

PRESERVING ONTARIO'S HEADWATERS



**A Presentation from the
Ontario Headwaters Institute**

A generic version of the OHI presentation from the spring of 2010

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Objectives

- **Introduction to the OHI and Watersheds**
- **What are headwaters, and why are they important?**
- **Headwater Challenges**
- **Headwater Strengths**
- **Headwater Opportunities**



Our Mission

To promote the protection and preservation of headwaters in Ontario

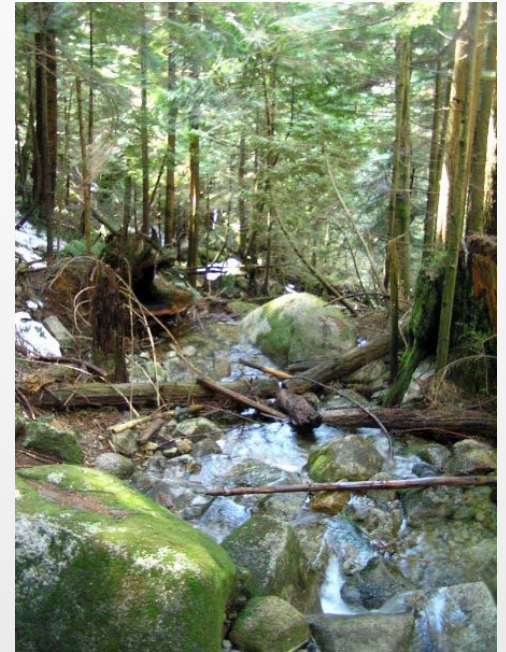


Areas of Activity

- Research
- Education
- Best Practices
- Time-limited special projects

Freshwater is Precious

- **Saltwater** **97.40 %**
- **Ice caps, Glaciers, & Groundwater** **2.58 %**
- **Atmosphere, Soil, Biota, Rivers & Lakes** **.014 %**
- **Ontario has over 250,000 lakes and countless rivers**
- **The Great Lakes hold 18-20% of the world's surface freshwater**



What are headwaters?

Headwaters are the foundation of our watersheds

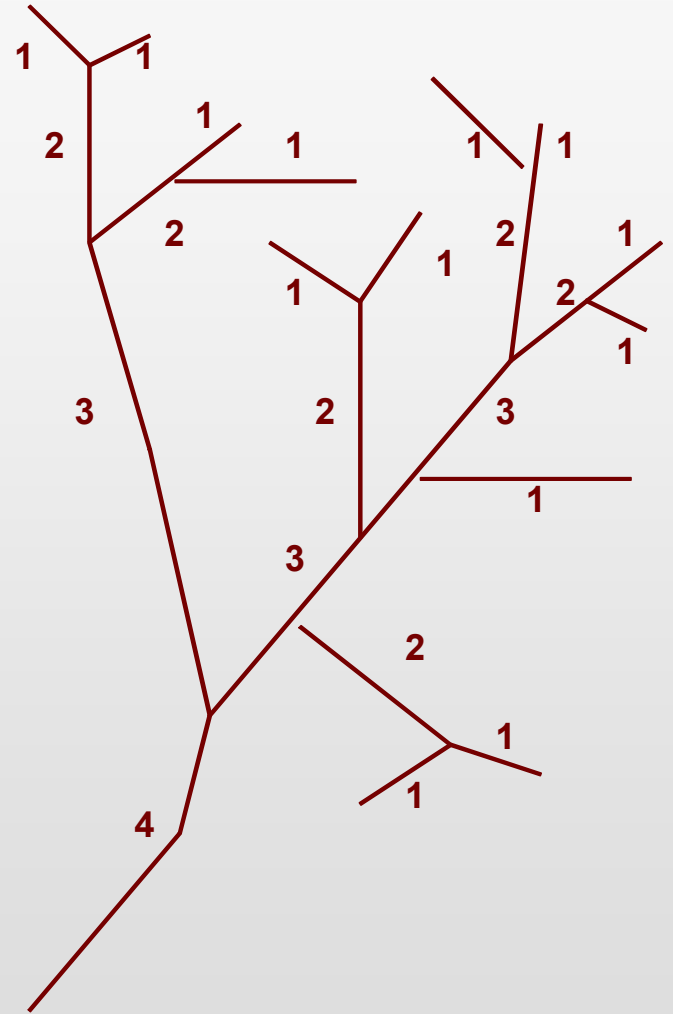


They include:

- **Glaciers and snow-packs**
- **Lands in which water pools, collects into rivulets, and/or infiltrates into the ground**
- **Aquifers and groundwater; and,**
- **Swales, wetlands, and small streams.**

