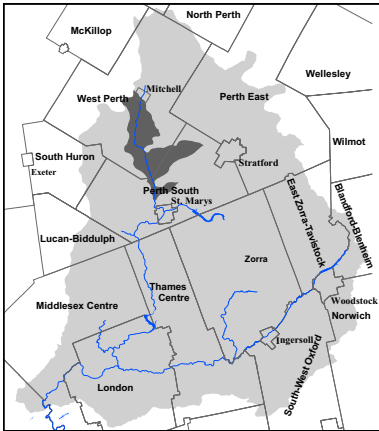




# Glengowan Watershed Report Card

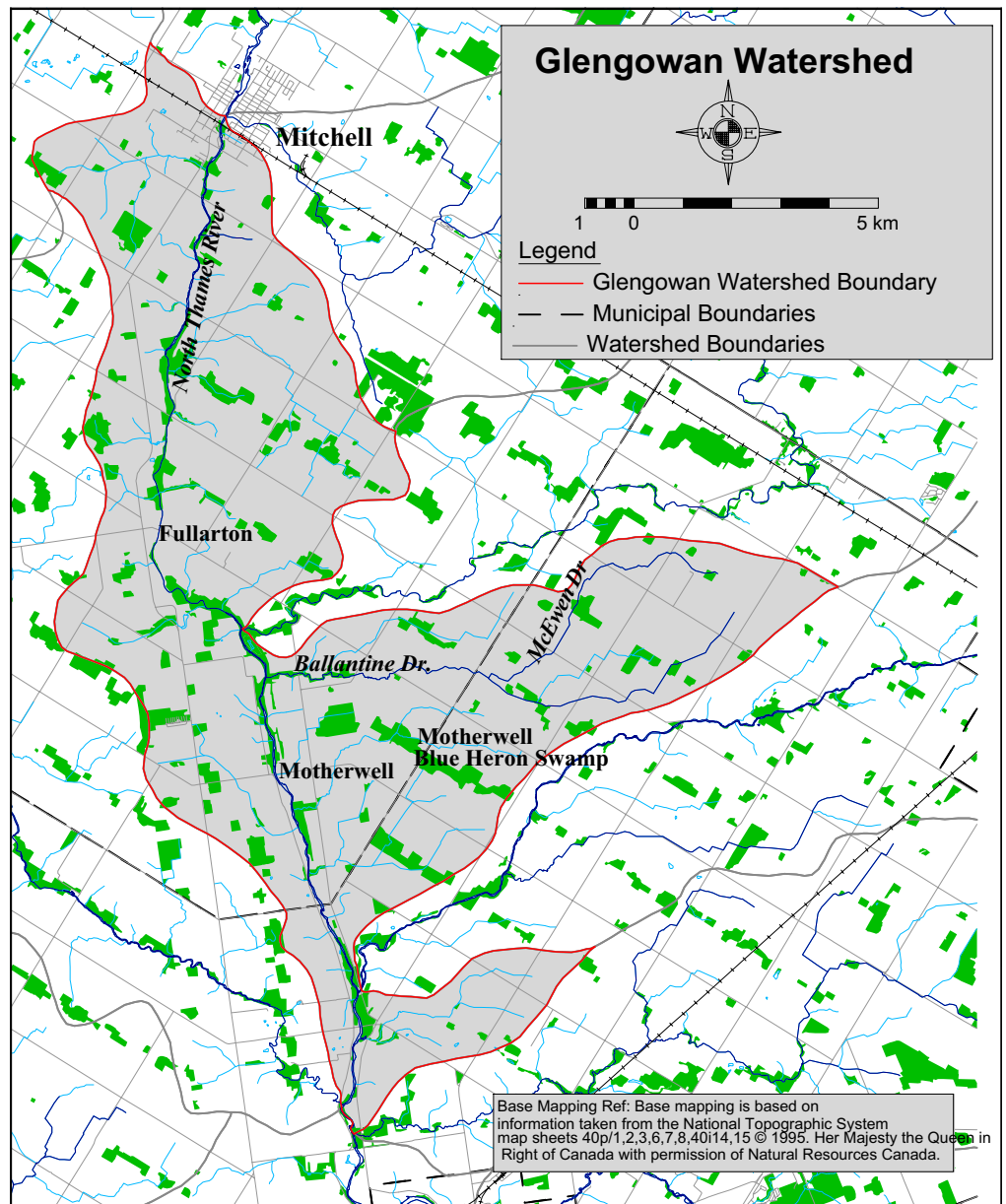


This report card outlines environmental information for the Glengowan watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff, municipalities and interested parties working for the protection of local forest and water resources. These report cards are part of a larger report titled *The Upper Thames River Watershed Report Cards* (UTRCA, 2001) that is posted on the Upper Thames River Conservation Authority (UTRCA) web site. (See back)

