

Enabling Climate Change Watershed Adaptation Across Ontario: Access and Discovery Through the Gateway

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Adaptation Planning in Eastern Ontario

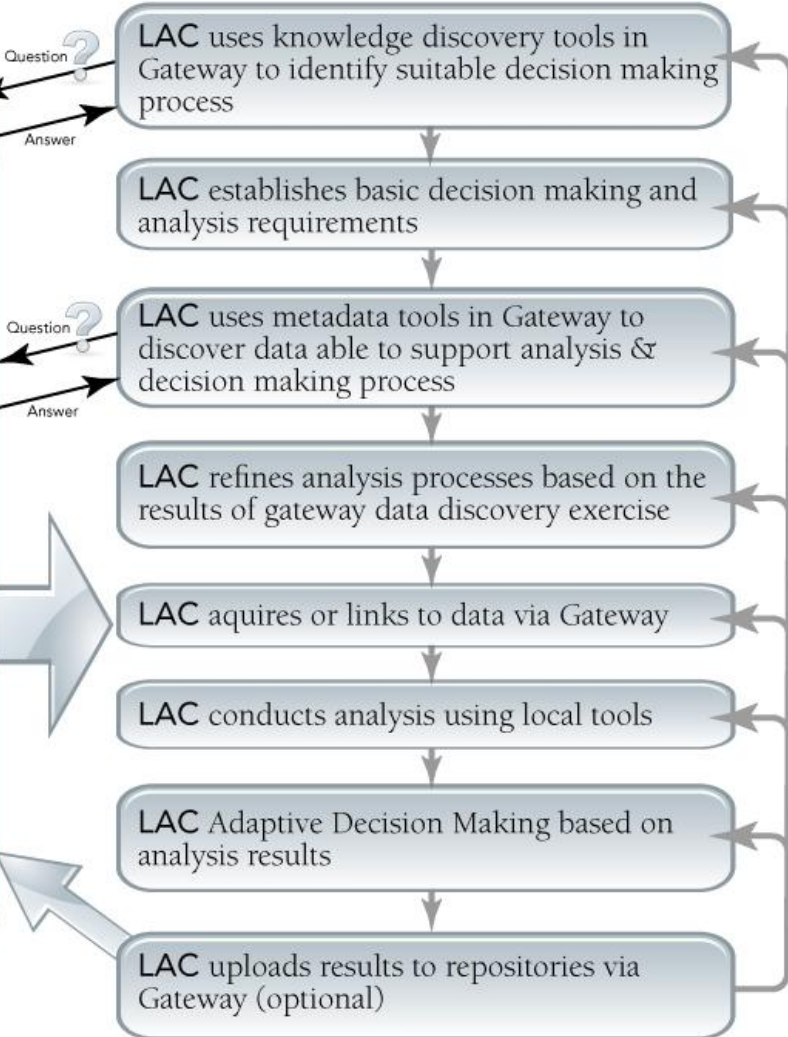
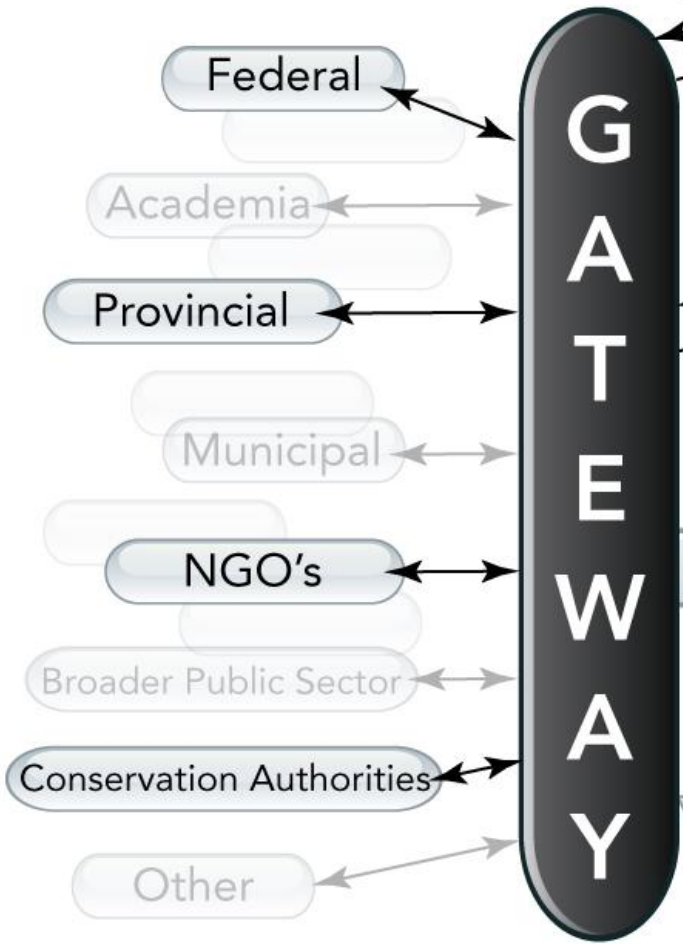
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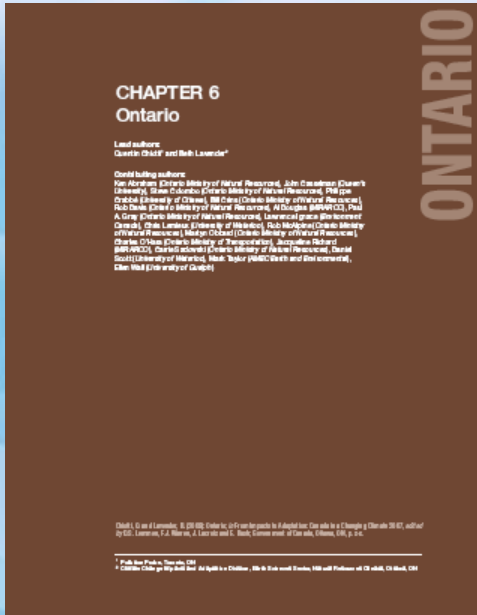


