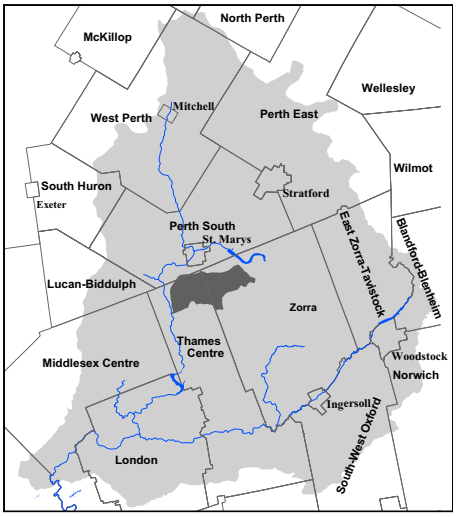
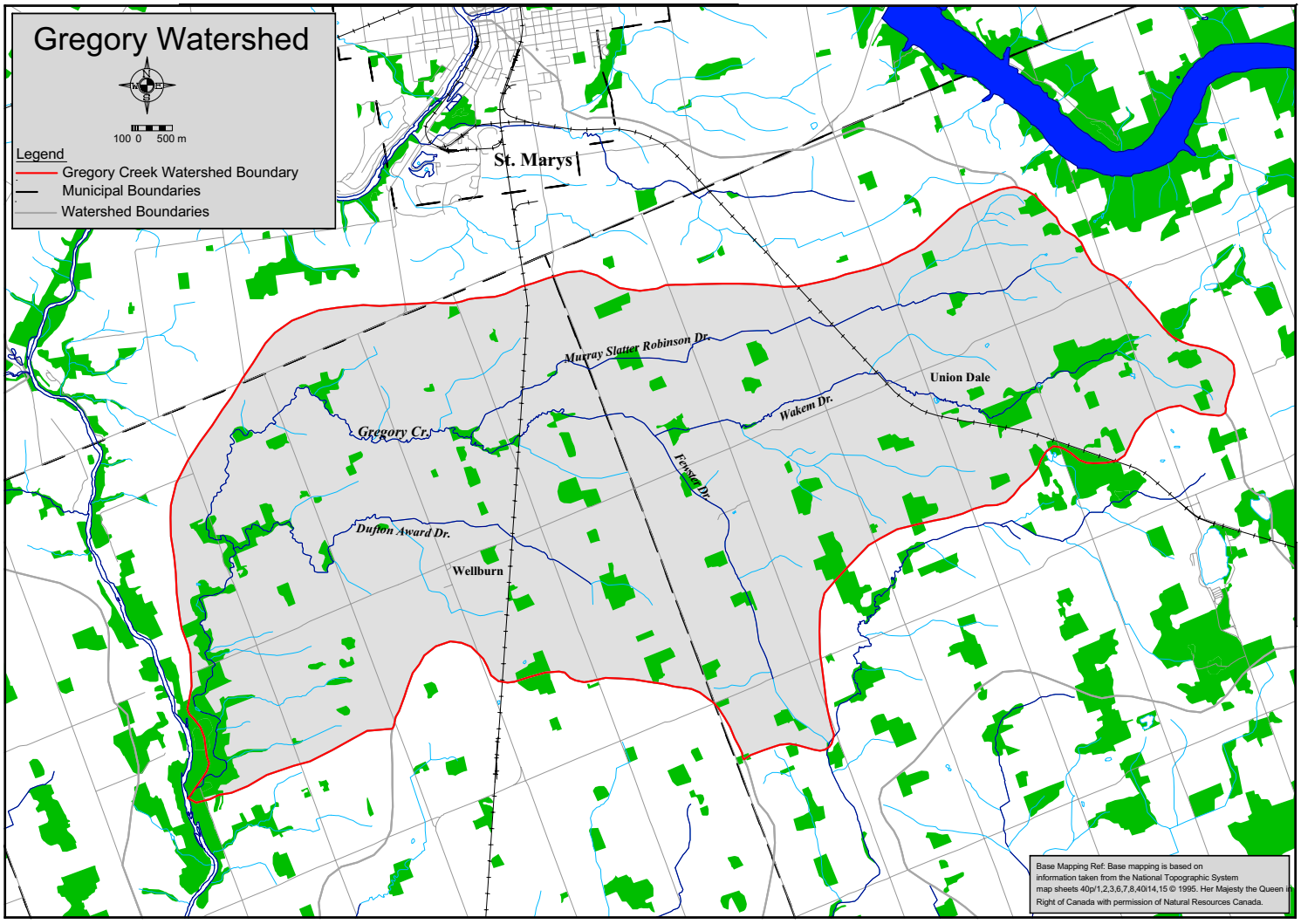
Gregory Creek Watershed Report Card



This report card outlines environmental information for the Gregory 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:

F	**Forest Conditions**
B	**Surface Water Quality***



Municipalities: Thames Centre (32 sq. km), Zorra (32 sq. km)
Watercourses: Gregory (tributary of North Thames River), Fewster Dr., Murray Slater Robinson Dr., Wakem Dr.

