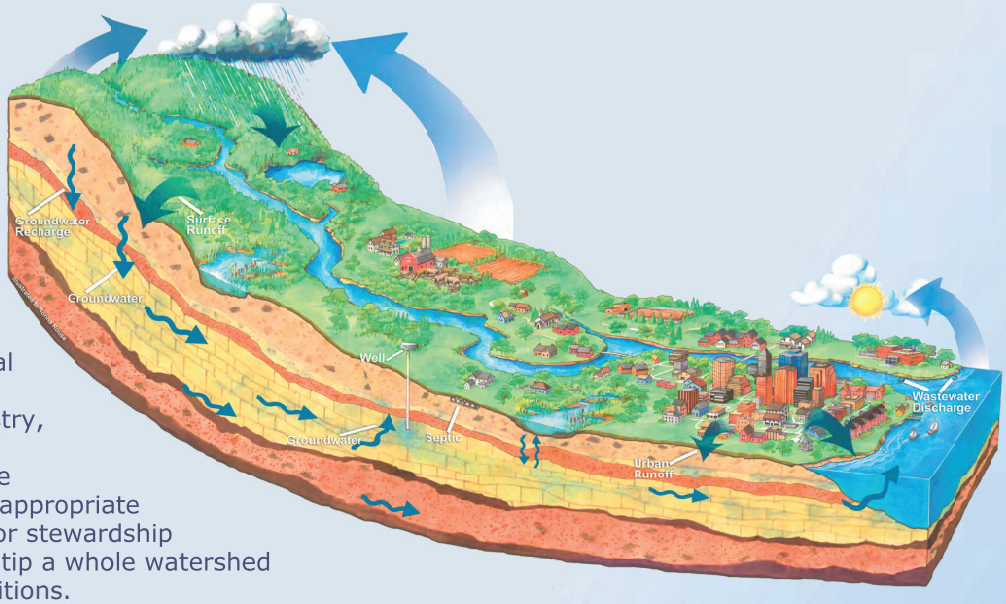
Watershed Security

The Hydrologic Cycle

Watershed security - healthy and resilient watersheds that protect regional ecological integrity, social well-being, and economic vitality - begins with the hydrologic cycle and flows through land use planning and stewardship practices. As water circles the planet, it courses through the atmosphere, surface and ground-water, and all living things. Global impacts to the hydrologic cycle from climate change include increased ocean temperature, sea level, evaporation rates, major storm frequency, acidity, and the disruption of ocean circulation patterns. These outcomes inform and amplify terrestrial impacts that alter climatic norms, regional precipitation, and freshwater ecosystems. In short, we can no longer separate local development from global climate change, nor land-use planning from watershed security.

Upland Areas

Upland areas act as reservoirs of both freshwater and biodiversity for whole watersheds. Usually with fewer people than live downstream, upland areas in Ontario can be impacted by rural industry that includes agriculture, dams, forestry, transportation & utility corridors, and aggregate extraction or mining. Inappropriate land conversion and poor stewardship practices upstream can tip a whole watershed from good to poor conditions.



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The Midstream

The midstream can be characterized by reduced natural heritage, with more rural industry as well as small and mid-size communities leading to outlying suburbs. Threats to watershed security stem from more population and development, often in municipalities with a tax base too small to provide for fulsome storm and sanitary infrastructure. The challenge in the midstream is for communities with an appetite for growth to not neglect their inter-generational responsibility to protect the water upon which we all depend.

The Urban Mosaic

For the most part, Ontario's urban centers formed where key rivers meet large lakes. Forests, meadows, and wetlands were reduced as land was converted to agriculture and then an increasingly dense residential, commercial, industrial, and institutional tapestry. Historic stream flow and aquatic health were also disrupted as run-off from extensive areas of impervious surface that was drained by storm sewers that conduct heat and polluted flow, often with limited treatment, to our receiving waters. Sanitary sewage plants add to the mix, contributing their effluent, more heat, and what they cannot treat, such as micro-plastics and pharmacological products. The urban mosaic, perhaps the highest expression of humanity's social evolution, must embrace watershed security, sustainable development, and sound stewardship practices while reducing emissions that could further impact the hydrological cycle.

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