**Grades:**

**D- Forest Conditions**

**C Surface Water Quality**



**Municipalities:** West Perth (81 sq. km), Perth South (38 sq. km)  
**Watercourses:** North Thames River (part of), Ballantine Drain, McEwen Drain

Grade  
D-

# Forest Conditions

Overall, forest conditions in the Glengowan watershed score a D-grade and the three indicators each score a D- as well (see table below). The amount of forest cover (10%) is slightly below the average for the Upper Thames watershed, and considered too low for sustainability. The ideal amount of natural cover for southern Ontario is 25-30% (Carolinian Canada, 2000). Forest density is also low, indicating most

of the woodlots are isolated and too far from other woodlots to allow seeds to be transported easily and animals to move between them. Forest interior is also low indicating that many of the woodlots are too small and narrow to support sensitive species that need to live in large protected habitats. In fact, approximately 73% of the woodlots are under 10 hectares in size.

Indicators	Glengowan Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	10%	D-	12%	D	Forest cover is the percentage of the watershed that is forested. It is believed there should be 25-30% natural cover in southern Ontario's landscape to sustain our native plants and animals.
Forest Density	45%	D-	55%	D	Forest density is a measure of how close woodlots are to each other. Woodlots that are near several other woodlots tend to have greater species diversity than those that are isolated. The movement of seeds and animals between woodlots ensures a healthy gene pool.
Forest Interior	0.9%	D-	1.8%	D	Forest interior refers to the protected core area found inside a woodlot that some bird species require to nest and breed successfully. The outer 100m perimeter of a woodlot is considered 'edge' habitat and prone to high predation, alien species invasion, sun and wind damage, etc.

## Local Actions Needed for Improvement:

- Protection of all woodlands and Locally Significant Wetlands at the municipal planning level is a very important and effective method of preserving local forest cover. This goal can be achieved through designations in Official Plans, enforcement of tree cutting by-laws, protective zoning and other appropriate planning measures.
- Forest interior can be increased by “bulking up” woodlots to make them larger and rounder by planting native trees and shrubs around existing woodlots or allowing the edges to naturalize on their own (e.g. retire land near woodlot edges).
- The Motherwell Blue Heron Swamp is one of the largest wooded areas in the watershed and likely holds the greatest potential for wildlife habitat and therefore is a target for further enhancement projects. With landowner cooperation, projects could include planting hedgerows or windbreaks to create connections to nearby habitats, retiring marginal farmland around swamp to enlarge it and examining drain management practices and/or alternatives to drainage to protect the swamp's hydrology.
- Connections can be made between woodlots and other habitat types by planting hedgerows or windbreaks along fields, waterways and roads.
- The amount of forest cover along the North Thames River corridor is moderate, but these forests are very narrow and fragmented. Connecting, extending and widening these riparian woodlots by planting native hardwood trees would protect the river and create an excellent wildlife corridor. This work should be targeted to areas that are experiencing erosion and where tributaries join the North Thames (e.g. confluence of Black Creek and Avon River). Thinning some of the conifer plantations along the river would allow hardwoods to move in and create a more diverse habitat.
- To improve the health of individual woodlots, owners should prepare and follow Woodlot Management Plans.



North Thames and Avon Rivers

Grade  
C

# Surface Water Quality

The Glengowan watershed ranks a 'C' with respect to overall water quality, with the four indicators ranging from B to D (see chart below). Fecal coliform bacteria levels are close to the Upper Thames watershed average, still indicating on-going contamination from human/animal

waste. Water quality improves moving downstream through the watershed. Information on coldwater stream status is unavailable for this subwatershed.

Indicators	Glengowan Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
<b>Benthic Score (FBI)</b>	4.83	B	5.66	C	---	Benthic organisms are the aquatic invertebrates that live in stream sediments and are a good indicator of water quality and stream health. The 'Family Biotic Index' (FBI) scores each species according to its pollution tolerance.
<b>Phosphorus (mg/l)</b>	0.057*	C	0.08*	D	0.03 (Provincial Objective)	Phosphorus is found in such products as soaps, detergents, fertilizers and pesticides, and contributes to excess algae and low oxygen in streams and lakes.
<b>Bacteria (per 100 ml)</b>	306*	C	304*	C	100 (Recreational Swimming Guideline)	Fecal coliform bacteria are found in human and animal waste and their presence in water indicates fecal contamination. Fecal coliform bacteria are a strong indicator for the potential to have other disease-causing organisms in the water.
<b>Conductivity (<math>\mu</math>s/cm)</b>	697*	D	642*	D	---	Conductivity is a measure of water's ability to conduct an electrical current and is an indicator of the level of dissolved solids and pollutants in water.