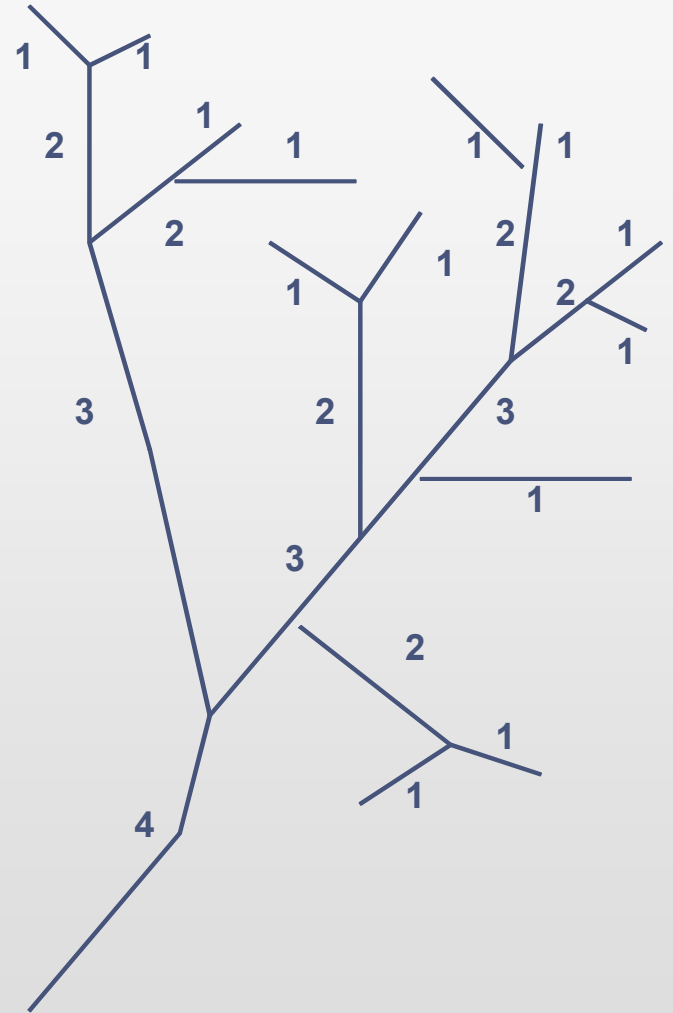
Some Technical Terms

- **First- and Second-order streams**
- **Ephemeral streams**
- **Intermittent streams, and**



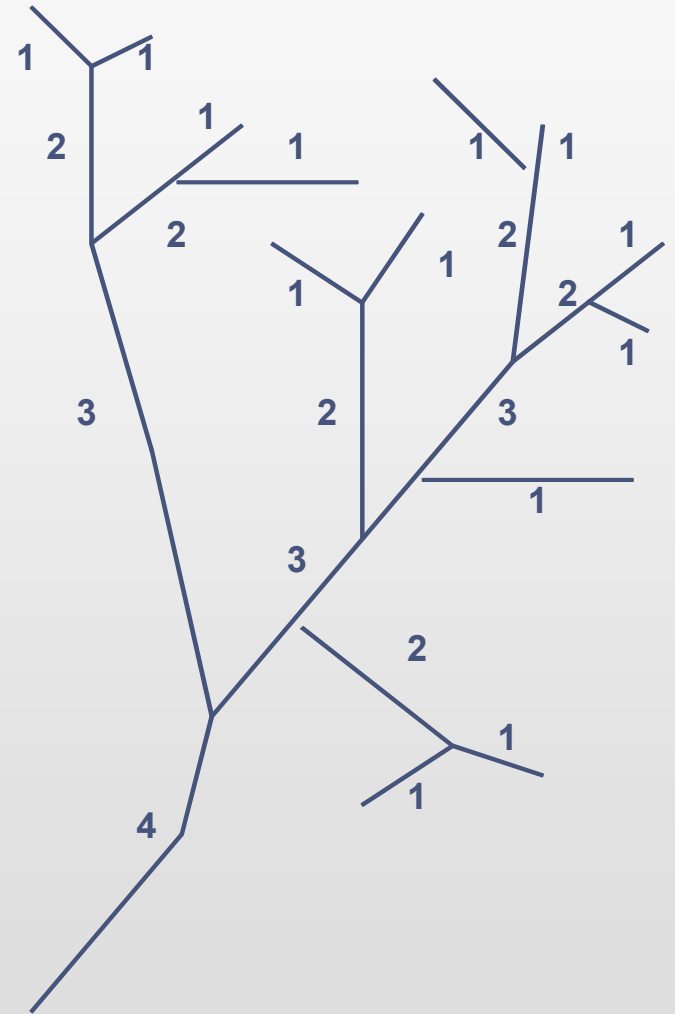
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- **Headwater Drainage Areas**



