

# Lake Simcoe Water Levels

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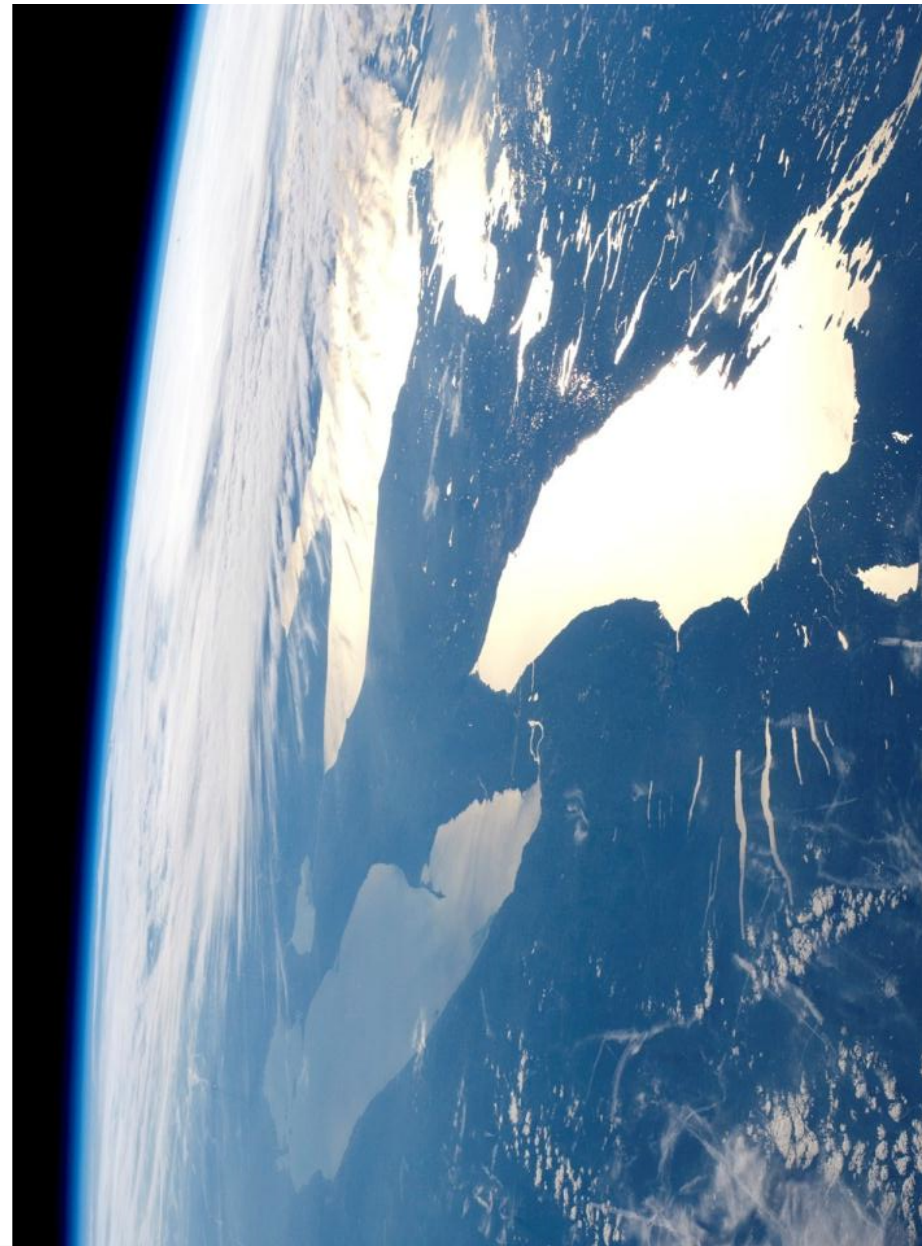
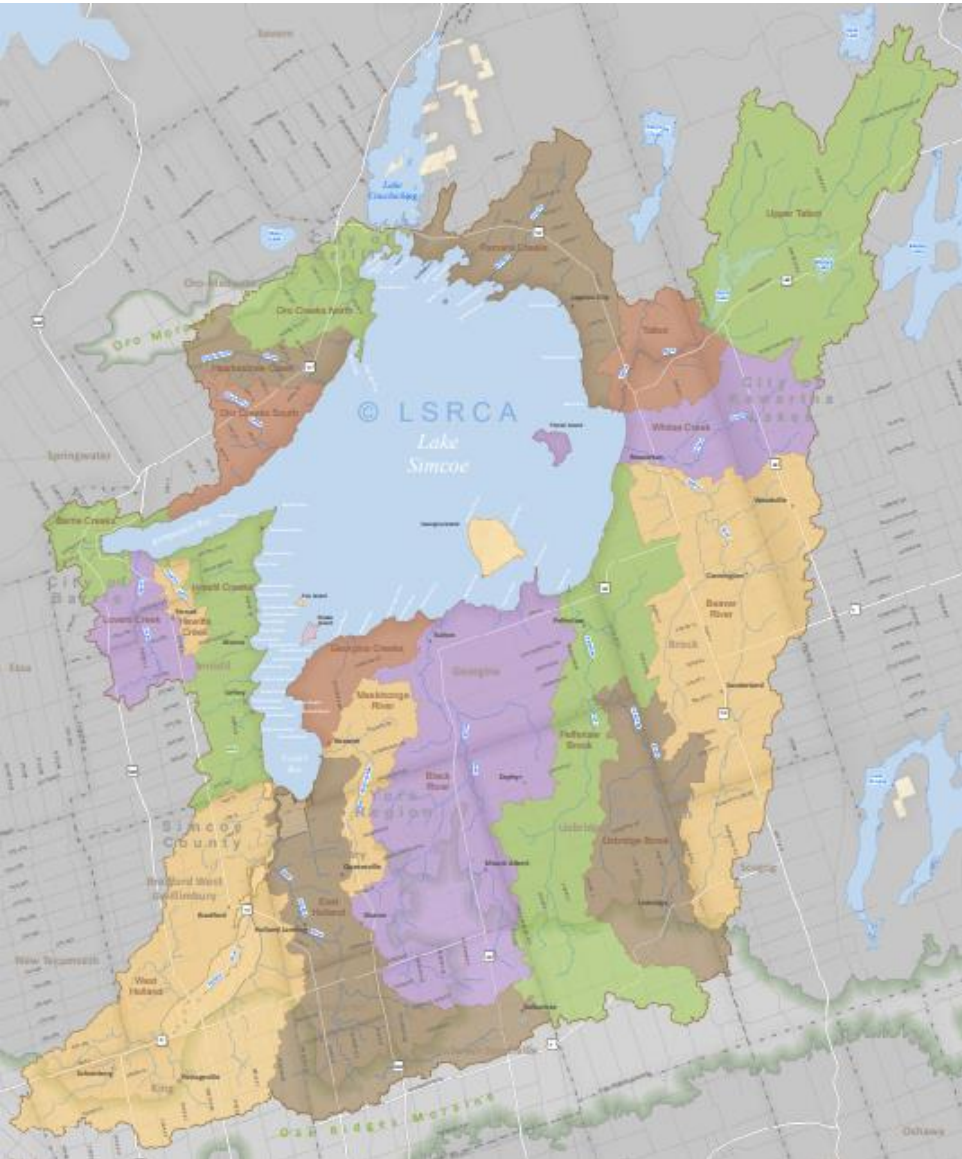
Ken Cheney, Director, Engineering



