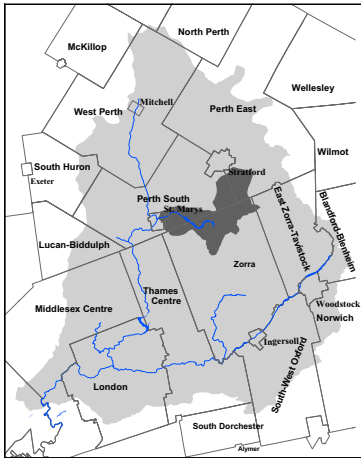


Trout Creek Watershed Report Card

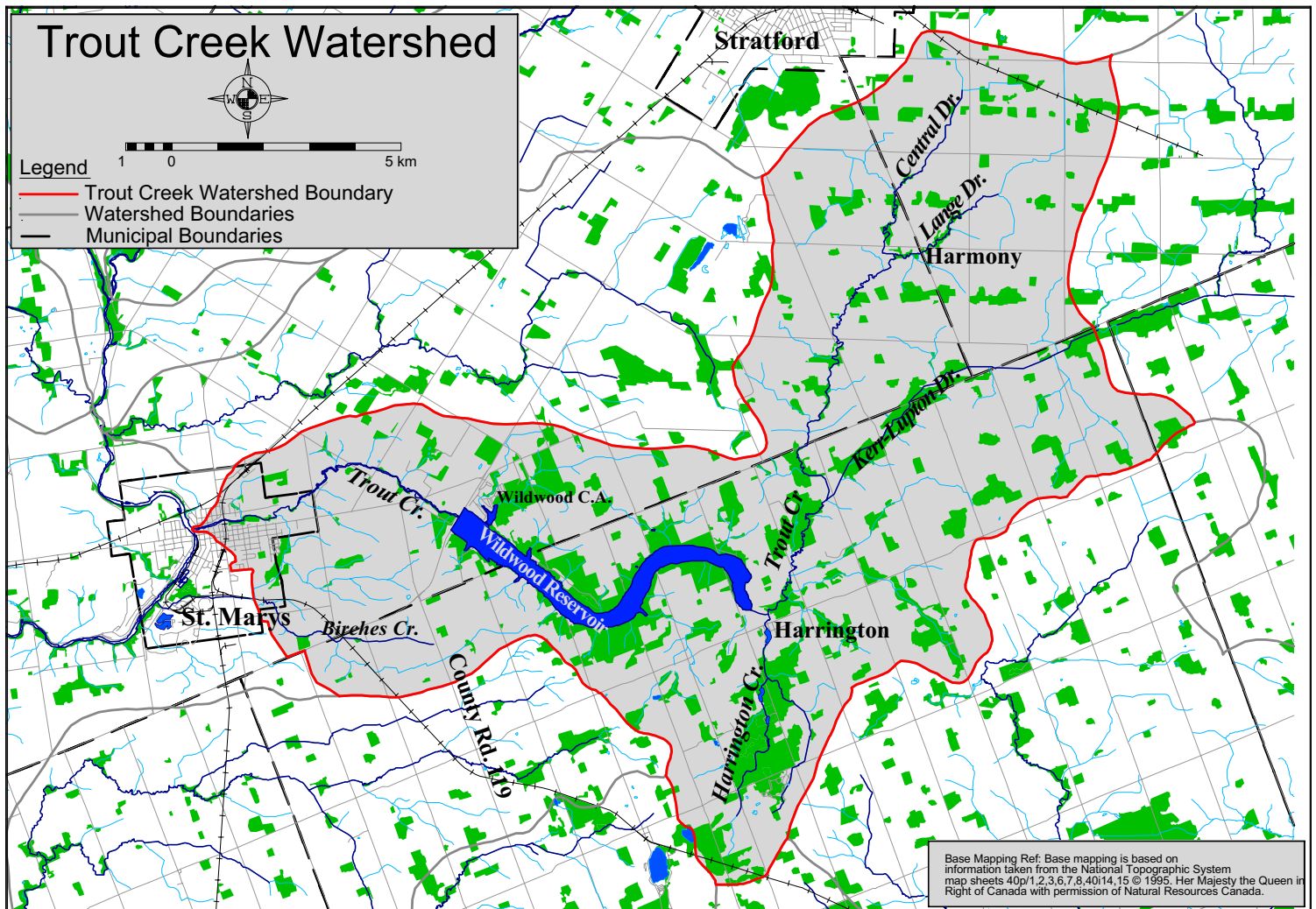


This report card outlines environmental information for the Trout Creek watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff,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

B Forest Conditions

D Surface Water Quality



Base Mapping Ref: Base mapping is based on information taken from the National Topographic System map sheets 40p/1, 2, 3, 6, 7, 8, 40/14, 15 © 1995, Her Majesty the Queen in Right of Canada with permission of Natural Resources Canada.

Municipalities: Zorra (77 sq. km), Perth South (53 sq. km), Perth East (26 sq. km), Town of St. Marys (4 sq. km), East Zorra-Tavistock (<1 sq. km)

Watercourses: Trout Creek (tributary of North Thames River), Harrington Creek, Kerr Lupton Drain, Central Drain, Lange Drain, Birches Drain/Creek

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Grade
B

Forest Conditions

Overall, forest conditions in the Trout Creek watershed score a B grade and the three indicators score grades from A to C (see table below). The amount of forest cover (16%) is higher than 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 good, indicating the woodlots

are close enough to each other to allow seeds to be transported and animals to move between them. The amount of forest interior is also good compared to other areas of the Upper Thames watershed indicating that many of the woodlots are big enough to support sensitive species that need to live in large protected habitats.