* Surface water quality grade is based on benthic scores only

Grade F

Forest Conditions

Overall, forest conditions in the Gregory Creek watershed rank an F grade and the three indicators score grades from D to F (see table below). The amount of forest cover (8%) is very low and considered too low for sustainability. The ideal for southern Ontario is 25-30% natural cover (Carolinian Canada, 2000). Forest density is also very low indicating the woodlots are isolated from each making it difficult for seeds to be transported and wildlife to move between them. Forest interior is also very low meaning the majority of woodlots are too small and/or narrow to support sensitive species that need to live in large protected forests. Approximately 84% of the woodlots are under 10 ha in size.

Indicators	Gregory Creek Results		Upper Thames Watershed Average		Indicator Description
Forest Cover	8%	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	29%	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	0.5%	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 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.
- To improve the health of individual woodlots, owners should prepare and follow Woodlot Management Plans.
- 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, watercourses and roads.
- The amount of forest cover along Gregory Creek is poor, except for the lower end. As the creek nears the North Thames, it passes through several woodlots, but these are narrow and somewhat fragmented. Connecting and widening these riparian woodlots by planting native hardwood trees would protect the creek and create an excellent wildlife corridor. A second priority area for enhancement work is along the headwaters of Waken Drain where the watercourse passes through some moderate-sized woodlots. The area would also benefit from woodlot connecting, widening and other enhancement project, with landowner cooperation.

Small Woodlot

Grade B

Surface Water Quality

The Gregory Creek watershed ranks a B with respect to overall water quality, based on benthic scores only (see chart below). Water quality is poorer in the mid-portion of the watershed and improves towards the outlet of this creek where more natural stream conditions are prevalent including better vegetative cover and flow characteristics. There are three coldwater streams with one at the upper portion of the watershed supporting a Brook Trout population. Water quality and flow monitoring stations are lacking within this subwatershed.

Indicators	Gregory Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	4.96	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.
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 quantity and quality.
- Plant buffers (grassed or treed) along creeks, rivers and open drains in this area to filter runoff and provide shade. Target the rehabilitation of the three coldwater tributaries.
- 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 in Middlesex County, and develop strategies for these areas. In Oxford County, implement protection of identified groundwater recharge zones and discharge areas, and continue with groundwater research and monitoring (refer to *Oxford County Groundwater Study, 2000.*)
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- 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.

Benthic Monitoring, Fall 2001

Gregory Creek Watershed Features

Area	64 sq. km (2 % of Upper Thames River watershed)
Land Use	91% agriculture, 8% wooded, 1% urban (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	41% silty loam, 28% clay loam, 21% silty clay loam, 6% bottomland, 2% organic, 1% coarse sand and 1% sandy loam (GIS derived using county soil maps)
Soil Erosion/Delivery	6% 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)
Physiography	89% undrumlinized till plain, 6% till moraine, 3% eskers, 2% spillway (Chapman and Putnam, 1984)
Stream Flow	There are no flow monitoring stations on Gregory Creek.
Groundwater	There are shallow overburden aquifers (< 18m) found around Wellburn and in a small pocket to the north. There is a large intermediate aquifer (18-45 m) covering St.Ives, Cherry Grove and west of the Thames River. (MOE 1981).
Fishery Resources	22 species of fish have been recorded in Gregory Creek including Brook Trout, and Largemouth, Smallmouth and Rock Bass. Three cold water tributaries occur in this watershed. (UTRCA data and DFO data)
Dams	No dams are reported in this watershed.
Sewage Treatment	There are no sewage treatment plants discharging to Gregory Creek. Properties in the watershed are serviced by private septic systems.
Woodlot Size	52% of the woodlots are very small (<4 ha), 32% are small (4-10 ha), 9% are mid-sized (10-30 ha), 3% are large (30-40 ha) and 4% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	20% 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)
Rare Species	Fish – Greenside Darter (ROM data, UTRCA data, and NHIC, 2000)
Significant Natural Sites	**Provincially Significant Wetlands** – DeBoer Wetlands, Wetland Southwest of Uniondale **Locally Significant Wetlands** – St. Ives Flood Plain **Environmentally Significant Areas** – none (MNR data and UTRCA 1996)

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

Greenside Darter

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