**Lake Simcoe Region**  
conservation authority



# Lake Simcoe Watershed



# Trent Severn Waterway

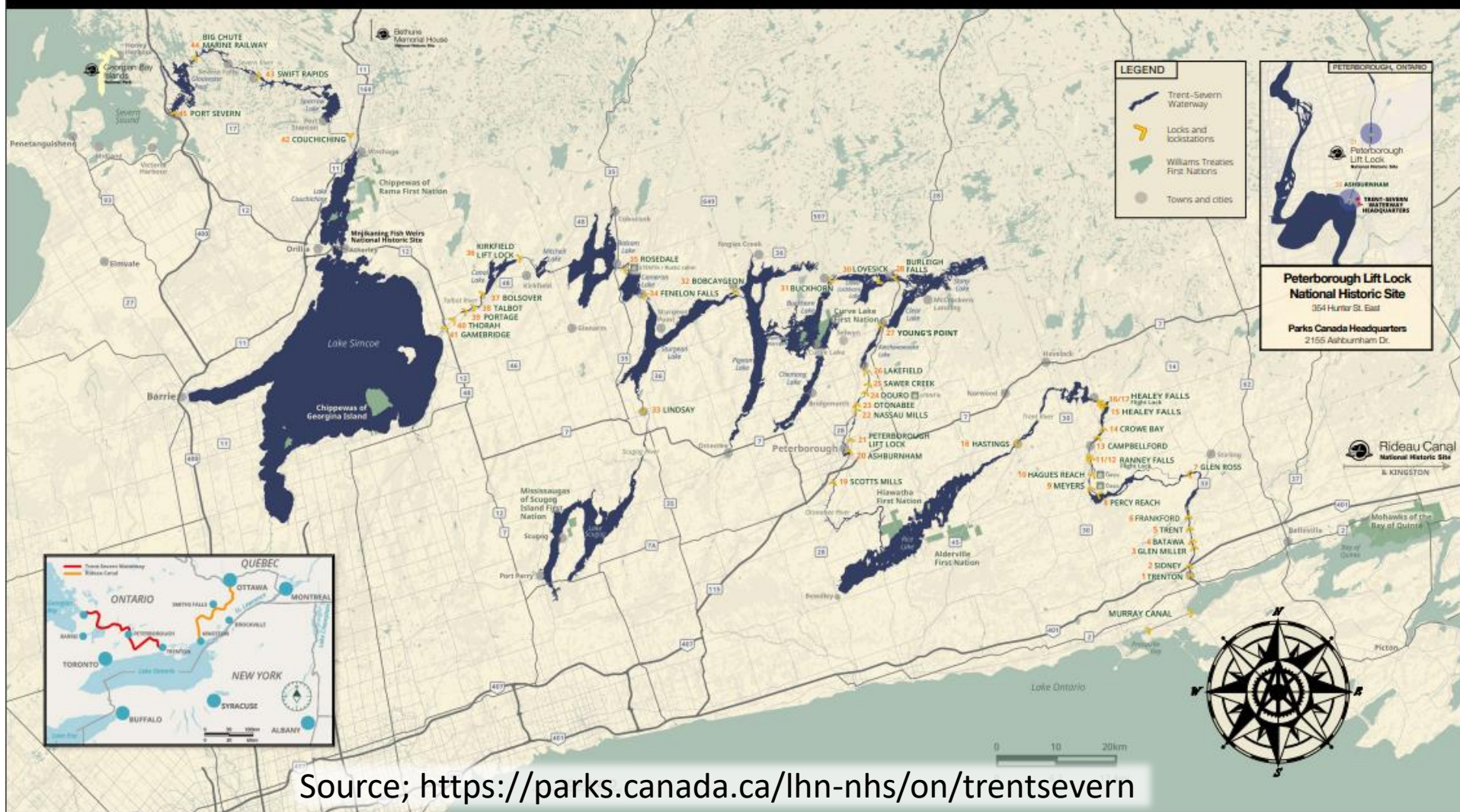


Trent-Severn Waterway  
National Historic Site



Parks Canada  
Parcs Canada

Canada



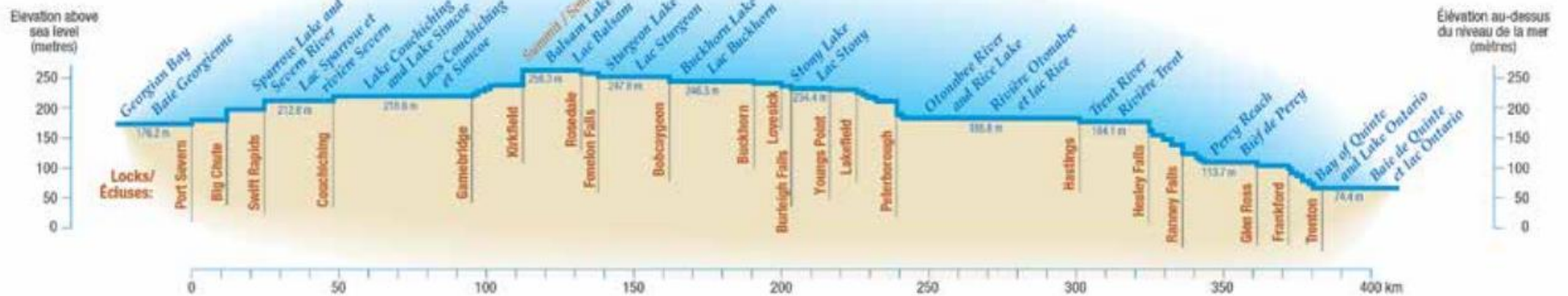
Source; <https://parks.canada.ca/lhn-nhs/on/trentsevern>



# Trent Severn Waterway Elevation Profile

Profile of Trent-Severn Waterway

Profil de la Voie-Navigable-Trent-Severn



Source; <https://parks.canada.ca/lhn-nhs/on/trentsevern>

# Trent Severn Facts

- 386 km long navigation route
- Consists of the Trent River and the Severn River watersheds plus reservoir lakes
- 60 lakes
- More than 250 marshes, swamps and other wetlands
- 15 rivers
- 102 operating dams
- 45 Locks
- 130 water level / flow gauges