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The Importance of Headwaters

- Can be 50 - 80% of the length of a watercourse
- Contribute up to 70% of mean annual flow of 2nd order streams
- Provide the majority of a stream's sediment, nutrients & organic material, and
- Provide key breeding areas and niche habitat



Headwater Challenges

- **Development**
- **Pollution, and**
- **Climate Change**

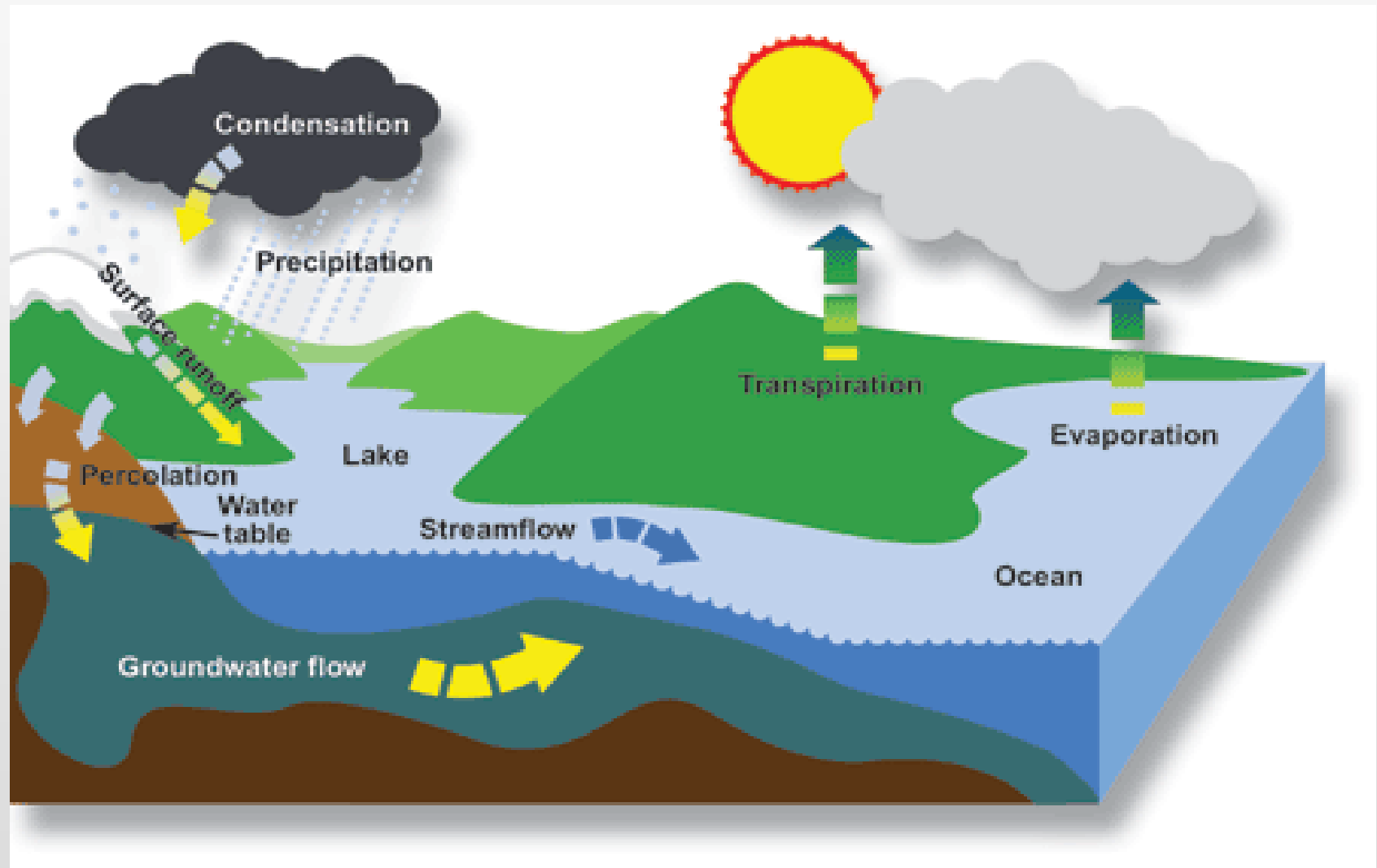


Development and Pollution

- **Development problems for headwaters include**
 - reducing and fragmenting natural areas,
 - permitting too much water-taking, and
 - burying small streams, which can result in both less infiltration and greater erosion
- **Pollution problems are different from heavy industrial activities or high urban populations and tend to come from agriculture, forestry, pits & quarries, and septic systems**



Climate Change



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Climate Change

- The IPCC has identified freshwater ecosystems as the most vulnerable in a changing climate
- Although the Great Lakes get the majority of their in-flow from direct precipitation, most of the rest of Ontario's lakes obtain the bulk of their water from thousands of small streams.
- The message is clear: we need to protect our headwaters to maintain our freshwater capital.



