

Current & Potential Threats to the Grand River Watershed & Necessary Directions

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Grand River Environmental Network &
Great Lakes United

June 8, 2013

The logo for the Grand River Environmental Network features the text 'Grand River Environmental Network' in a bold, yellow, sans-serif font with a black outline. The text is arranged in three lines: 'Grand River' on the top line, 'Environmental' on the middle line, and 'Network' on the bottom line. The background of the logo is a dark green, wavy shape that resembles a river or a stylized landscape. The entire logo is set against a light green background.

**Grand River
Environmental
Network**

www.gren.ca

info@gren.ca

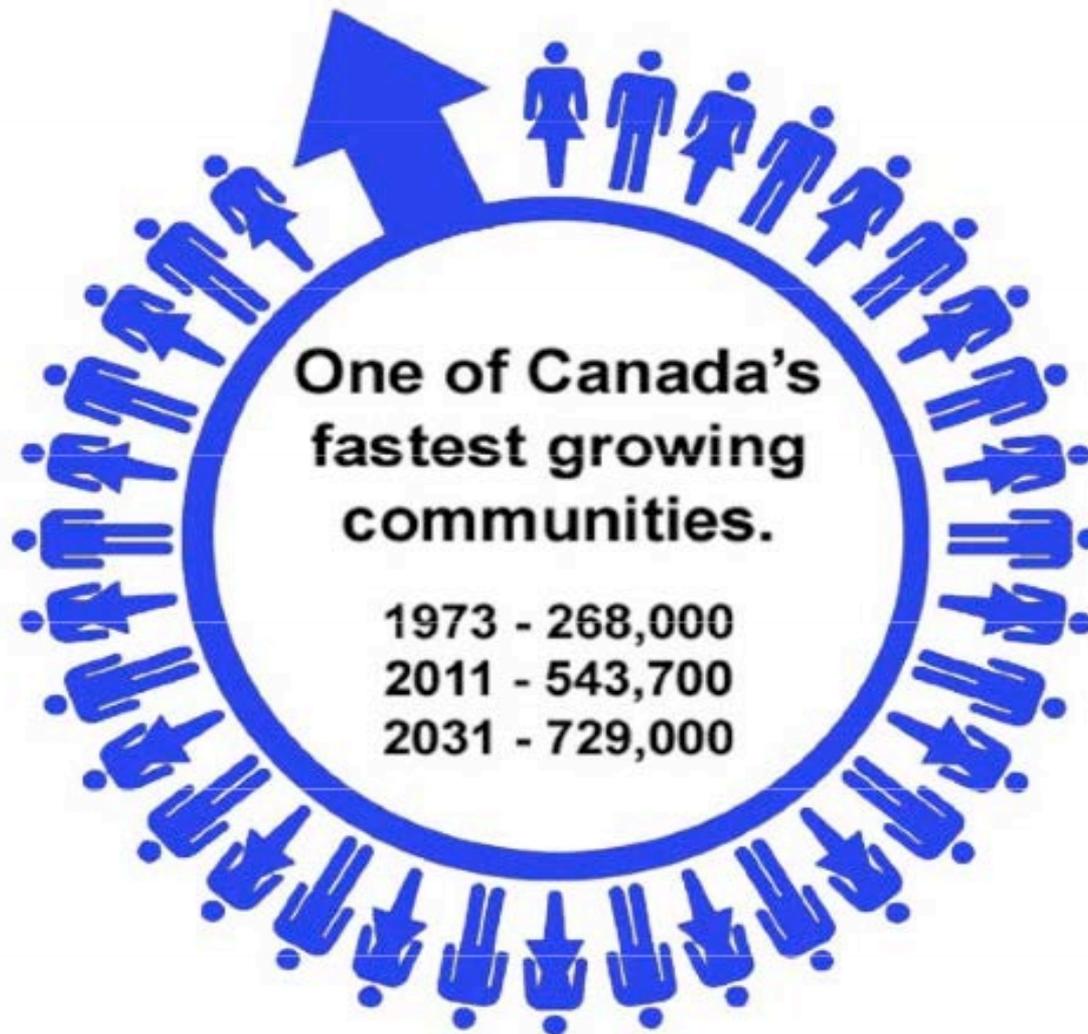
The proactive voice for the environment
in the Grand River watershed

Great Lakes United

Union St-Laurent Grands Lacs

We are citizens, environmentalists, conservationists, labour unions, First Nations, tribes, hunters, anglers, academics, and progressive businesses.

