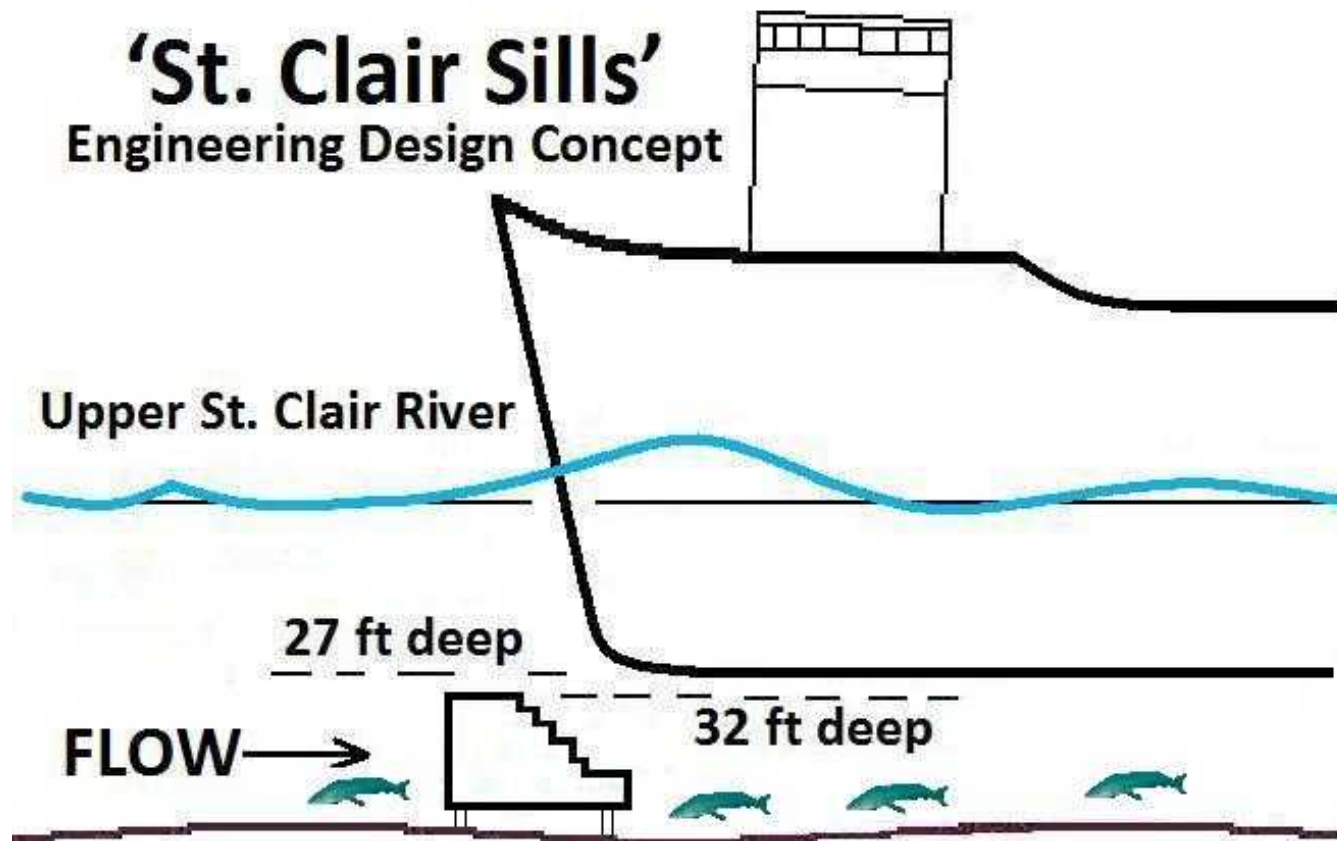
# *Restore Our Water International Inc.*

## *(ROWI)*

formed January 2013



**There is a reasonable, responsible solution,  
USACE ready to begin work, need \$3M**



SC Sills are designed to sit on legs 3 ft off the bottom and leave the fish habitat undisturbed. In the unlikely event of a future high water crisis, they can be rotated 90° to lie with the flow, or be completely removed.

# What can the municipalities, provincial and federal governments do?

- publicly endorse the IJC's 2013 advice to solve the St. Clair River excess flow problem, and work with U.S. federal and Great Lakes States politicians to achieve the necessary restoration of water levels.
- Support the U.S. Army Corps of Engineers (USACE) to initiate a re-evaluation within the next year of proposed structures in the St. Clair River to compensate for past dredging, sand/gravel mining and erosion, and work with the USACE to undertake a review and update of past Environmental Impact Studies and permits.



*Restore Our Water International*



F O U N D A T I O N  
S I E R R A C L U B C A N A D A  
F O U N D A T I O N

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905 833 2020