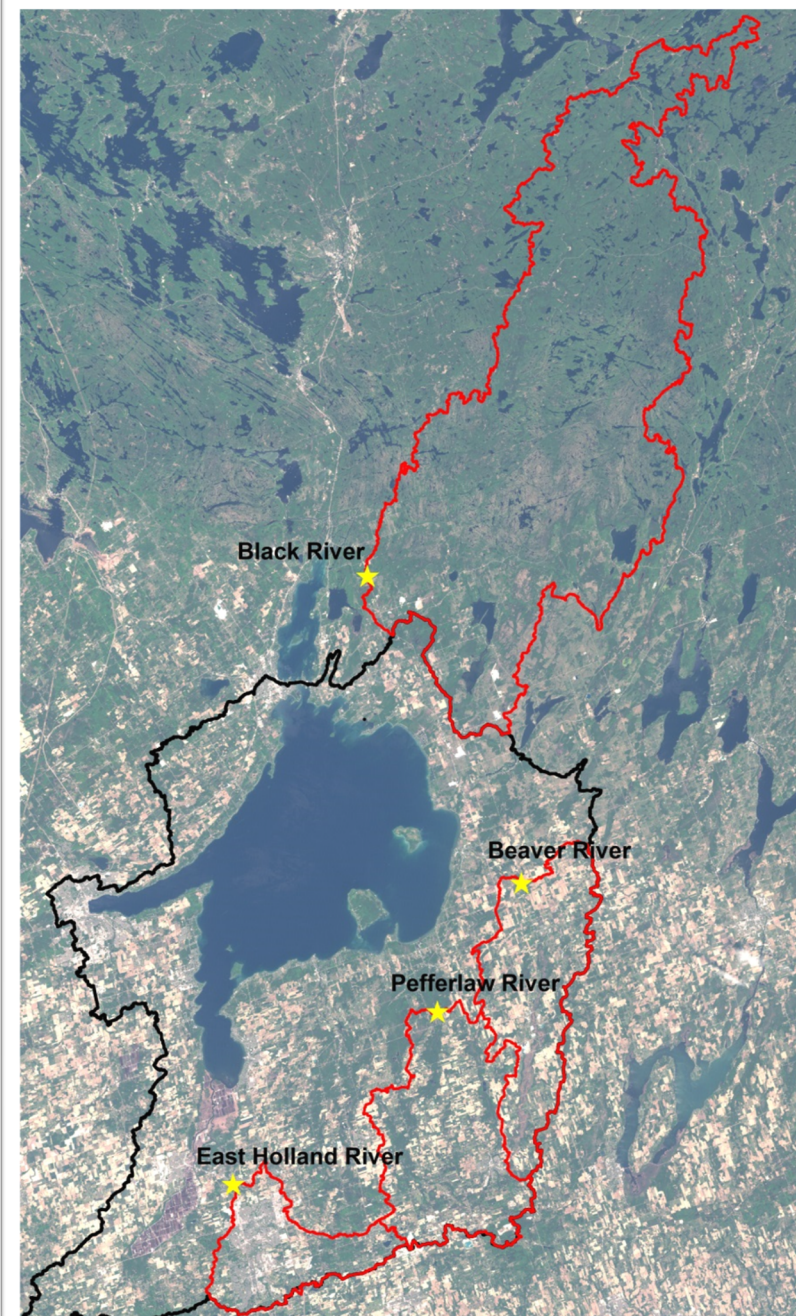
# Water Level Management

- The water management goal is to provide for safe navigation while trying to accommodate the other water users.
  - Flooding / draw down
  - Fisheries
  - Assimilative capacity / hydro generation
  - Climate (wet, dry, snow pack, upcoming season forecast, and climate change)



# Spring Water levels

- Spring water level objective:
  - To reduce flooding, and to store as much water as possible for summer use.
- In the Severn basin, the two main spring objectives are:
  - fill Lakes Simcoe-Couchiching without overflowing, and
  - minimize the effect of the peak flow from the uncontrolled Black River that joins the Severn River below the outlets of Lakes Simcoe-Couchiching at Washago.