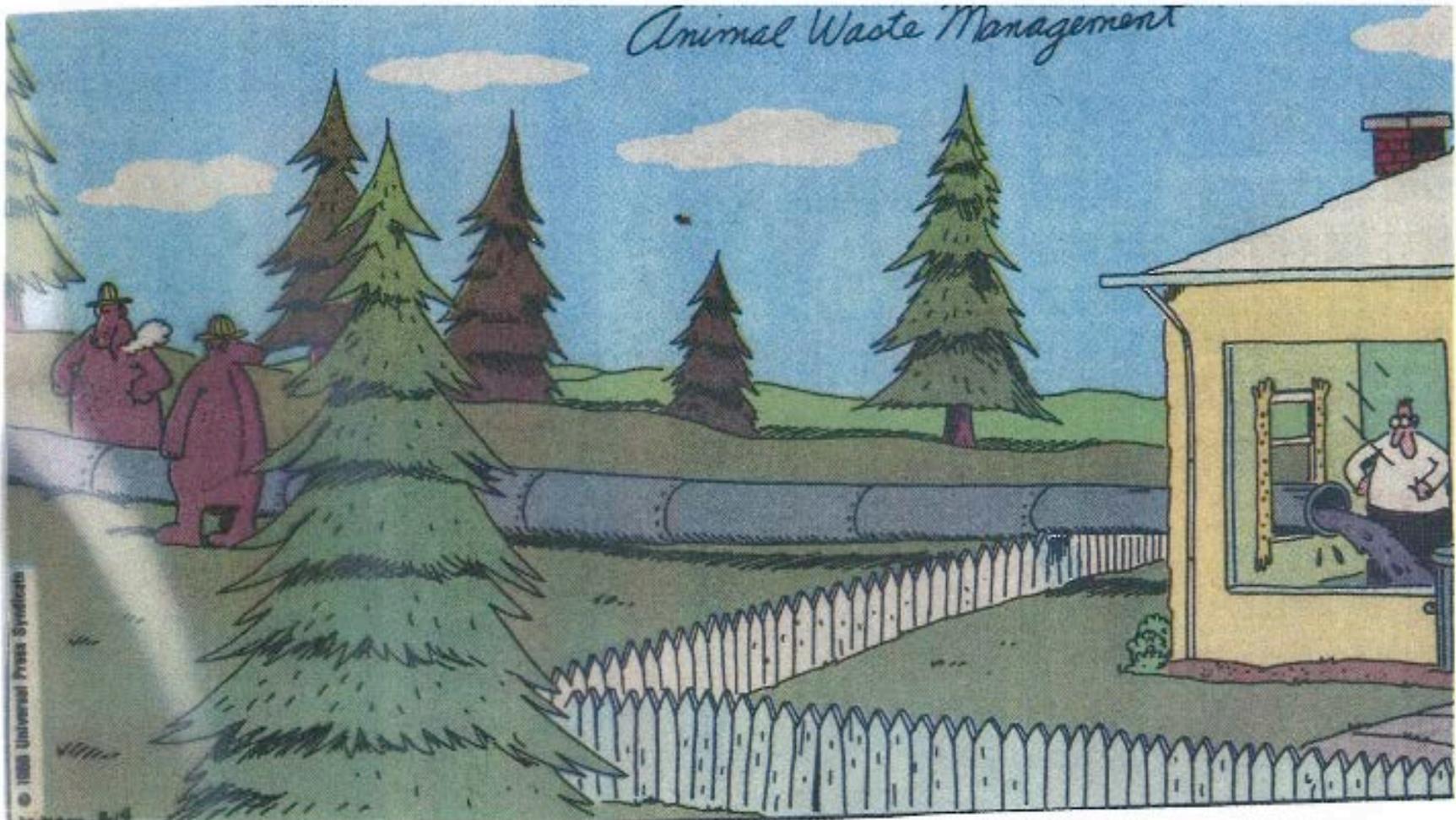
Together, we work to protect the world's largest freshwater ecosystem.





Chris Hadfield, February 2013

Animal Waste Management



Grand River

ENVIRONMENTAL FLOWS

STATUS: **Fair**

FORECAST: **Steady**



Flow Regulation and Fragmentation

- Flow regulation and fragmentation strongly affect the river and its tributaries
- The watershed is highly regulated by more than 100 dams and control structures

Withdrawals and Diversions

- Withdrawals in the watershed are among the highest from any watershed in Ontario
- Demand for water is expected to grow by 57% between 2001 and 2031

Climate Change

- Average air temperature in the watershed is expected to rise by 2.6 to 5.6°C over the next century
- Precipitation is predicted to increase by 11 to 18% by 2090

- Regulation has provided flood control and flow augmentation, but has also modified the natural flow regime extensively

- Dams have fragmented the watershed and curtailed high flows that would naturally flush nutrients and sediment downstream

- Withdrawals peak when flow is at its lowest; the provincial government classifies the lower Grand as a "high use" watershed during summer low-flow conditions

- At peak demand, in the middle Grand as much as 20% of flow is withdrawn; in the Whiteman's Creek sub-watershed, permitted withdrawals exceed summer mean flows

- Warmer winters could lower water supply and reduce flows; a predicted 10% reduction in spring peak flow will decrease flushing and further reduce water quality

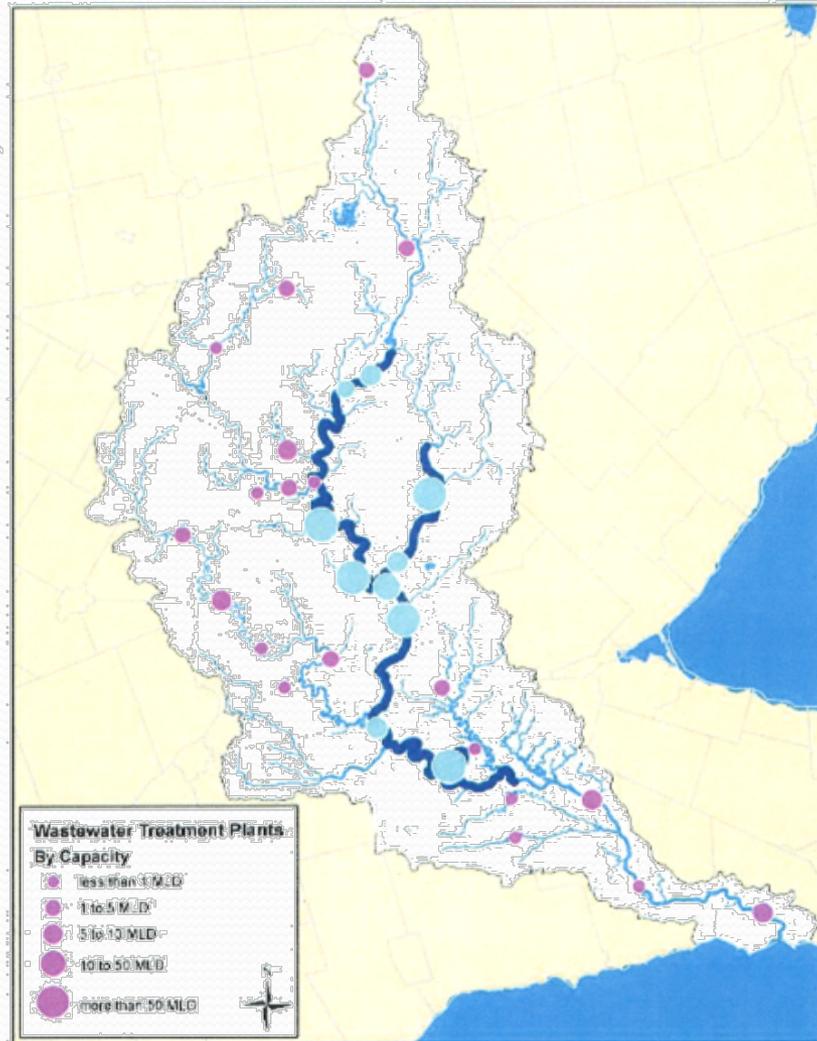


Figure 1. The location of municipal wastewater treatment plants in the Grand River watershed

Fish are becoming easier to catch 'because traces of anti-depressants are getting into water supply and making them more relaxed'

Antidepressants in water trigger autism genes in fish

The United States Geological Survey has found “intersex fish, or male fish that develop female sexual characteristics, in the Potomac River and its tributaries, raising questions about whether hormone residues might be responsible.

