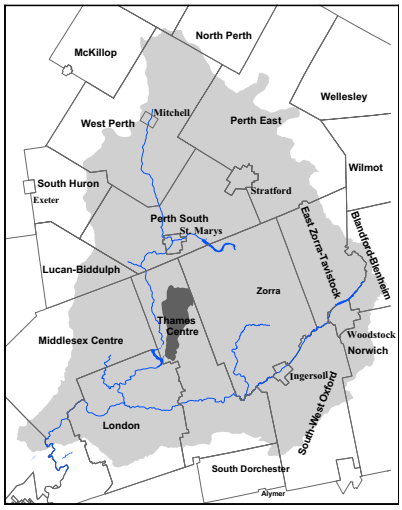
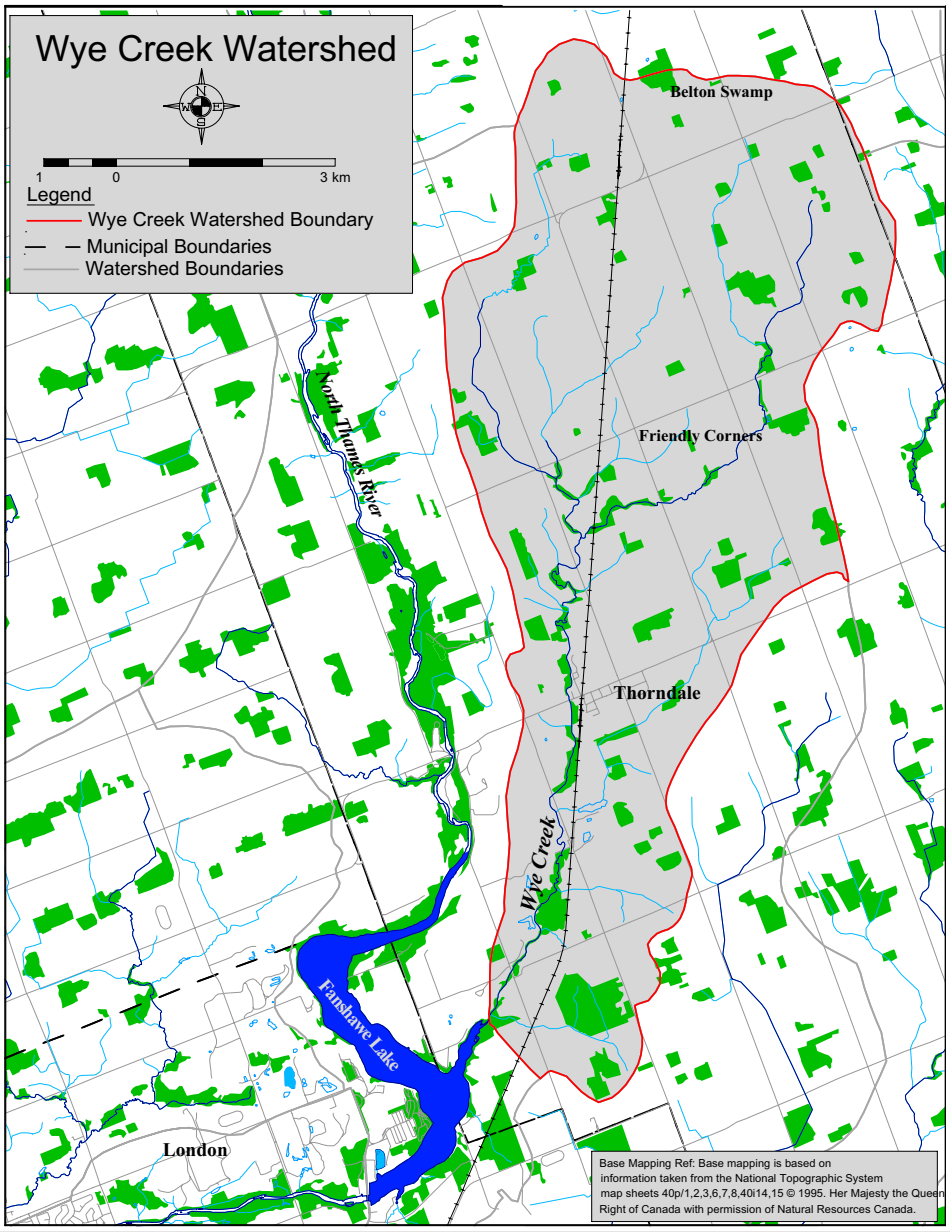
Wye Creek Watershed Report Card



This report card outlines environmental information for the Wye Creek 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**
D	**Surface Water Quality***



Municipalities: Thames Centre (52 sq. km), Zorra (<1 sq. km)
Watercourses: Wye Creek (drains into the North Thames River at Fanshawe Reservoir)

* Surface water quality grade is based on benthic scores only.

