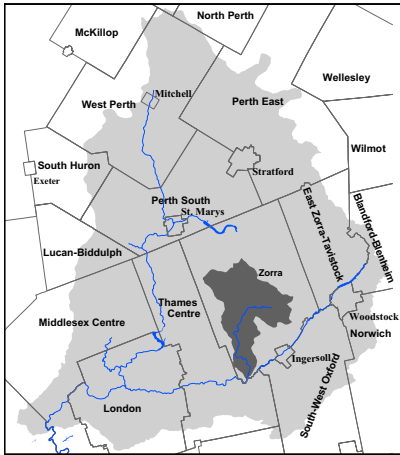


Middle Thames Watershed Report Card

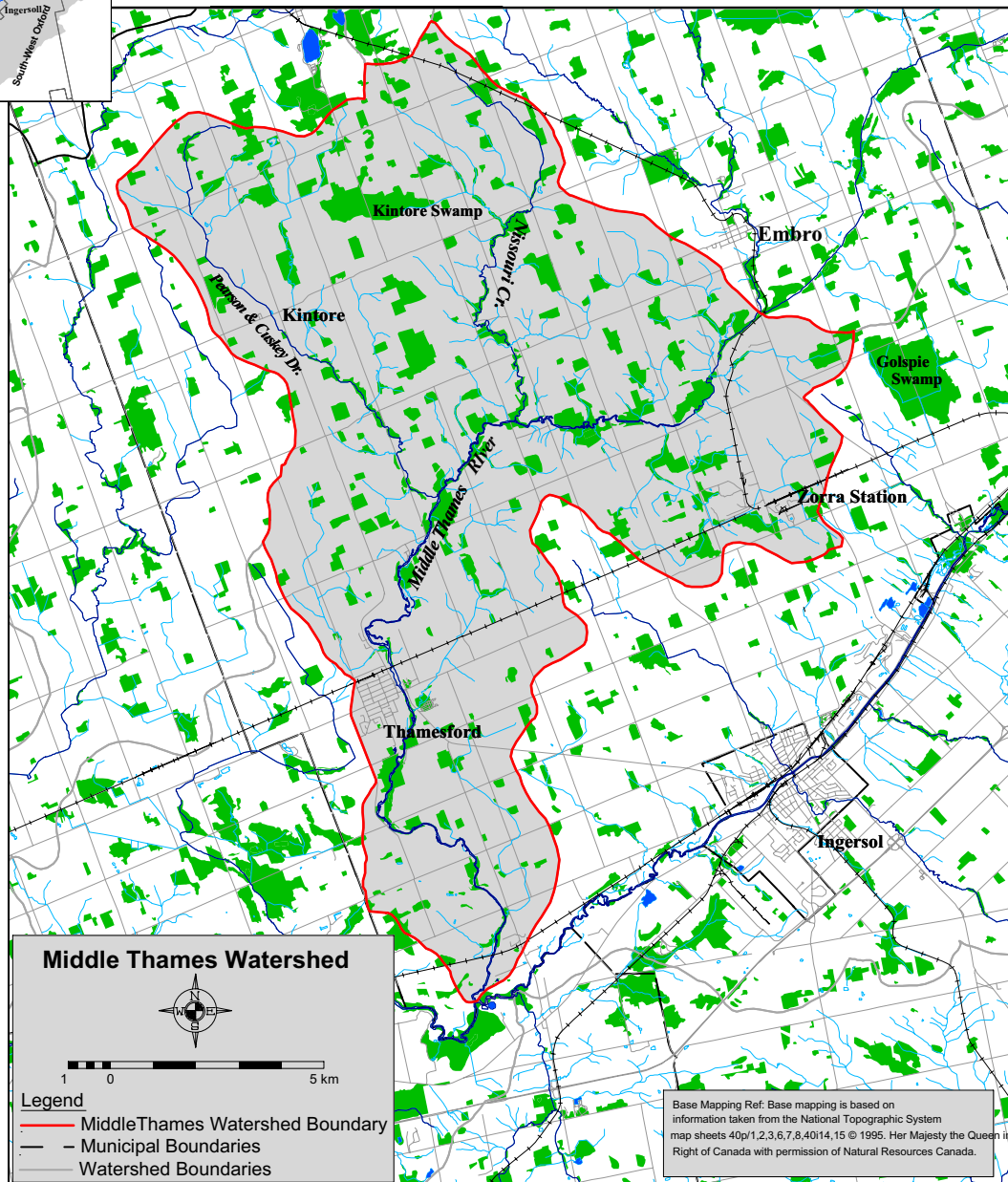


This report card outlines environmental information for the Middle Thames watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff,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