What happens to fish that swim in waters tainted by traces of drugs that people take? When it’s an anti-anxiety drug, they become hyper, anti-social and aggressive, a study found. They even get the munchies.



Ont. July 21, 1983. Uniroyal Chemical Ltd. Waste settling pond.
Szlukovenyi/The Globe and Mail/Thomas Szlukovenyi/The Globe and Mail

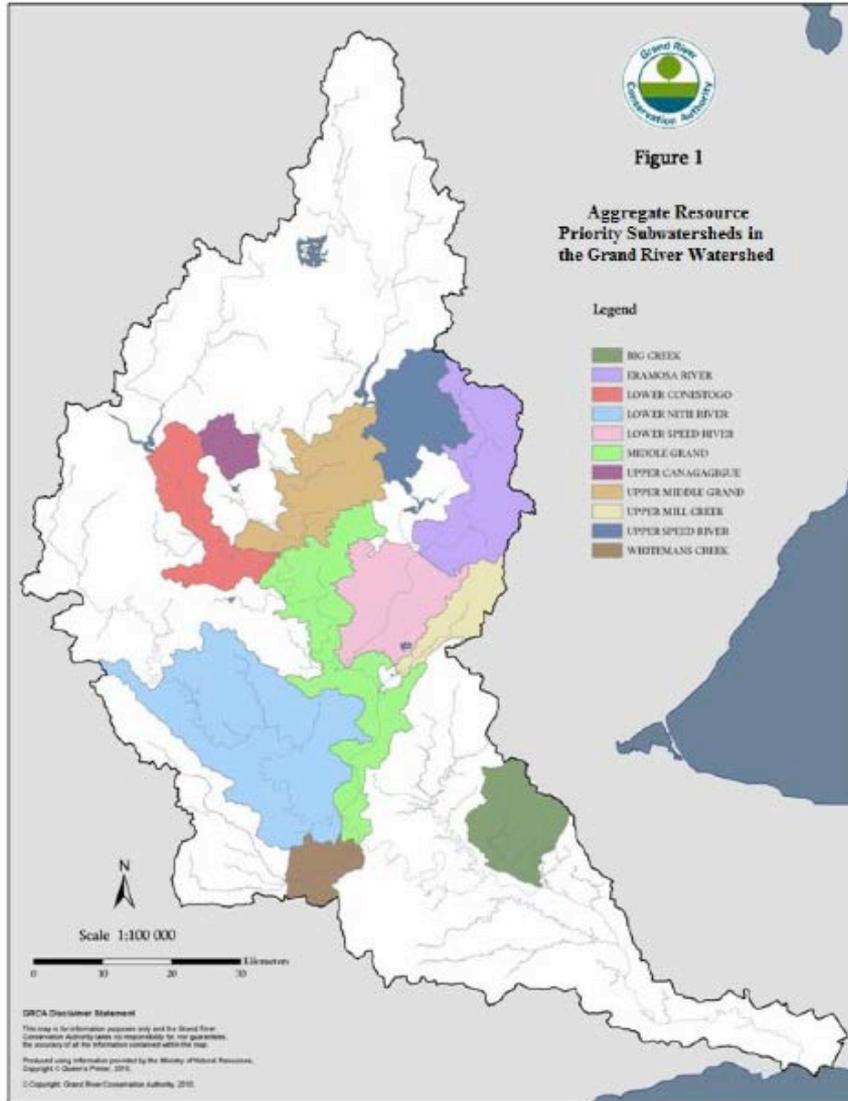


Figure 1

Aggregate Resource
Priority Subwatersheds in
the Grand River Watershed

Legend

- BG CREEK
- FRANKOSA RIVER
- LOWER CUMSTOGO
- LOWER NITH RIVER
- LOWER SPEED RIVER
- MIDDLE GRAND
- UPPER CANAGAGGUE
- UPPER MIDDLE GRAND
- UPPER MILL CREEK
- UPPER SPEED RIVER
- WHITEMANS CREEK