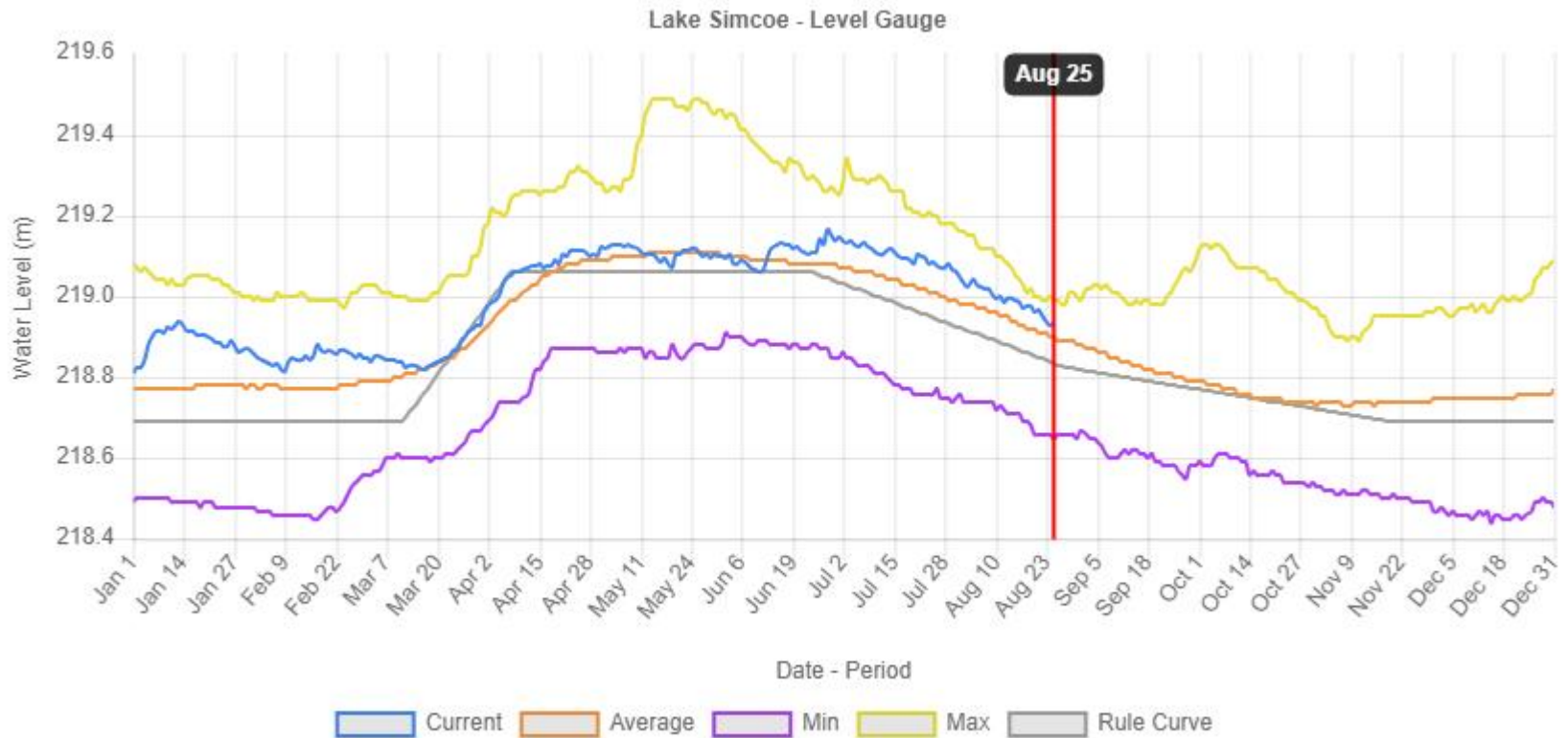
# Summer drawdown

- During summer, priority is maintaining water levels and flows. The three main objectives for summer water control are:
  - maintain the lakes and rivers on the main navigation system within advertised navigable depth ranges;
  - use as little water as possible from Reservoir Lakes and maintain all Reservoir Lakes at the same percentage of storage depth; and
  - maintain sufficient flows through the system to ensure water quality.