\*10 year average concentration, 1990-2000 (Ministry of the Environment data)

## Local Actions Needed for Improvement:

- Plant buffers (grassed or treed) along creeks, rivers and open drains to filter runoff and provide shade.
- Identify temperature status of streams within this watershed and target any potential coldwater streams for rehabilitation.
- Implement protection of identified groundwater infiltration zones and continue with groundwater research and monitoring (refer to *Perth County Groundwater Study, 2001*).
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Assess the purpose of each dam to determine if any should be removed or modified to improve river health.
- Encourage environmentally sustainable practices on golf courses (e.g. Audubon Cooperative Sanctuary Program).
- Target soil erosion measures to areas of high erodibility (13% of the land within this watershed is classified as highly erodible compared to Upper Thames River watershed average of 9%).
- The following actions should be targeted within Mitchell:
  - upgrade sewer systems where risk of contamination is greatest (e.g. combined sanitary/storm sewers), extend sanitary sewers to urban properties on septic systems, and repair or replace faulty existing septic systems;
  - implement stormwater management plans for new urban developments and implement projects to reduce stormwater runoff (e.g. infiltration ponds, pavement alternatives, etc);
  - encourage river clean-up /stream stewardship projects to improve stream habitat; and
  - educate urban residents regarding urban Best Management Practices such as reduction and proper use of pesticides and fertilizers, and proper household hazardous waste disposal.
- The following actions should be targeted in rural areas:
  - encourage landowners to repair or replace faulty septic systems;
  - encourage agricultural Best Management Practices in the areas of manure storage and spreading, soil conservation practices, fertilizer and pesticide storage and application, fuel storage, milkhouse washwater disposal, and cattle access restriction; and
  - promote the completion of Environmental Farm Plans and Nutrient Management Plans.

# Glengowan Watershed Features

<b>Area</b>	120 sq. km (3 % of Upper Thames River watershed) (618 sq. km lies upstream)
<b>Land Use</b>	87% agriculture, 10% wooded, 2% urban (GIS derived using OMAFRA Landuse Systems, 1983)
<b>Soil Type</b>	50% silt loam, 39% clay loam, 8% bottomland, 2% loam and 1% not mapped (urban) (GIS derived using county soil maps)
<b>Soil Erosion/Delivery</b>	13% of the watershed is classified as highly erodible, meaning lands that contribute over 7 tonnes/ha of soil to a watercourse per year. The average for the Upper Thames River watershed is 9%. (GIS derived using 1991 Geomatics data)
<b>Physiography</b>	71% undrumlined till plain, 17% spillway, 12% till moraine (GIS derived using digitized physiographic maps, OMAFRA)
<b>Stream Flow</b>	4.5 cubic metres/second is the mean annual flow at Mitchell and 13.7 cubic metres/second is the mean annual flow just downstream of this watershed at St. Marys.
<b>Groundwater</b>	A shallow aquifer (< 18 m) follows along the main branch of the Thames. There are also small areas with intermediate aquifers (18 -45 m). The rest of the watershed relies on deeper bedrock aquifers. (MOE 1981)
<b>Fishery Resources</b>	28 species of fish including Rock Bass, Smallmouth Bass and Largemouth Bass have been recorded in this watershed. Information on coldwater streams is not available. (UTRCA and DFO, 2000)
<b>Dams</b>	3 dams have been documented in the watershed including the Fullarton Conservation Area Dam. The other dams are privately owned. (UTRCA, 1991)
<b>Sewage Treatment</b>	The Mitchell Wastewater Treatment Plant discharges treated effluent to the North Thames River. All rural properties are serviced by private septic systems.
<b>Woodlot Size</b>	57% of the woodlots are very small (<4 ha), 16% are small (4-10 ha), 17% are mid-sized (10-30 ha), 2% are large (30-40 ha) and 8% are very large (>40 ha). (GIS derived using 1997 NTS maps)
<b>Riparian Forest</b>	25% of the riparian zone (20 metres on either side of all watercourses) is forested. The average for the Upper Thames River watershed is 24%. (GIS derived using 1997 NTS maps)
<b>Rare Species</b>	Fish – Greenside Darter, Silver Shiner, Black Redhorse (ROM data, UTRCA data, and NHIC, 2000) Birds – Black Tern
<b>Significant Natural Sites</b>	<b>Provincially Significant Wetlands</b> – none <b>Locally Significant Wetlands</b> – Motherwell Blue Heron Swamp <b>Significant Natural Areas</b> – none <b>Earth Science Areas of Natural and Scientific Interest</b> – Fullarton Area, North Thames Valley (MNR and UTRCA 1996, County ESA reports)

**References:** For a complete listing of references, see the full report: *The Upper Thames River Watershed Report Cards* (UTRCA, 2001).



Greenside Darter