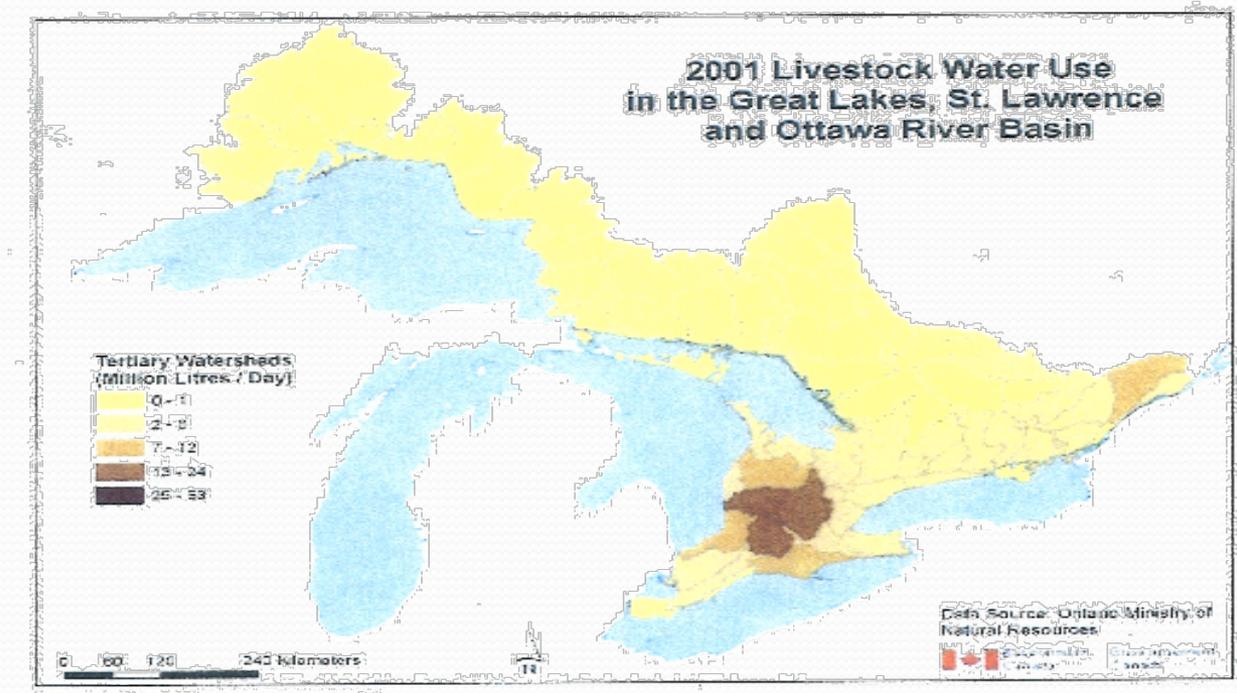
DRCA Disclaimer Statement

This map is for information purposes only and the Grand River Conservation Authority does not accept any responsibility for any guarantee, the accuracy of all the information contained within the map. Produced using information provided by the Ministry of Natural Resources. Copyright © Queen's Printer, 2016. © Copyright Grand River Conservation Authority, 2016.

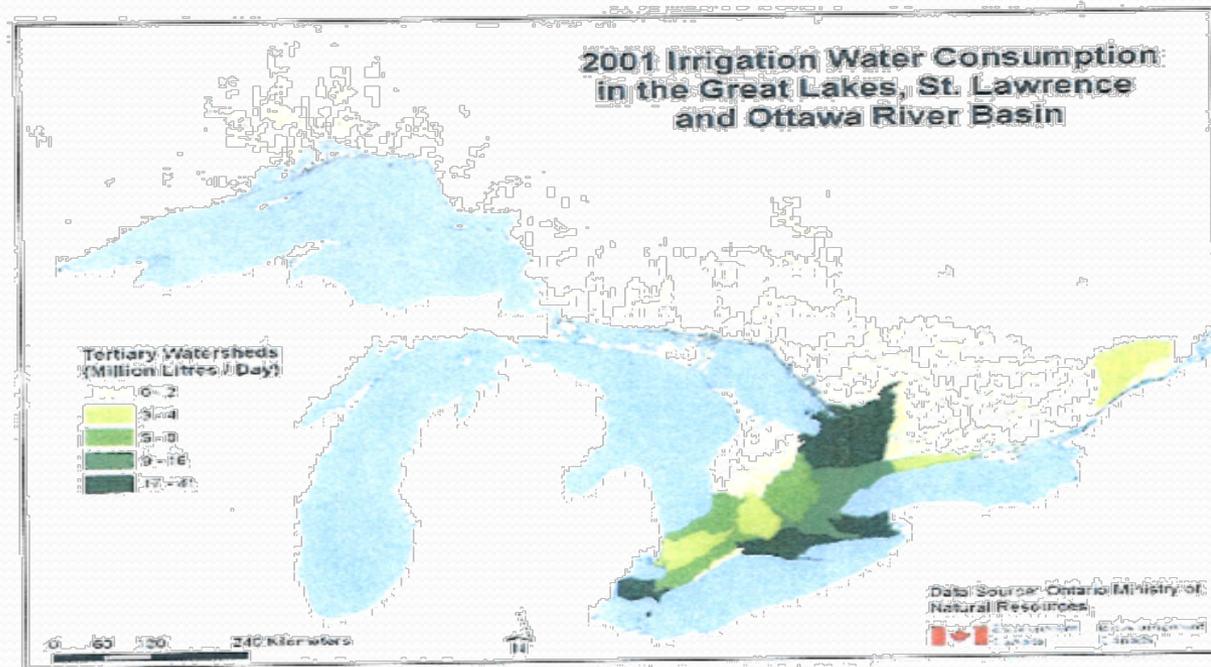


“In the Grand River Watershed, there is an overlap of significant high quality aggregate resource deposits and landform features that are important for groundwater recharge, e.g. some moraines and outwash deposits.”

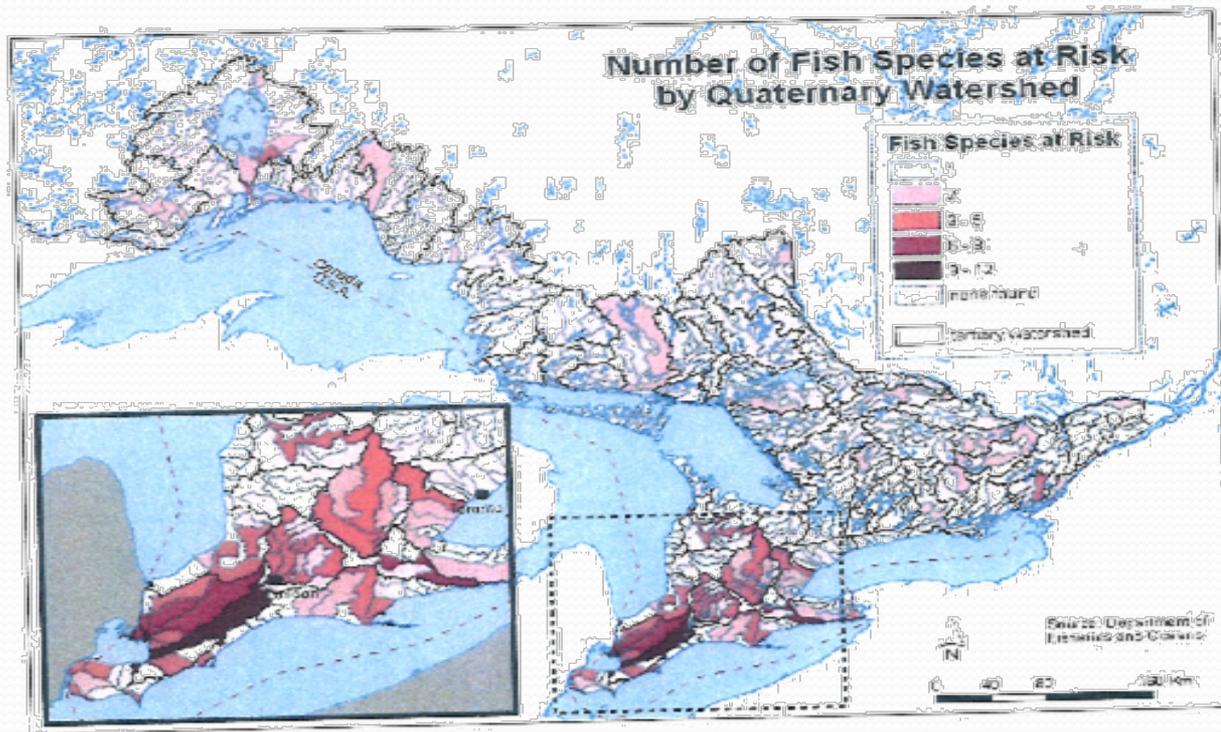
Ontario Ministry of Natural Resources, Grand River
Conservation Authority, Ontario Stone Sand & Gravel
Association – June 22, 2007