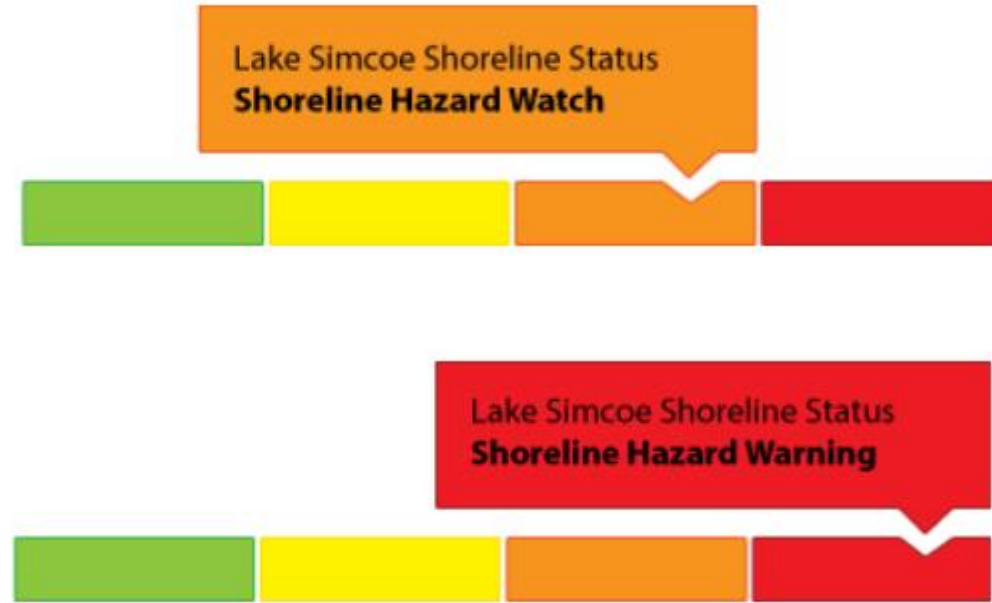


# Lake Simcoe Rule Curve (since 1918)



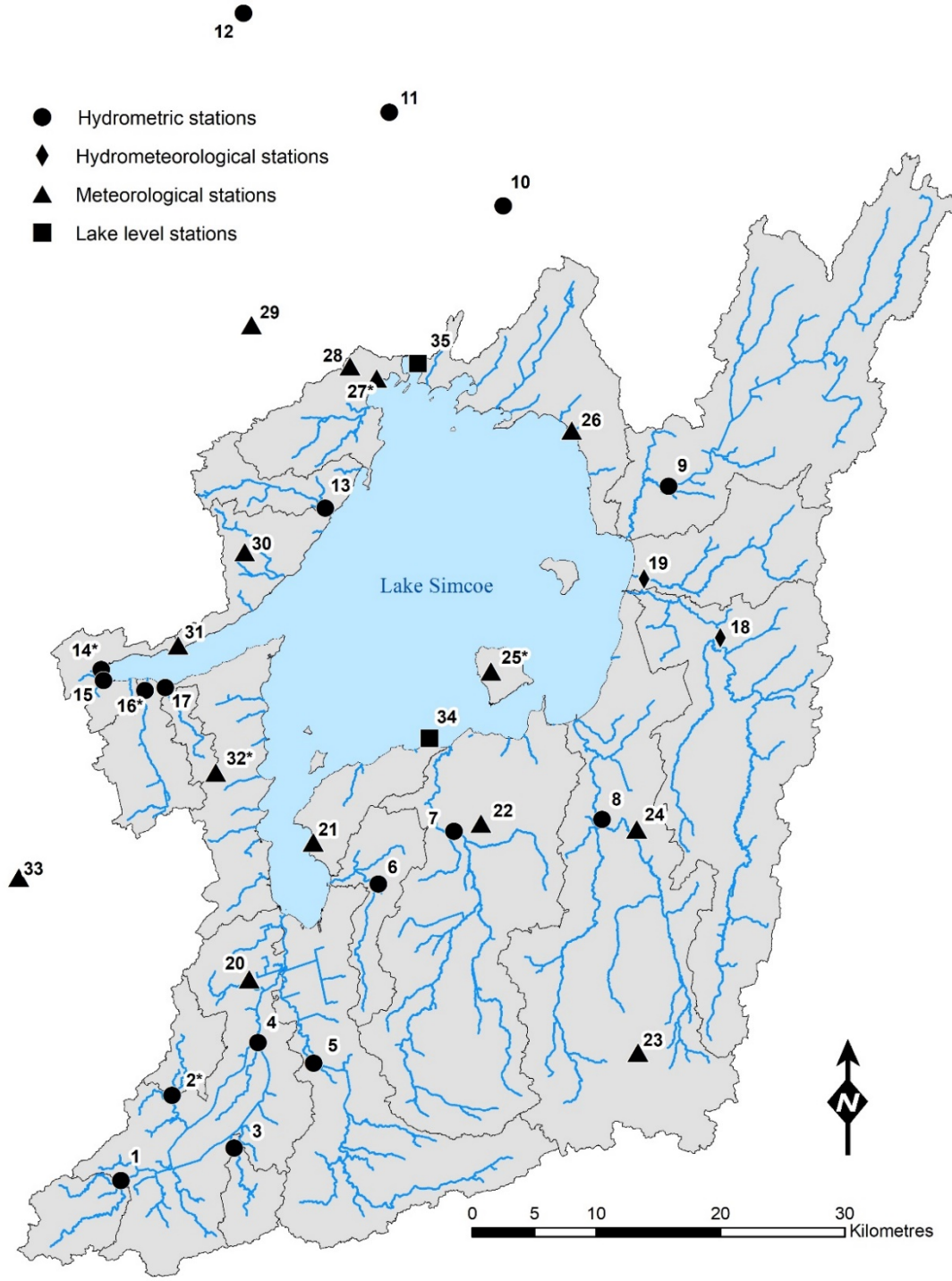
# Lake Level and Shoreline Hazard

- Water levels > ~219.15 may have shoreline impacts
- Flooding
- Local drainage impacts
- Storm surge or seiche causing wave damage
- Impacts to agricultural dikes



# Monitoring Water Supply and Loss Parameters

- 20 Stream Flow Stations
- 14 Meteorological Stations
- 1 Lake Level Station
- 1 New Lake Level Station  
Coming Fall 2023!



