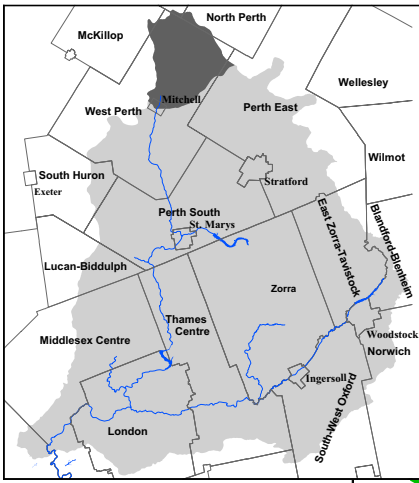


# North Mitchell Watershed Report Card

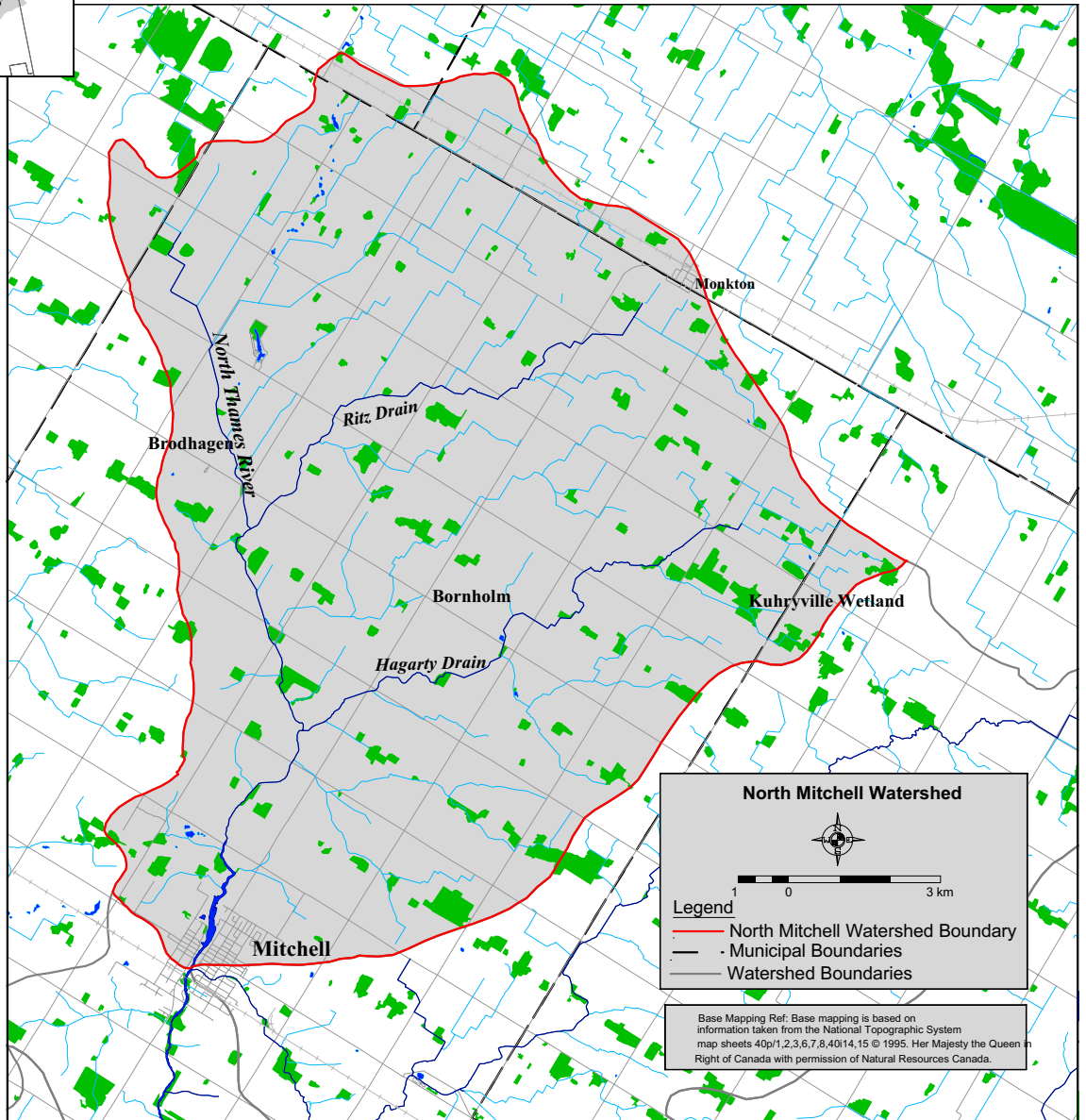


This report card outlines environmental information for the North Mitchell watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff, 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:**

**F** Forest Conditions

**D** Surface Water Quality



**Municipalities:** West Perth (163 sq. km), North Perth (6 sq. km), Perth East (3 sq. km), McKillop (2 sq. km), and Grey (2 sq. km)  
**Watercourses:** Includes the headwaters of the North Thames River

Grade  
F

# Forest Conditions

Overall, forest conditions in the North Mitchell watershed score an F grade and the three indicators score similarly (see table below). The amount of forest cover (5%) is the lowest in 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 very poor indicating the majority of woodlots are isolated from each other, making it very difficult for seeds

to be transported or animals to move between them. The amount of forest interior is close to zero indicating that virtually all of the woodlots are too small and narrow to support sensitive species that need to live in large habitats with significant central areas. In fact, 85% of the woodlots are under 10 hectares in size. Small, isolated woodlots tend to have poor species diversity and many non-native plants.