Canada & Ontario, Water Use and Supply Project, April 2007

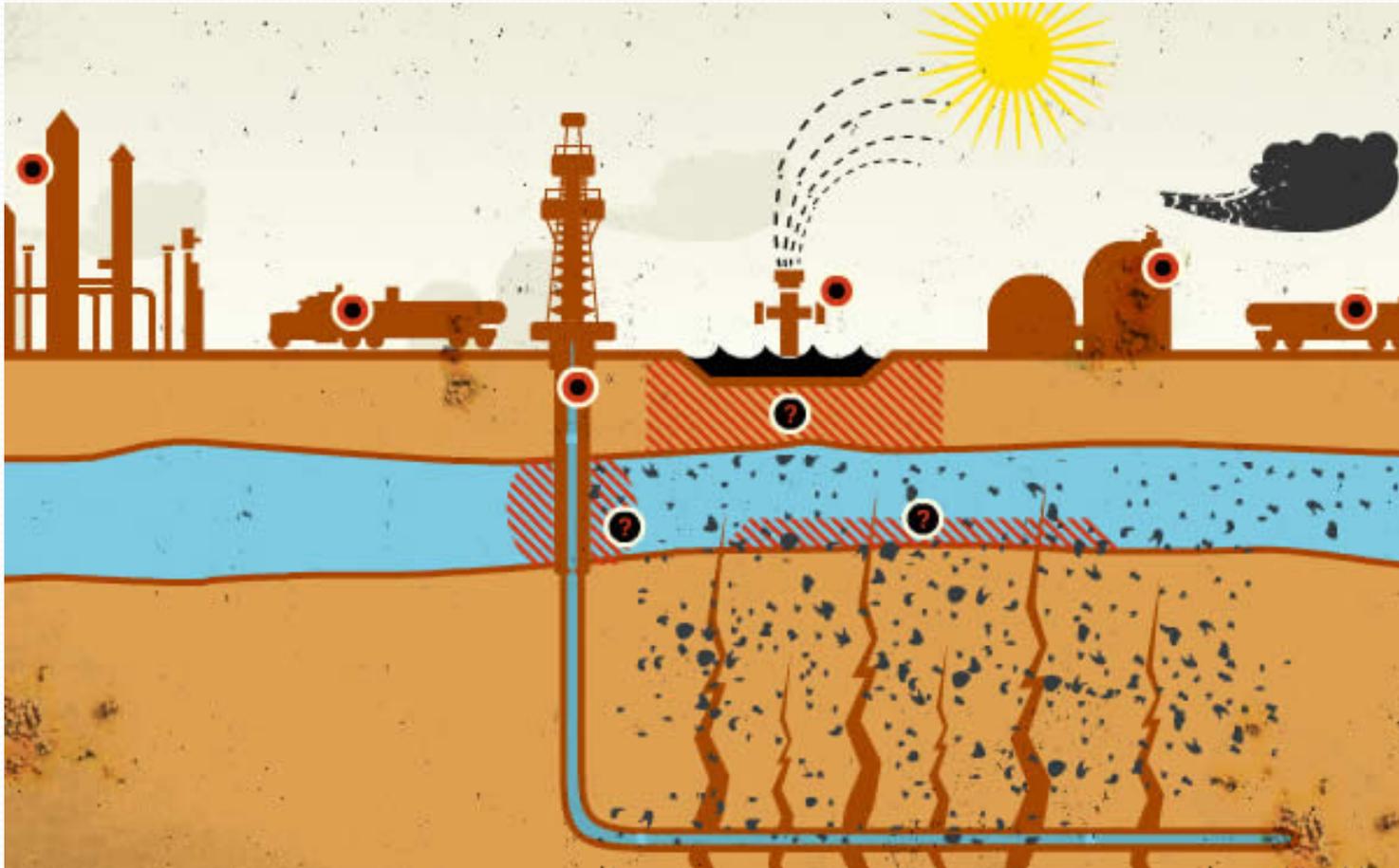


Canada & Ontario, Water Use and Supply Project, April 2007



Canada & Ontario, Water Use and Supply Project, April 2007

Horizontal Hydrofracking for Natural Gas



Ontario

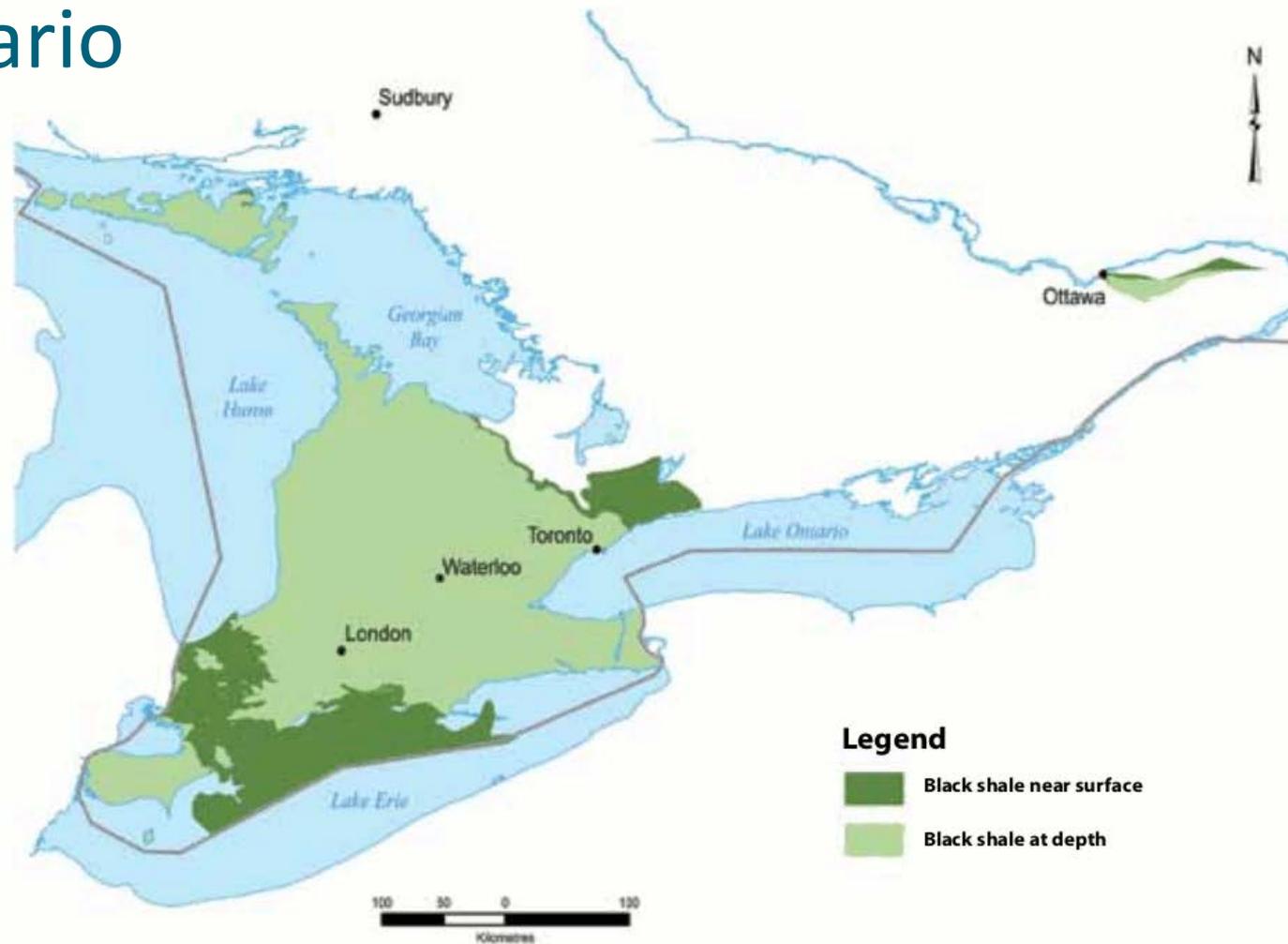