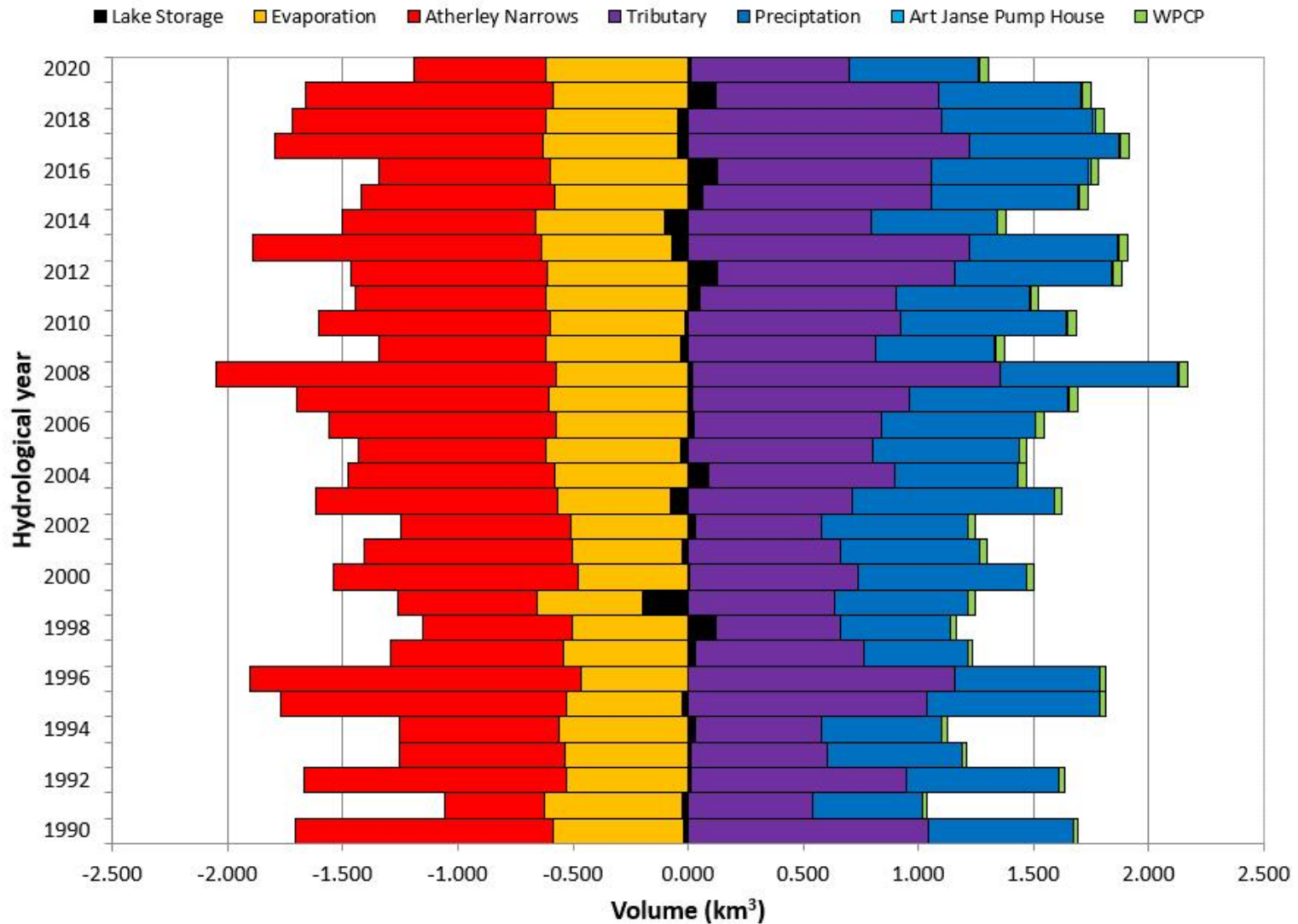
# Water Supply and Loss to Lake Simcoe

Annual			
Supply	% Contribution	Loss	% Contribution
Tributary Flow	60%	Outflow	60%
Precipitation (to lake)	38%	Evaporation (from lake)	40%
WPCP	2%	Lake Storage	+/- 1%