C Forest Conditions

C Surface Water Quality



Municipalities: Zorra Township (172 sq. km)
Watercourses: Lower part of Middle Thames (a tributary of the South Thames River), Nissouri Creek, Pearson & Cucksey Drain

Grade
C

Forest Conditions

Overall, forest conditions in the Middle Thames watershed score a C grade and the three indicators have grades ranging from B to D (see table below). The amount of forest cover (13%) is close to the average for the Upper Thames watershed, but still considered too low for sustainability. The ideal for southern Ontario is 25-30% natural cover (Carolinian Canada, 2000). Forest density is relatively high, indicating that many woodlots are close enough to each other to allow seeds to be transported and animals to move between them. Forest interior is 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	Middle Thames Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	13%	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	81%	B	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	1.6%	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).
- Connections can be made between woodlots and other habitats by planting hedgerows and windbreaks along fields, water-courses and roads.
- Forest cover along the Middle Thames and its tributaries is low. However, there is a moderate amount of riparian forest cover adjacent to the Middle Thames River upstream of Thamesford, although these woodlots are narrow and fragmented. Additional tree planting to connect and widen these woodlots would create an excellent wildlife corridor, benefiting both aquatic and terrestrial species.
- The north part of the watershed contains the largest forest tracts (primarily swamps) and these hold the greatest potential for wildlife habitat. Increasing connections between these tracts would be beneficial for species movement. With land-owner cooperation, strategies should be created outlining their protection and management needs.



Grade
C

Surface Water Quality

The Middle Thames watershed ranks a C with respect to overall water quality, with the four indicators ranging from B to D (see chart below). The water quality in this watershed has deteriorated over the past 30 years. Nitrates, suspended solids, conductivity, and fecal bacteria all show increasing trends. Fecal coliform bacteria levels were within the

provincial guideline until 1990, after which they rose above acceptable levels. This indicates an increase in contamination from human/animal sources. Most of this watershed is warmwater with two coldwater tributaries.

Indicators	Middle Thames Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
	Value	Grade	Value	Grade		
Benthic Score (FBI)	5.55	C	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)	0.05*	B	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)	203*	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.
Conductivity (μS/cm)	655*	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 open drains, creeks and rivers to filter runoff and provide shade. Target the rehabilitation of the two coldwater tributaries. Also target riparian plantings within Thamesford.
- Implement protection of identified groundwater recharge zones and discharge points 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.
- Investigate potential impacts of aggregate extraction on surface and groundwater and the effects of water taking.
- Assess the purpose of the Thamesford dam to determine if it should be modified or removed 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 (21% of the land within this watershed is classified as highly erodible compared to Upper Thames River watershed average of 9%).
- 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).
- The following actions should be targeted within Thamesford:
 - 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.

Middle Thames Watershed Features

Area	172 sq. km (5% of Upper Thames River watershed) (152 sq. km lies upstream)
Land Use	85% agriculture, 13% wooded, 1% quarry, 1% urban (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	42% sandy loam, 42% silt loam, 11% loam, 2% bottomland, 2% organic, 1% not mapped (urban) (GIS derived using county soil maps)
Soil Erosion/Delivery	21% 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	54% drumlinized till plain, 23% spillway, 16% undrumlinized till plain, 7% eskers, 1% clay plain (Chapman and Putnam, 1984)
Stream Flow	3.7 cubic metres/second is the mean annual flow near Thamesford. The Middle Thames contributes approximately 9.5% of the flow in the Thames River downstream of London. (Environment Canada, 1998)
Groundwater	There are bands of shallow overburden aquifers (< 18 m) along the main channel of the Middle Thames. There is a larger intermediate overburden aquifer (18-45m) west of Embro. (MOE 1981)
Fishery Resources	35 species of fish have been recorded. Most of the watershed is warm water with the main channel and tributaries supporting game fish such as Largemouth and Smallmouth Bass, and Northern Pike. Two tributaries are coldwater, one with a remnant Brook Trout population.
Dams	2 dams are documented in this watershed, both privately owned. (UTRCA, 1991)
Sewage Treatment	The Thamesford Wastewater Treatment Plant discharges treated effluent into the Middle Thames River (currently not all homes are hooked up). All rural properties are serviced by private septic systems.
Woodlot Size	49% of the woodlots are very small (<4 ha), 24% are small (4-10 ha), 19% are mid-sized (10-20 ha), 4% are large (30-40 ha) and 5% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	26% 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, Silver Shiner Reptiles – Eastern Spiny Softshell Turtle (ROM and UTRCA and NHIC databases)
Significant Natural Sites	Provincially Significant Wetlands – Great Blue Heronry, Lakeside Dump Swamp, Medina Bush, Unopened 12 th Woodlots Locally Significant Wetland – Banner Swamp, Kintore Swamp Earth Science Areas of Natural and Scientific Interest – Thamesford Meltwater Channel (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).