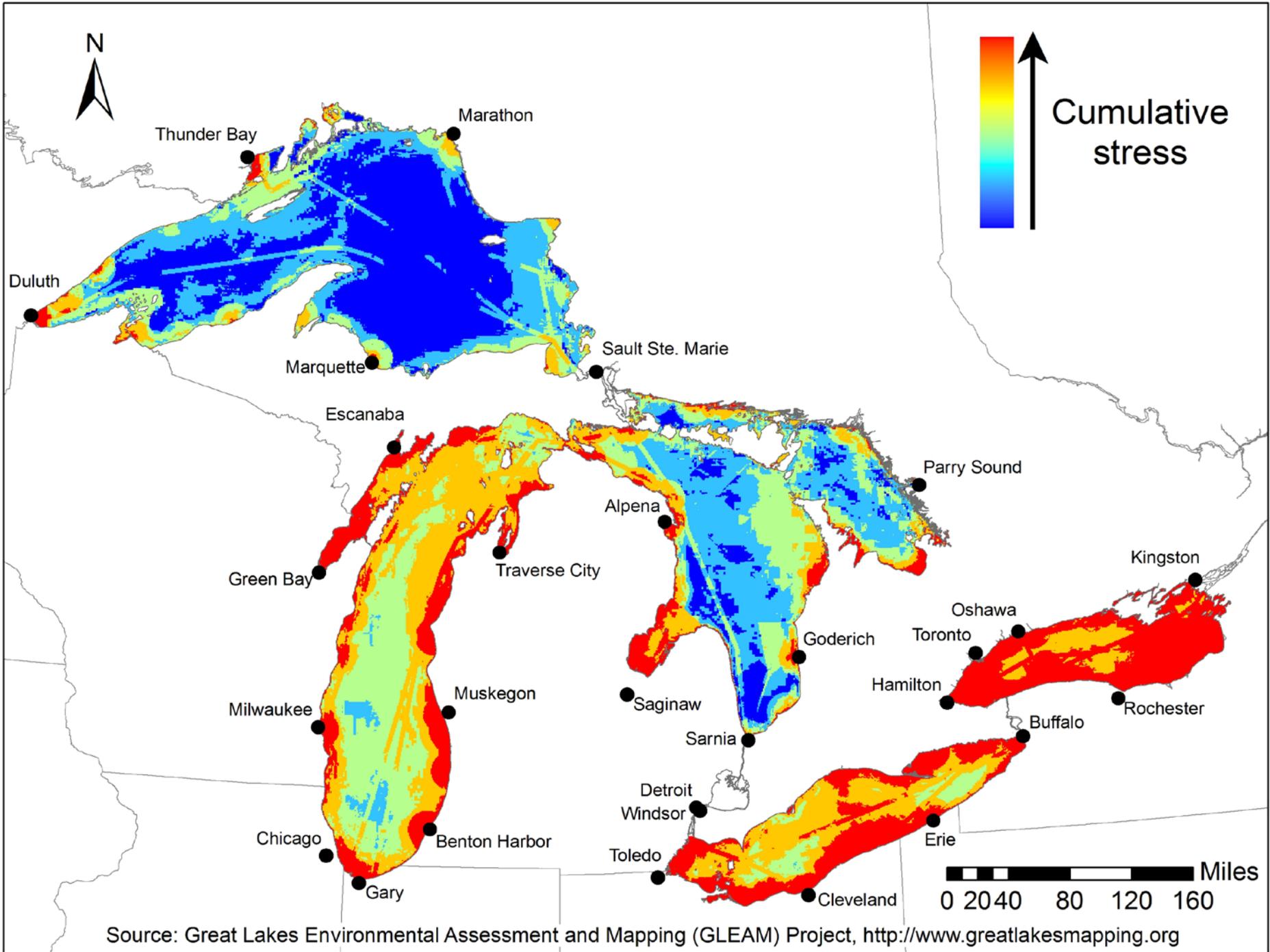


Figure 6.1.1. Distribution of black shale with shale gas potential in Ontario. Note: Black shale is the term used to identify dark-coloured shale rock that is a potential source for natural gas. Black shale rocks typically contain 1 per cent or more of organic carbon. Source: Ministry of Natural Resources.