Pumphouse	0.5%		

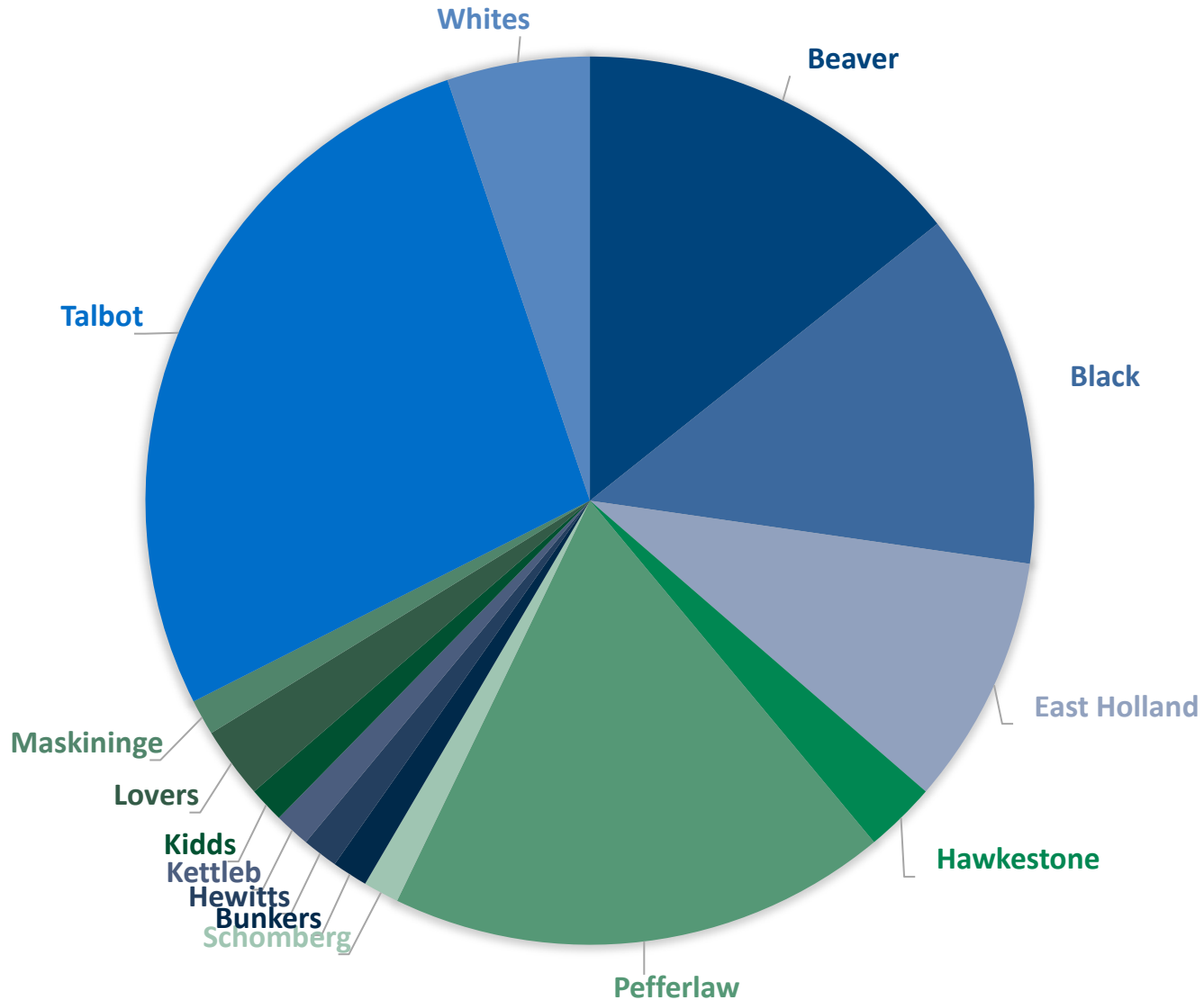
Summer			
Supply	% Contribution	Loss	% Contribution
Tributary Flow	40%	Outflow	42%
Precipitation (to lake)	57%	Evaporation (from lake)	58%
WPCP	2.5%	Lake Storage	+/- 1%
Pumphouse	0.5%		



