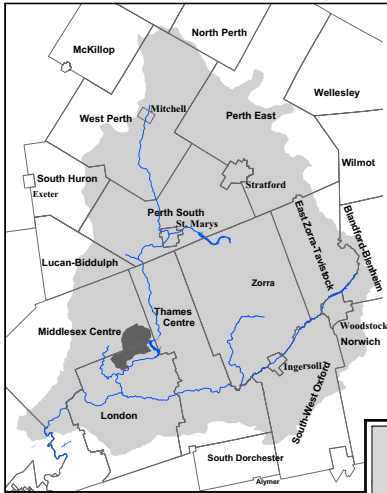


Stoney Creek Watershed Report Card

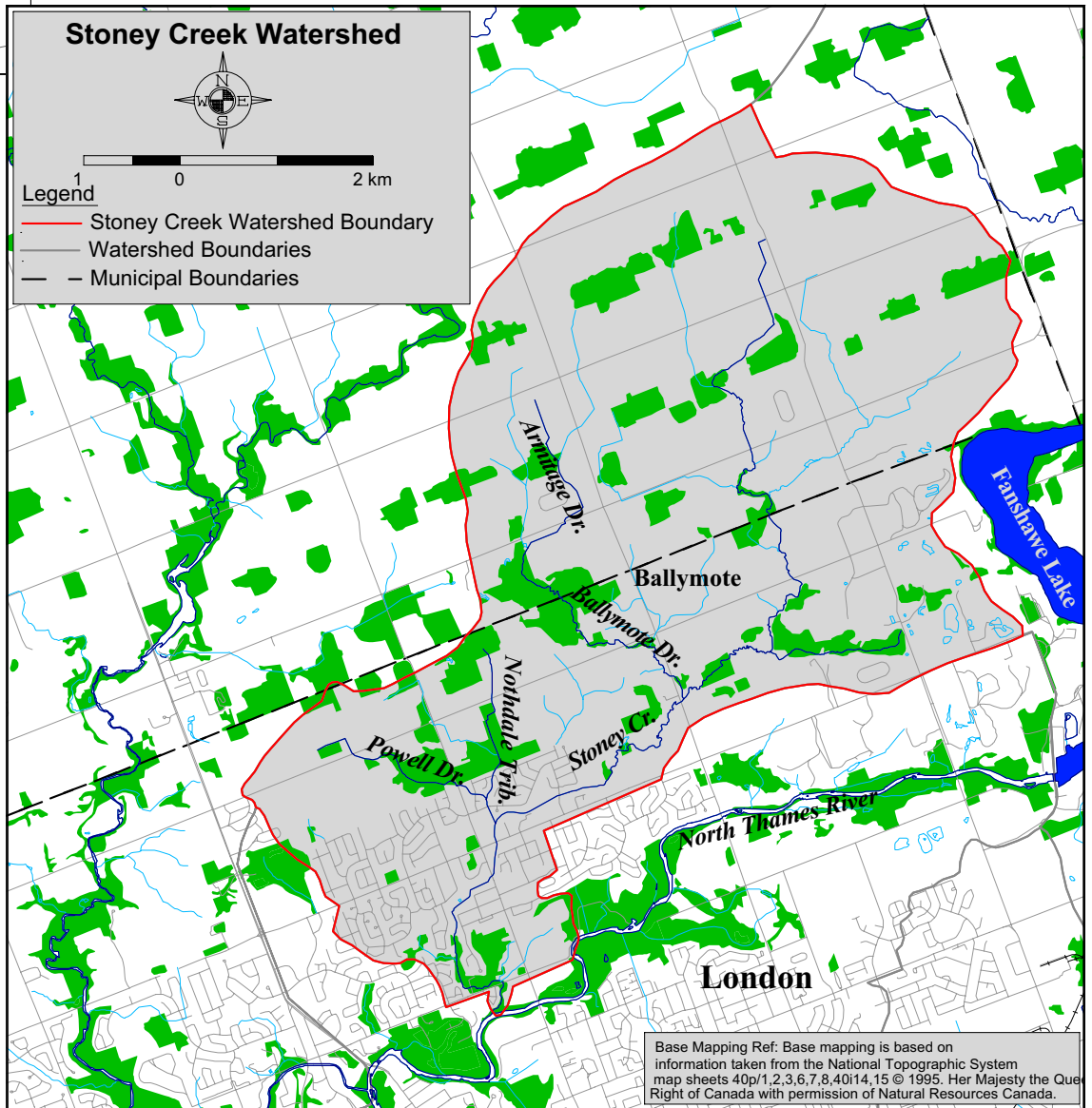


This report card outlines environmental information for the Stoney Creek watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff,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

C Forest Conditions

D Surface Water Quality



Municipalities: Middlesex Centre (20 sq. km), City of London (18 sq. km)
Watercourses: Stoney Creek, Powell Drain, Ballymote Drain, Northdale Tributary, Armitage Drain

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* The Stoney Creek watershed is very small compared to other subwatersheds in this study and so comparisons may be skewed.