Water Usage

- Average daily use of water in Waterloo Region 150 million litres
- 7-19 million litres of water for each “frack” at each well (approximately 10% of total average regional use)



Lake Erie Fall 2009







Have fun on the water, but know that blue-green algae are in many Ohio lakes. Their toxins may be, too.

Be Alert! Avoid water that:

- looks like spilled paint
- has surface scums, mats or films
- is discolored or has colored streaks
- has green globs floating below the surface



Avoid swallowing lake water.

**For more information, visit
ohioalgaefinfo.com
or call 1-866-644-6224.**







The Big Shift??

Growth Management in Waterloo Region

Rob Horne, Waterloo Region, Commissioner, Planning, Housing & Community Services

Why Shift?

The Consequences of Not Shifting

Intrusion onto environmentally sensitive areas

- 80% of our water supply comes from the ground

Loss of prime farmland

- 225,000 acres in Waterloo Region

Negative health impacts

- Commuting and "unwalkable" subdivisions

Lack of global competitiveness

- Waterloo Region as a "Complete Community" is critical to success

More Density with Design Excellence

Traditional (Post War 1950s) Subdivision St. Mary's Hospital Area

44 people per hectare (p/h)

1970s Subdivision: Beechwood/Idlewood:

28 – 30 p/h

1990s Subdivision: Eastbridge/Branchton Park

41 – 43 p/h

Growth Plan Requirement

50 p/h

Typical Subdivision Today : Limerick/ Mattamy

57 – 58 p/h or more

Typically Subdivision of the Future

60 + p/h



Natural Environment: Islands to Systems



Living Within Ecological Limits



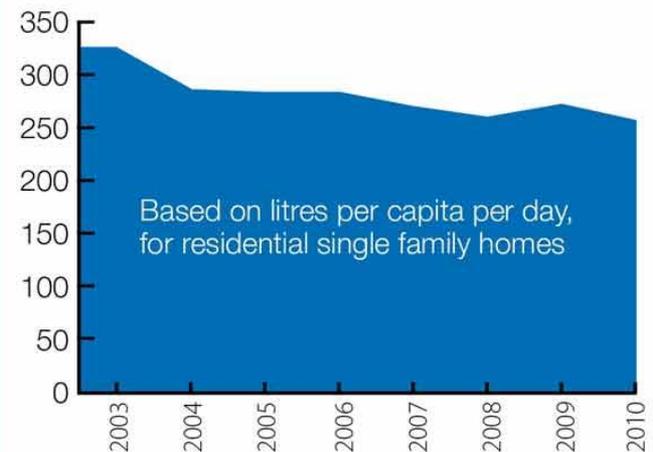
No New Water

The aspirational target scenario of no new water by 2051 used a back-casting methodology by assuming total water used across all sectors in 2051 is equivalent to that used in 2011.

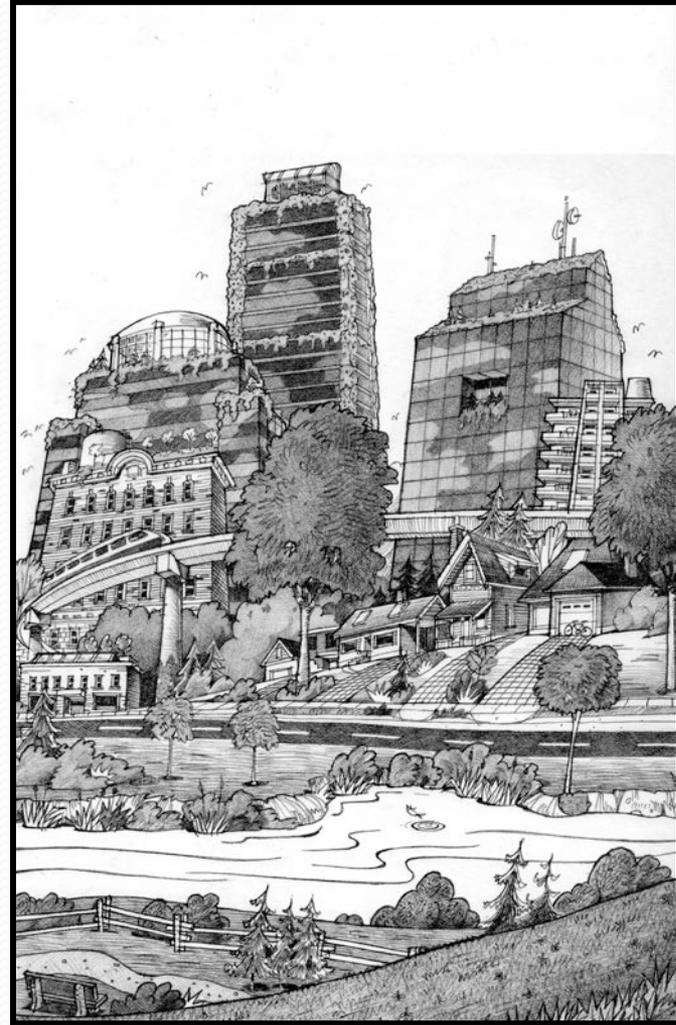
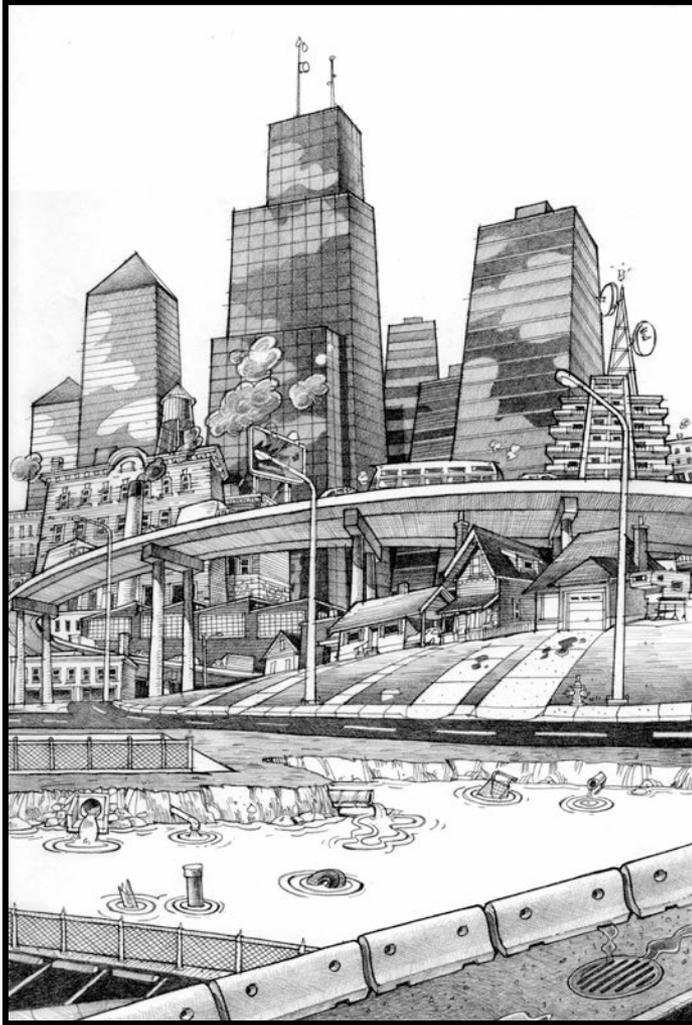
30-in-30