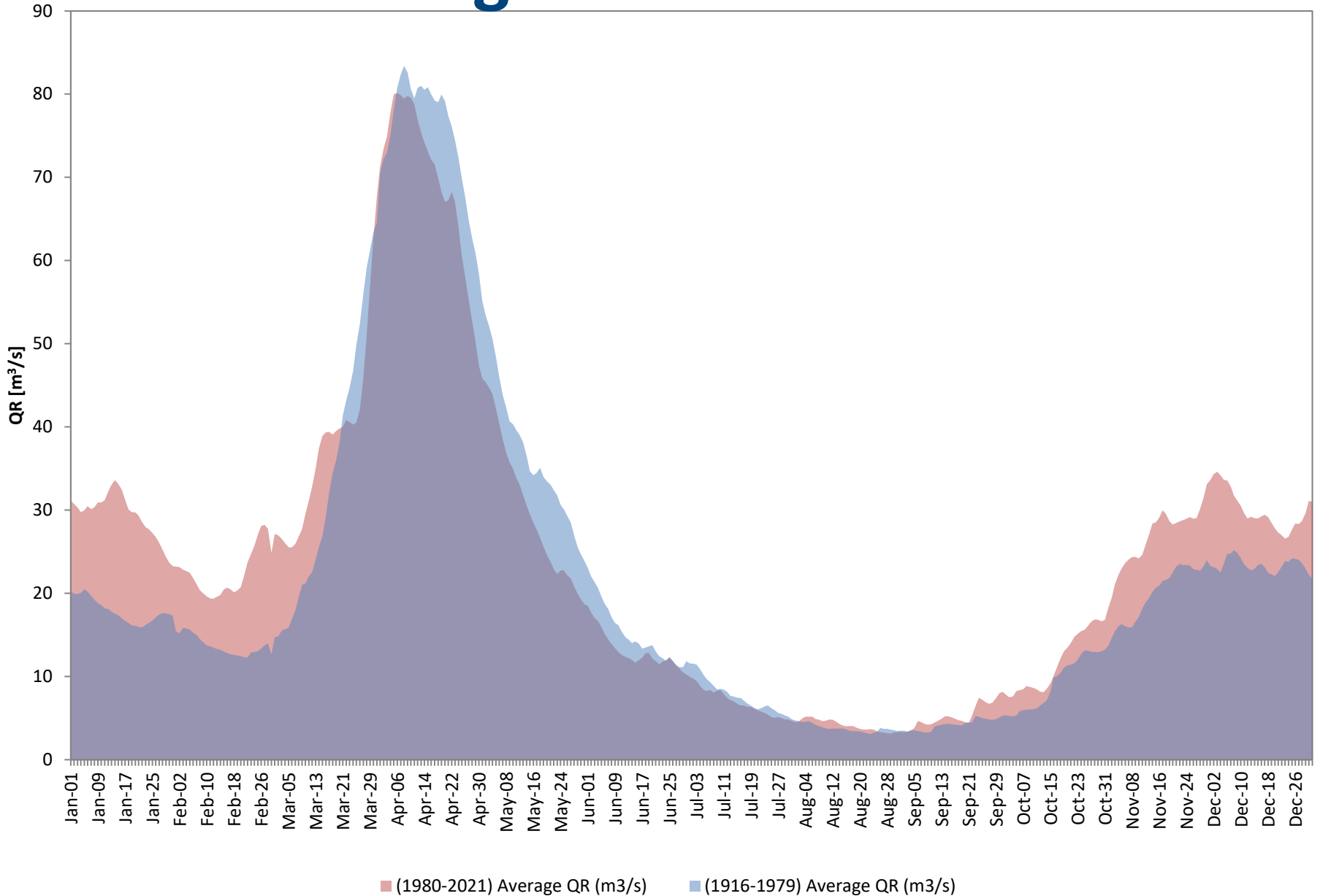
# Water Balance for Lake Simcoe



# Annual Flow to Lake by Tributary



# Climate Change and Water Balance



# Questions?