Data Repositories:
Multiple Sectors, Multiple Levels

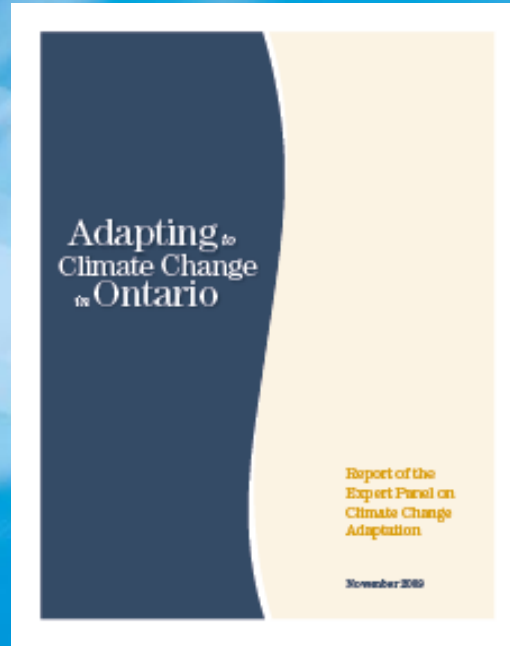
Local Adaptation Collaborative (LAC)

Decision Making
Continuum



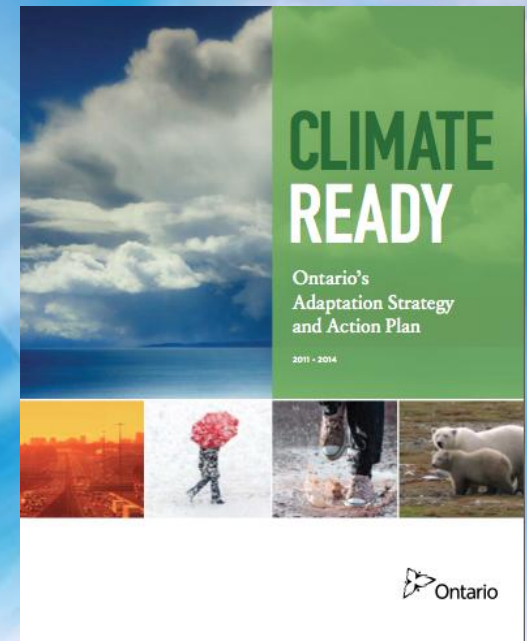


Scientific foundation for climate change and impacts on water resources but can it tell me exactly how I will be impacted in the future?



Mainstream into policy: 25 of the Expert Panel's 59 recommendations dealt with water and water related issues, but how does it affect my job/issue?

High level strategy, but what does it mean for where the rubber hits the road? How should local decision makers best respond?



Preparing for Climate Change or Current Climate?