“The goal is to accommodate Calgary’s future population growth with the same amount of water we removed from the river in 2003.”

Calgary’s residential demand



A Tale of Two Cities



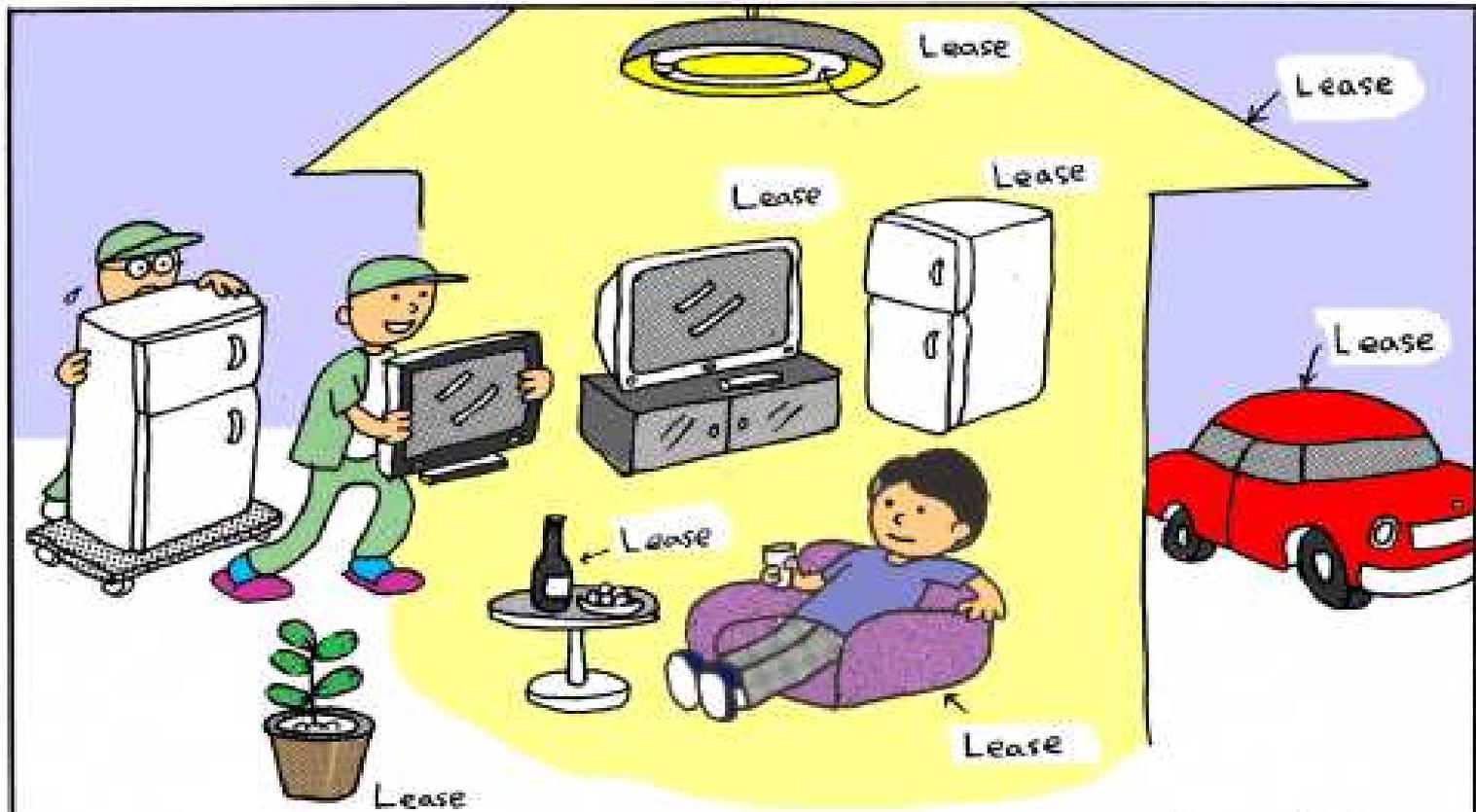
POLIS Project on Ecological Governance

[watersustainabilityproject](http://watersustainabilityproject.org)

Industrial Transformation

Our goal is a day when our factories have no smokestacks and no effluents. If successful, we'll spend the rest of our days harvesting yesteryear's carpets, recycling old petro-chemicals into new materials, and converting sunlight into energy. There will be zero scrap going into landfills and zero emissions into the biosphere. Literally our company will grow by cleaning up the world, not by polluting or degrading it.

Ray Anderson, President, Interface Carpets Inc.



“Now! We are coming to exchange to new types...” *High Moon*

Note: Under these circumstances, EPR (Extended Producer Responsibility) could be realized.



Grand River Fire, Justin Fabian Conservation Photography www.justinfabian.com



Celebrate Lake Superior Day!

Shawn Malone



John Jackson

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Great Lakes United



Union St-Laurent Grand Lacs