Grade D-

Forest Conditions

Overall, forest conditions in the Wye Creek watershed rank a D- and the three indicators score similarly (see table below). The amount of forest cover (9%) is below the Upper Thames average and considered too low for sustainability. The ideal for southern Ontario is 25-30% natural cover (Carolinian Canada, 2000). Forest density is poor, indicating the majority of woodlots are isolated from each other, making it difficult for seeds to be transported and animals to move easily between them. Forest interior is also very low indicating that most of the woodlots are too small and narrow to support sensitive species that need to live in large protected habitats.

Indicators	Wye Creek Results		Upper Thames Watershed Average		Indicator Description
Forest Cover	9%	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	40%	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	0.8%	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 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).
- Connections can be made between woodlots and other habitats by planting hedgerows and windbreaks along fields, roads, and watercourses.
- Belton Swamp is the only significant site identified in this watershed and so habitat enhancement and naturalization projects should be targeted here to further enhance its values. With landowner cooperation, projects may include biological inventory work, plantation thinning and examining drainage works that may be harmful to the swamp.
- Forest cover along Wye Creek is good is some sections, sparse in others. The lower end of the creek between Thorndale and Fanshawe Reservoir has some riparian cover but the wooded areas are narrow and fragmented. Connecting, extending and widening these riparian woodlots through tree planting or naturalization would protect the river and create an excellent wildlife corridor.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.

Grade D

Surface Water Quality

Water quality in the Wye Creek watershed ranks a D based on benthic scores (see chart below). Water quality improves towards the outlet of this creek due to more natural stream conditions with improved flow characteristics and vegetated cover. The lower reaches of this creek may provide important spawning and nursery areas for gamefish from the Fanshawe reservoir. There is a lack of water quality data for bacteria and chemistry parameters in this watershed.

Indicators	Wye Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	5.99	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.
Phosphorus (mg/l)	No Data		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.
Bacteria (per 100 ml)	No Data		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.
Conductivity (μs/cm)	No Data		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:

- Add monitoring station(s) to this watershed to adequately assess changes in water quality. Also, re-establish the stream flow monitoring station at the lower end of Wye Creek.
- Plant buffers (grasses or treed) along all open drains, creeks and rivers to filter runoff, and provide shade. Target riparian planting along Wye Creek within the village of Thorndale.
- Rehabilitate the coldwater tributaries in the headwaters of this watershed and assess their suitability for trout re-introduction. Assess opportunities to enhance fish spawning and rearing habitat in the downstream section of Wye Creek.
- 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).
- Identify groundwater recharge and discharge zones and develop protection strategies for these areas.
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- The following actions should be targeted within Thorndale:
  - encourage a broad servicing strategy for both septic and stormwater management;
  - encourage river clean-up /stream stewardship projects to improve the 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.

Wye Creek Watershed Features

Area	52 sq. km (1.5% of Upper Thames River watershed)
Land Use	89% agriculture, 9% wooded, 1% urban, 1% aggregate extraction (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	43% silt loam, 33% clay loam, 12% course sand, 10% bottom land, 1% fine sandy loam and 1% sandy loam (GIS derived using county soil maps)
Soil Erosion/Delivery	2% of the watershed is classified as highly erodible (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 derved using 1991 Geomatics data)
Physiography	75% undrumlinized till plain, 14% spillway, 6% till moraine, 4% sand plain (Chapman and Putnam, 1984)
Stream Flow	0.5 cubic metres/second is the mean annual flow. Wye Creek contributes approximately 1% of the flow in the Thames River downstream of London. (Environment Canada 1998)
Groundwater	A substantial shallow overburden aquifer (< 18 m depth) extends around the Fanshawe Lake area. Another smaller shallow aquifer is found in the Belton area. Smaller intermediate overburden aquifers (18 to 46 m) are located in the Thorndale and Friendly Corners area. (MOE 1981)
Fishery Resources	19 species of fish have been recorded in this primarily warm water system. The lower reaches may have some significance as spawning and nursery areas for gamefish from the Fanshawe reservoir. A few headwater tributaries have coldwater flows and may be suitable for rehabilitation and trout re-introduction.
Dams	No dams have been recorded in this watershed. (UTRCA, 1991)
Sewage Treatment	There are no sewage treatment plants discharging to the Wye Creek. Homes in the watershed are serviced by private septic systems.
Woodlot Size	51% of the woodlots are very small (<4 ha), 29% are small (4-10 ha), 16% are mid-sized (10-30 ha), 2% are large (30-40 ha) and 2% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	28% of the riparian zone (20 metres on either side of a watercourse) is forested. The average for the Upper Thames River watershed is 24%. (GIS derived using 1997 NTS maps)
Rare Species	Fish – Greenside Darter (ROM and UTRCA, 2000 and NHIC, 2000)
Significant Natural Sites	**Provincially Significant Wetlands** –- none **Locally Significant Wetlands** – Belton Swamp **Environmentally Significant Areas** – Wyton Station Woods (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).

Wye Creek at bottom of photo entering Fanshawe Reservoir

Greenside Darter

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