Effects from changes in climate are already being felt



Past conditions will not apply in the future

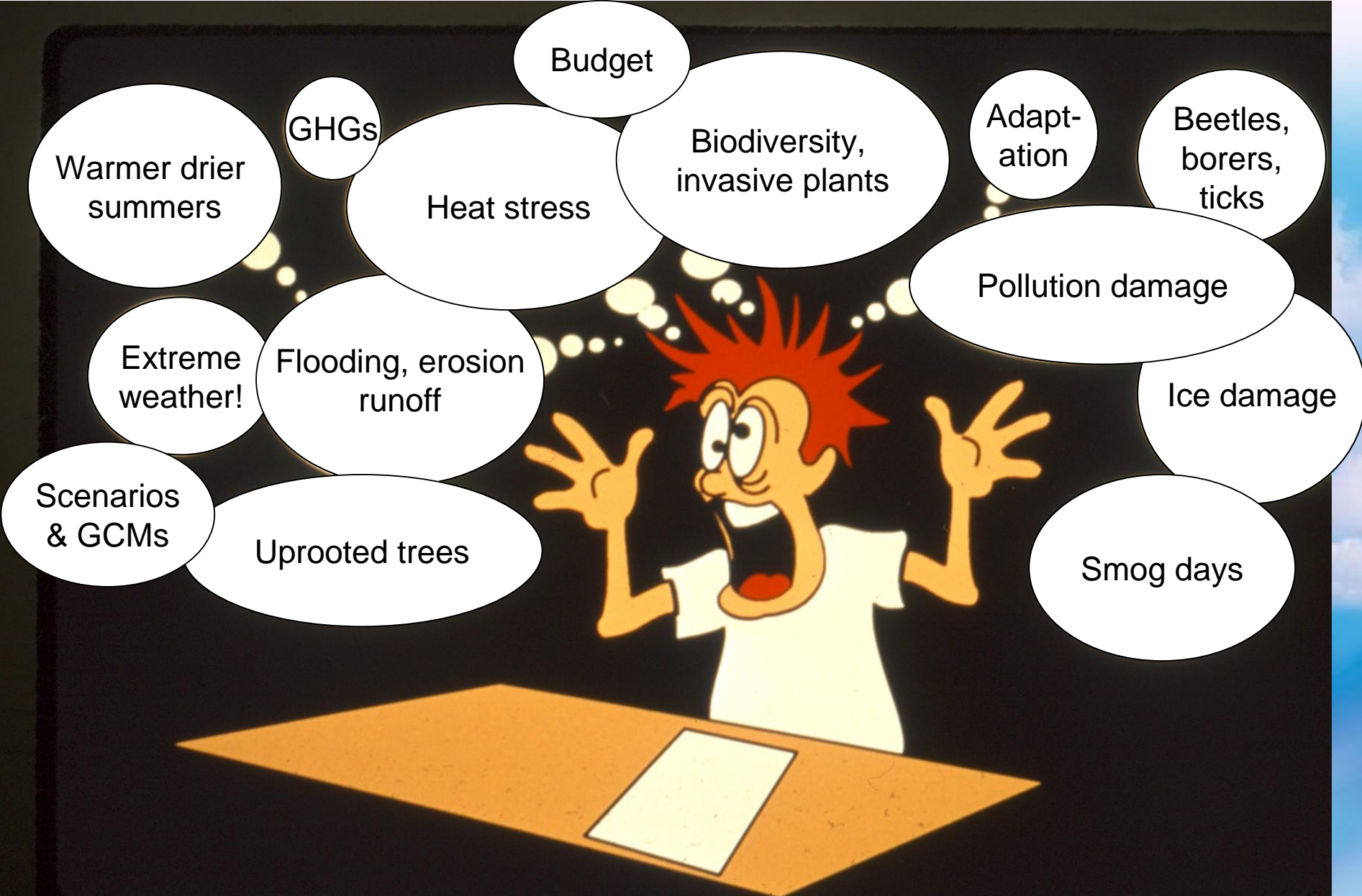


What do we know/don't know?



Accept that conditions are changing, but: by how much, where, what are the consequences, and what are my options?





Budget

GHGs

Warmer drier summers

Heat stress

Biodiversity, invasive plants

Adaptation

Beetles, borers, ticks

Pollution damage

Extreme weather!