Indicators	Trout Creek Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	16%	C	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	78%	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	3.0%	A	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 and other appropriate planning measures.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following 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 habitat types by planting hedgerows or windbreaks along fields, waterways and roads.
- The large wooded areas around Wildwood Conservation Area and Harrington Creek hold the greatest potential for wildlife habitat and so enhancement and restoration projects should be targeted here. Projects could include conifer plantation thinning to encourage hardwood regeneration (especially at Wildwood CA) and conducting wildlife inventories, with landowner cooperation.
- Strategies should be put in place for the other significant woodlands and wetlands in the watershed (with landowner cooperation), to ensure the unique system of natural heritage features in this watershed is preserved.



Conifer plantings near Wildwood Reservoir

Grade
D

Surface Water Quality

Water quality in the Trout Creek watershed ranks a D with the four indicators ranging from C to D- (see chart below). Fecal coliform bacteria levels in Trout Creek are fairly low but show an increasing trend from the 1970's to present day indicating contamination from human/animal waste. Poor benthic scores are largely influenced by the effects of dams (Wildwood and St. Marys) in the lower portion of the watershed. These dams modify water flow and water temperature creating negative impacts on aquatic life. Upstream of Wildwood Reservoir, stream conditions are variable with some healthy coldwater

streams (e.g. Harrington Creek, Young's Drain, and a mid-section of Trout Creek) along with poorer channelized watercourses. In the summer, Trout Creek provides approximately 75% of the summer baseflow in the North Thames River below St. Marys largely due to releases from the Wildwood Reservoir. Current information on fish habitat and populations, and stream characteristics (cold versus warmwater, permanent versus intermittent flow) is lacking for the north part of this watershed (in Perth County).

Indicators	Trout Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	6.80	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)	0.06*	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.
Bacteria (per 100 ml)	256*	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)	592*	C	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:

- Continue to monitor conditions and develop solutions to the impacts of Wildwood Dam on downstream water quality. Implement practices to improve oxygen levels downstream of the dam to protect fish populations.
- Conduct further study on fish habitat and stream characteristics in the north part of this watershed.
- Plant buffers (grassed or treed) along creeks, rivers and open drains to filter runoff and provide shade. Target rehabilitation of the coldwater streams.
- Protect identified groundwater infiltration zones and continue with groundwater research and monitoring (*Oxford County Groundwater Study, 2000* and *Perth County Groundwater Study, 2001*).
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Target soil erosion measures to areas of high erodibility (16% of the land within this watershed is classified as highly erodible compared to Upper Thames River watershed average of 9%).
- Assess the purpose of the 12 dams 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).
- The following actions should be targeted within St. Marys:
 - 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;

(continued on back)

- Implement stormwater management plans for all new urban developments, and implement projects to reduce stormwater runoff (e.g. through 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 within 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.

Trout Creek Watershed Features

Area	161 sq. km (4.4% of Upper Thames River watershed)
Land Use	78% agriculture, 17% wooded, 3% urban, 2% water (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	43% silt loam, 33% clay loam, 10% sandy loam, 7% bottom land, 4% organic, 3% loam, 2% not mapped (urban) (GIS derived using county soil maps)
Soil Erosion/Delivery	16% 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% undrumlinized till plain, 16% spillway, 14% drumlinized till plain, 7% till moraine, 6% eskers, 1% clay plain, 1% water (Chapman and Putnam, 1984)
Stream Flow	1.9 cubic metres/second is the mean annual flow upstream of St. Marys. Trout Creek contributes approximately 5% of the flow in the Thames downstream of London. Trout Creek also contributes approximately 75% of summer flow in the North Thames below St. Marys. (Environment Canada, 1998)
Groundwater	Shallow overburden aquifers (<18 m) are concentrated along the upper branches of Trout Creek. The remaining area is supplied primarily by the deeper bedrock aquifer. (MOE 1981)
Fishery Resources	A total of 33 fish species has been recorded. Wildwood Reservoir provides sportfishing opportunities for bass, pike and panfish. As well, there are several coldwater tributaries, four of which support Brook Trout populations.
Dams	12 dams are documented in this watershed including the Harrington Conservation Area Dam and the Wildwood Conservation Area Dam. The other dams are privately owned. The St. Marys Weir backs up water in the downstream section of Trout Creek. (UTRCA, 1991)
Sewage Treatment	There are no sewage treatment plants discharging to Trout Creek. Most St. Marys homes in this watershed are serviced by the St. Marys Water Pollution Control Plant that discharges to the North Thames. Rural residences in the watershed are serviced by private septic systems.
Woodlot Size	45% of the woodlots are very small (<4 ha), 18% are small (4-10 ha), 16% are mid-sized (10-30 ha), 5% are large (30-40 ha) and 16% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	34% 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)
Rare Species	Fish – Silver Shiner (ROM/UTRCA and NHIC, 2000)
Significant Natural Sites	<p>Provincially Significant Wetlands – Brooksdale Forest, Trout Creek Swamp, Wildwood Lake Wetland, Wetland ZO34Bd, Wetland ZO34cbc, Wetland ZO34cfg</p> <p>Locally Significant Wetlands – none</p> <p>Significant Natural Areas – Fairview Woods, Happy Hills, Harmony Woods, Lost Concession, Shagbark Hickory Woods, Trout Creek Floodplain, Trout Creek Valley</p> <p>Earth Science Areas of Natural and Scientific Interest – Harmony Cut, St. Marys Cement Company South Quarry, Wildwood Silts (MNR and UTRCA 1996, County ESA reports)</p>

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