Grade
C

Forest Conditions

Overall, forest conditions in the Stoney Creek watershed scored a C grade but the three indicators scored grades from A to D- (see table below). The amount of forest cover (12%) is the same as the average for the Upper Thames watershed, but still considered too low for sustainability. The ideal amount of forest cover for southern Ontario is 25-30% (Carolinian Canada, 2000). Forest density is very good,

indicating most of the woodlots are located close enough to other woodlots to allow seeds to be transported and animals to move between them. Forest interior is very low, however, indicating most of the woodlots are small and narrow and unlikely to support sensitive species that need to live in large protected habitats.

Indicators	Stoney Creek Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	12%	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	97%	A	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	1.0%	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).
- Tree planting and naturalization projects should be targeted to sites identified by the City of London as *Corridors* and *Anti-Fragmentation Areas*. These areas have the greatest potential to become good wildlife habitat. As urban development pressure is high in this area, establishing priority natural areas and corridors for protection and rehabilitation is an excellent way to plan for both human growth and natural heritage. Landowner cooperation is required.
- Ongoing efforts to naturalize and plant trees along Stoney Creek within the City of London should be supported as this stretch will become an excellent wildlife corridor.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.
- To reduce the degradation of public woodlands, landowners living next to natural areas should be educated regarding ways to minimize their impacts. There should be ongoing enforcement of by-laws pertaining to permitted uses within these natural areas.



Farm woodlot edge

Grade
D

Surface Water Quality

The Stoney Creek watershed ranks a D, with respect to overall water quality, with the four indicators ranging from C to D. The benthic score is poor. Fecal coliform bacteria levels in Stoney Creek are relatively high and indicate contamination from human/animal waste. There is a lack of both stream flow data and continuous water quality data within this subwatershed (the results in the table below are based on the

London Subwatershed Study, 1995). The urban areas of the watershed have higher heavy metal concentrations indicative of urban runoff. Sodium, copper, iron, selenium and arsenic are all found at higher concentrations. Both copper and iron concentrations exceeded provincial guidelines (*London Subwatershed Study, 1995*).

Indicators	Stoney Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	6.01	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)	440**	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)	492**	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)

** 1993/94 Water Quality Monitoring Results for City of London Subwatershed Study

Local Actions Needed for Improvement:

- Implement the recommendations of the *City of London Subwatershed Studies Implementation Plan (1995)* and the *Stoney Creek Subwatershed Study (1995)*.
- Add continuous monitoring station(s) to this watershed to adequately assess changes in water quality and quantity.
- Conduct further study on Stoney Creek's significance as spawning, rearing or feeding habitat for North Thames fish.
- Plant buffers (grassed or treed) along creeks, rivers and open drains to filter runoff and provide shade. Target the rehabilitation of the coldwater tributary.
- Identify groundwater recharge and discharge zones, and develop strategies for their protection.
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Investigate potential impacts of aggregate extraction on surface and groundwater.
- Assess the purpose of each dam to determine if any should be removed or modified to improve river health. Where weir removal has taken place, monitor the resulting impacts.
- 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, use of natural channel design).
- The following actions should be targeted within London:
 - 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);

(continued on back)

- 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.



Stoney Creek Watershed Features

Area	38 sq. km (1% of Upper Thames River watershed)
Land Use	69% agriculture, 14% urban, 12% wooded, 5% quarry (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	36% silt loam, 16% coarse sand, 13% clay loam, 9% bottomland, 4% fine sandy loam, 1% silty clay loam, 22% not mapped (urban) (GIS derived using county soil maps)
Soil Erosion/Delivery	5% 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	49% spillway, 45% undrumlinized till plain, 6% till moraine (Chapman and Putnam, 1984.)
Stream Flow	Not available.
Groundwater	Predominantly, there are intermediate overburden aquifers (18 - 45 m) throughout the Stoney Creek watershed. There is also a small region of shallow overburden aquifer (< 18 m) located around Fanshawe Reservoir. (MOE 1981)
Fishery Resources	23 species have been recorded, including Smallmouth Bass and Rock Bass from the lower end of the creek. One small tributary is coldwater. Stoney Creek's significance as spawning, rearing or feeding habitat for North Thames fish is unknown. (ROM and UTRCA databases)
Dams	2 dams and 2 weirs are known in this watershed. Beavers are also active here. (UTRCA 1991)
Sewage Treatment	There are no sewage treatment plants discharging into Stoney Creek. That portion of the watershed within the City of London is serviced by the Adelaide Pollution Control Plant, while the rural properties are serviced by private septic systems.
Woodlot Size	48% of the woodlots are very small (<4 ha), 22% are small (4-10 ha), 25% are mid-sized (10-30 ha), 0% are large (30-40 ha) and 6% are very large (>40 ha) (GIS derived using 1997 NTS maps)
Riparian Forest	22% 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 – Fanshawe Wetlands Complex, Arva Moraine Wetland Locally Significant Wetlands — Ballymote Wetland Environmentally Significant Areas – none (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).