Flooding, erosion runoff

Ice damage

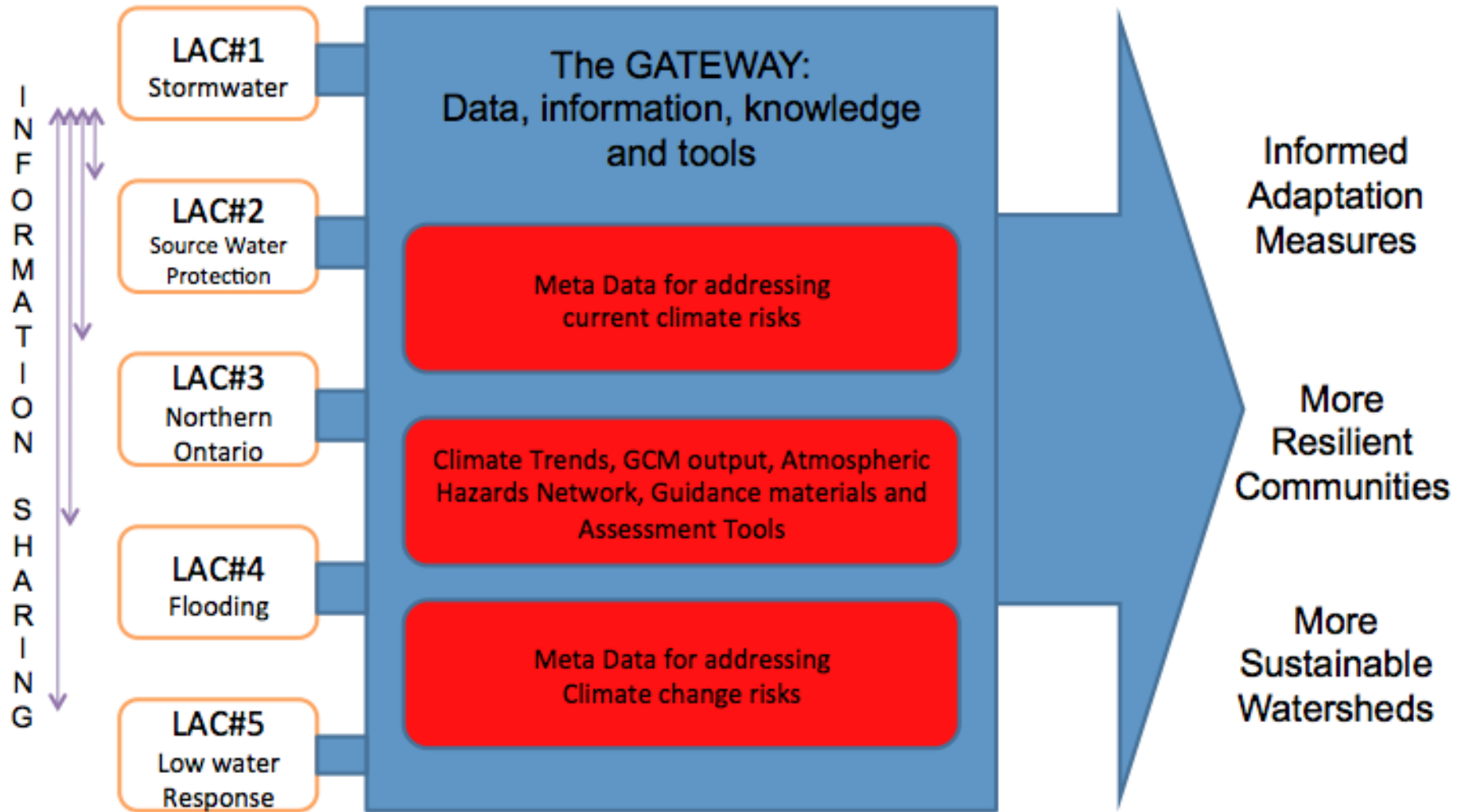
Scenarios & GCMs

Uprooted trees

Smog days

Balancing the tools and knowledge required is a challenge

Partners: MNR, ACER, CA's, Communities, other stakeholders



Gaps Analysis, Gateway Input, Testing, and Optimization, and Knowledge Transfer

Listening to LACs: What are our challenges/problems:

- **Baseline information:** More complete/updated data-sets for climate, IDF curves, stream characterization, stormwater systems, floodplain mapping, vulnerable groups, policy environment, standards and best practices
- **Climate Change Information:** Climate Change Scenarios, hydrologic effects, IDF curves, current practices and future adaptation (e.g. pipe size, low impact development, water takings, intake areas)
- **Guidance and Tools:** to assess climate change impacts, effects, risks, vulnerability and effectiveness of adaptation options
- **Case studies:** learning from others, sharing information, experiences and responsibility so we don't have to reinvent the wheel when making more informed, economically justified and effective adaptation decisions

Performance Measures

- LACs: Information exchange and information sharing today and in the future
- Demonstrate that each LAC is:
 - Able to use the Gateway to discover data and information
 - Using the Gateway to obtain data and information
 - Able to use the data and information to make more informed decisions regarding adaptation to climate change
- Outputs and Outcomes: Using the Gateway, leading to more sustainable and resilient communities and watersheds

Mississippi Valley Conservation Authority....