Headwater Strengths



- **Policies and Protocols**
- **Stewardship Activities, &**
- **Best Management Practices (BMPs)**

Note



The following slide was not spoken to at length but provided on screen and in the handout as a source for those interested in more information.

Headwater Strengths: Policies and Protocols

- **Boundary Waters Treaty of 1909 and the creation of the International Joint Commission**
- **Hurricane Hazel, 1954, and significant expansion of Conservation Authorities**
- **The creation of the Ontario Water Resources Commission, 1956**
- **The launch of federal and provincial ministries of the environment following the 1972 UN Conference on the Human Environment,**
- **The Great Lakes Water Quality agreements of 1972 and 1987, and the creation of Remedial Action and Lake Management Plans**
 - **The Municipal-Industrial Strategy for Abatement, etc etc...**



In addition, in Land-use Planning -

- **Niagara Escarpment Planning & Development Act, 1973, and**
- **The PPS provided protection for significant wetlands**

And then in 2000, we had the Walkerton fiasco

Spoken context for this slide noted that while prior to Walkerton the province had significantly reduced staff in MOE and MNR, staff responded with incredible skill after Walkerton to develop a broad spectrum of new regulatory initiatives.

The items in dark blue on the next slide were those that had particular benefit to headwaters.

And then in 2000, we had the Walkerton fiasco

- **Oak Ridges Moraine Conservation Act, 2001**
- **Low Water Response Plan, 2003**
- **GL-SLRB SWRA, 2005**
- **Clean Water Act, 2006**
- **Conservation Authorities Act, 2006**
- **Lake Simcoe Protection Act, 2008**
- **Greenbelt Plan, 2005**
- **Growth Plan for the Greater Golden Horseshoe, 2006**



In addition, Environment Canada published

- *How much Habitat is Enough, 2005*

Clean Water Act 2006

- Source Protection for Drinking Water
- Threat Matrices
- Water Budgets
- Mapping of SGRAs – Significant Groundwater Recharge Areas



Conservation Authorities Act, 2006

“ ‘watercourse’ means an identifiable depression in the ground in which a flow of water regularly or continuously occurs.”

Headwater Opportunities

- **Provincial Policies**
- **Regional Policies and Protocols**
- **Public Stewardship, and**
- **Landowner BMPs (Best Management Practices)**



Provincial Policy Issues

- **Establish Ontario goals similar to those in *How Much Habitat is Enough?***
- **Maintain and enhance existing water quality regime while closing a few policy gaps – eg: LWRP, PTTW, the Drainage Act, PWQOs**
- **Apply Source Water Protection upstream - eg: Integrated Watershed Management**
- **Amend the PPS, the Provincial Policy Statement – eg: in any watershed with less than 10% of its area in wetlands, declare all remaining wetlands provincially significant**



Regional Policies and Protocols



- **We need to embrace the new definition of a watercourse, especially for urban expansion, to protect small streams & wetlands**
- **We need to develop and include headwater metrics in watershed report cards**

Public Stewardship

Education

- Increased profile for natural heritage studies, conservation, biodiversity, and ecological integrity
- Increase public education on importance of headwaters
- Link headwater health to the reduction of air emissions



Conservations Lands

- Increase agency land holdings while encouraging more land trusts and conservation easements

Engagement

- More public stewardship initiatives – eg:
 - Headwater Maps, Videos, and Educational Walks
 - Youth and Multi-cultural Programs
 - Planting days, Hatchery Releases, Check Your Watershed Day, Family Fishing Days, etc

Landowner BMPs

- **Respect natural heritage**
- **Riparian Buffers**
- **Septic systems and Wellhead protection**
- **Key Headwater Sectors:**
 - **Agriculture**
 - **Stream fencing & crossings**
 - **Manure Management**
 - **Drainage practices**
 - **Forestry Practices**
 - **Mines, Pits and Quarries**
 - **Other Rural Industries**



In summary, headwaters:

- **Safeguard the quality of nature's filtration system and our drinking water**
- **Protect the quantity of surface water, groundwater, and aquifers**
- **Help maintain water chemistry and nutrients, and,**
- **Provide invaluable breeding areas and niche habitat**





We must treat each and every swamp, river basin, river and tributary, forest and field with the greatest care, for all these things are the elements of a very complex system that serves to preserve water reservoirs – and that represent the river of life.

UNESCO report, 2006

Thank you

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