Indicators	North Mitchell Results		Upper Thames Watershed Average		Indicator Description
	Forest Cover	Forest Density	Forest Interior	Forest Interior	
Forest Cover	5%	F	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	7%	F	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	0.3%	F	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 woodlots 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). Priority should be given to 'filling in' the narrow gaps between adjacent woodlots to reconnect them.
- Connections can be made between woodlots and other habitats by planting hedgerows and windbreaks along fields, roads and watercourses.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.
- Since the Kuhryville Wetland Complex is the largest and most significant wooded site in the watershed, protection and enhancement projects should be targeted here. Working with

the landowners, projects could include the planting of wooded corridors between it and other nearby woodlots, examining drainage conditions that could be impacting this swamp, and conducting a biological inventory to determine the site's management needs.

- Forest cover along the headwaters of the North Thames River and other creeks and drains in the watershed is very sparse. As a starting point, priority should be given to planting native trees and shrubs along the downstream section of the Thames close to Mitchell. A well vegetated watercourse protects both terrestrial and aquatic wildlife.



Grade  
D

# Surface Water Quality

The North Mitchell watershed ranks a D with respect to overall water quality, with the four indicators ranging from C to D- (see chart below). Since long term monitoring began on the North Thames River (just below the Town of Mitchell) in the early 1970's, total phosphorous concentrations have remained consistent. Fecal coliform concentrations have increased over the same period indicating increasing contamination from human/animal sources. The amount of

riparian cover in this subwatershed is well below average for the Upper Thames watershed. Almost all headwaters of the major tributaries are channelized and intermittent. Current information on coldwater vs warmwater stream characteristics is lacking. There have been 16 spills reported in the watershed since 1988, which is relatively high compared to the other subwatersheds in the Upper Thames.

Indicators	North Mitchell Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
<b>Benthic Score (FBI)</b>	6.57	D-	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>	0.08*	D	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>	407*	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 (µs/cm)</b>	604*	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. Naturalize the area along the Mitchell reservoir and immediately downstream for water quality protection (e.g. tall plants to discourage geese).
- Identify the temperature status of streams within this watershed and target the rehabilitation of potential coldwater streams.
- 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.
- Address the high number of spills in this watershed through education, regulation, and improved response.
- 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).
- Encourage drain maintenance and design procedures that protect water quality (e.g. careful timing of work, proper use of silt traps, maintaining existing vegetation where possible, use of natural channel design principles).
- Within Mitchell the following actions should be targeted:
  - 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.

(continued on back)

- 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 Plan and Nutrient Management Plans.



# North Mitchell Watershed Features

<b>Area</b>	176 sq. km (5 % of Upper Thames River watershed)
<b>Land Use</b>	93% agriculture, 5% wooded, 2% urban (GIS derived using OMAFRA Landuse Systems, 1983)
<b>Soil Type</b>	93% clay loam, 3% bottomland, 2% organic, 1% silt loam (GIS derived using county soil maps)
<b>Soil Erosion/Delivery</b>	1% 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>	46% undrumlinized till plain, 37% drumlinized till plain, 8% till moraine, 5% spillway, 3% clay plain, 1% eskers (GIS derived using digitized physiographic maps, OMAFRA)
<b>Stream Flow</b>	4.5 cubic metres per second is the mean annual flow at Mitchell on the North Thames River. This flow contributes approximately 11.5% of the flow in the Thames River downstream of London. (Environment Canada, 1998)
<b>Groundwater</b>	With limited overburden aquifers within the watershed, most of the groundwater in this area is drawn from deeper bedrock aquifers.
<b>Fishery Resources</b>	There has been very little fish sampling in this watershed and so species information is not available. No known coldwater streams are present.
<b>Dams</b>	2 small dams are located on watercourses in this watershed including the Mitchell Conservation Area dam. (UTRCA, 1991)
<b>Sewage Treatment</b>	The Mitchell Wastewater Treatment Plant discharges treated effluent to the North Thames River just downstream of this watershed and services that part of Mitchell that lies within the watershed. All other homes and businesses are on private septic systems.
<b>Woodlot Size</b>	57% of the woodlots are very small (<4 ha), 28% are small (4-10 ha), 13% are mid-sized (10-30 ha), 0% are large (30-40 ha) and 2% are very large (over 40 ha). (GIS derived using 1997 NTS maps)
<b>Riparian Forest</b>	7% of the riparian zone (20 metres on either side of all watercourses) is forested. The average for the Upper Thames watershed is 24%. (GIS derived using 1997 NTS maps)
<b>Rare Species</b>	none known
<b>Significant Natural Sites</b>	<b>Provincially Significant Wetlands</b> – none <b>Locally Significant Wetlands</b> – Kuhryville Wetland Complex <b>Environmentally Significant Areas</b> – none (MNR and UTRCA 1996, County ESA reports)
<b>References:</b>	For a complete listing of references, see the full report: The Upper Thames River Watershed Report Cards (UTRCA, 2001).