*** Report 20110330 ***

Fish, Fisheries, and Water Resources: Adapting to Ontario's Changing Climate

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Photographs courtesy of the Giffels family, Tweedmouth Lodge, Church Lake, Ontario, and courtesy of E. Johnson at G. Price, Church Lake, Ontario.

Low Flow Comparison
Mississippi River @ Appleton (WSC 02KF006)

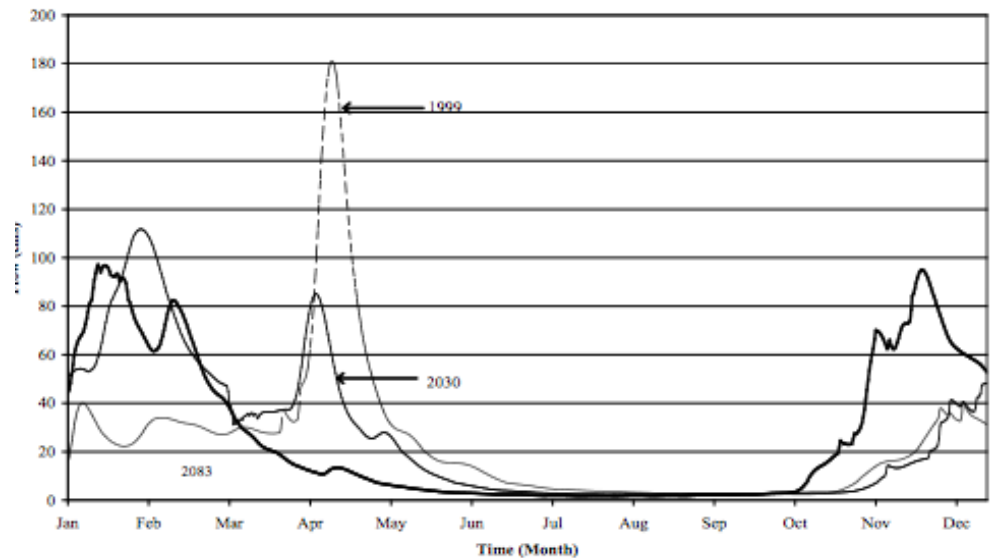


Figure 4.31. Low flow comparison for the Mississippi River at the Appleton gauge.

Climate Change Risks to Water-related Issues and Adaptation Options

Table 4.13. Water resource impacts and response summary.

Objective	Water Resource Impact	Potential Response
<p>Low flow augmentation Water supply Hydro generation</p>	<p>More severe and prolonged low flow conditions; Reservoirs will be insufficient to satisfy current low-flow targets; Municipal water supply requirements; Will be fully dependent on reservoir supplies; Hydro generation potential will be reduced in summer low flow periods.</p>	<p>Increased reservoir storage by 2000 to 3500 ha-m required to meet current objectives; Continued maintenance and reconstruction of water control infrastructure; Minimize water use and consumption.</p>
Fish habitat	<p>Lower stream flows during typical walleye spawning periods; Loss of traditional pike spawning habitat due to lower water levels during spawning period.</p>	<p>Identify and protect significant spawning areas; Develop opportunities for fish passage around structural barriers.</p>
Flood protection	<p>Generally lower risks from spring snowmelt/rainfall events; Greater risk of fall/winter flood conditions coupled with reservoir draw-down.</p>	<p>Discontinue/reduce fall drawdown regime; Assess implementation of risk based reservoir management strategy; Assess alternative flood damage reduction measures.</p>
Tourism/recreation	<p>Generally capable of achieving recreational water level targets on reservoirs; Lower stream flows will be insufficient to maintain recreational levels within current objectives.</p>	<p>Assess efficacy of lower and broader operating targets on recreational lakes, including the provision for flood reserves.</p>
Water quality protection	<p>Lower stream flows in summer will reduce flushing rates and waste assimilation capacity; Higher intensity rainfall events will increase nutrient loading to the river system; Total phosphorus levels currently approaching limit of provincial water quality objective for Policy 2 streams; Greater risk for low dissolved oxygen levels.</p>	<p>Quantify nutrient loading; Reduce point and non-point loading; Minimize disruption and alteration to natural stream corridors and shore lands.</p>