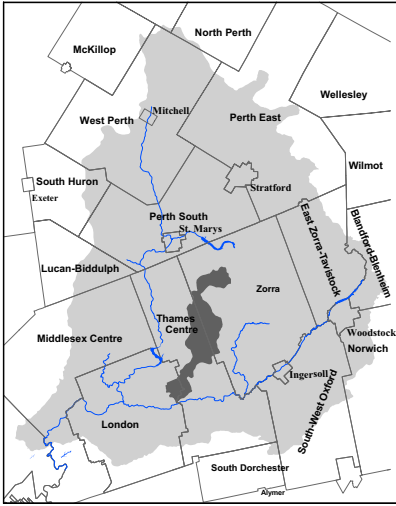


Waubuno Creek Watershed Report Card

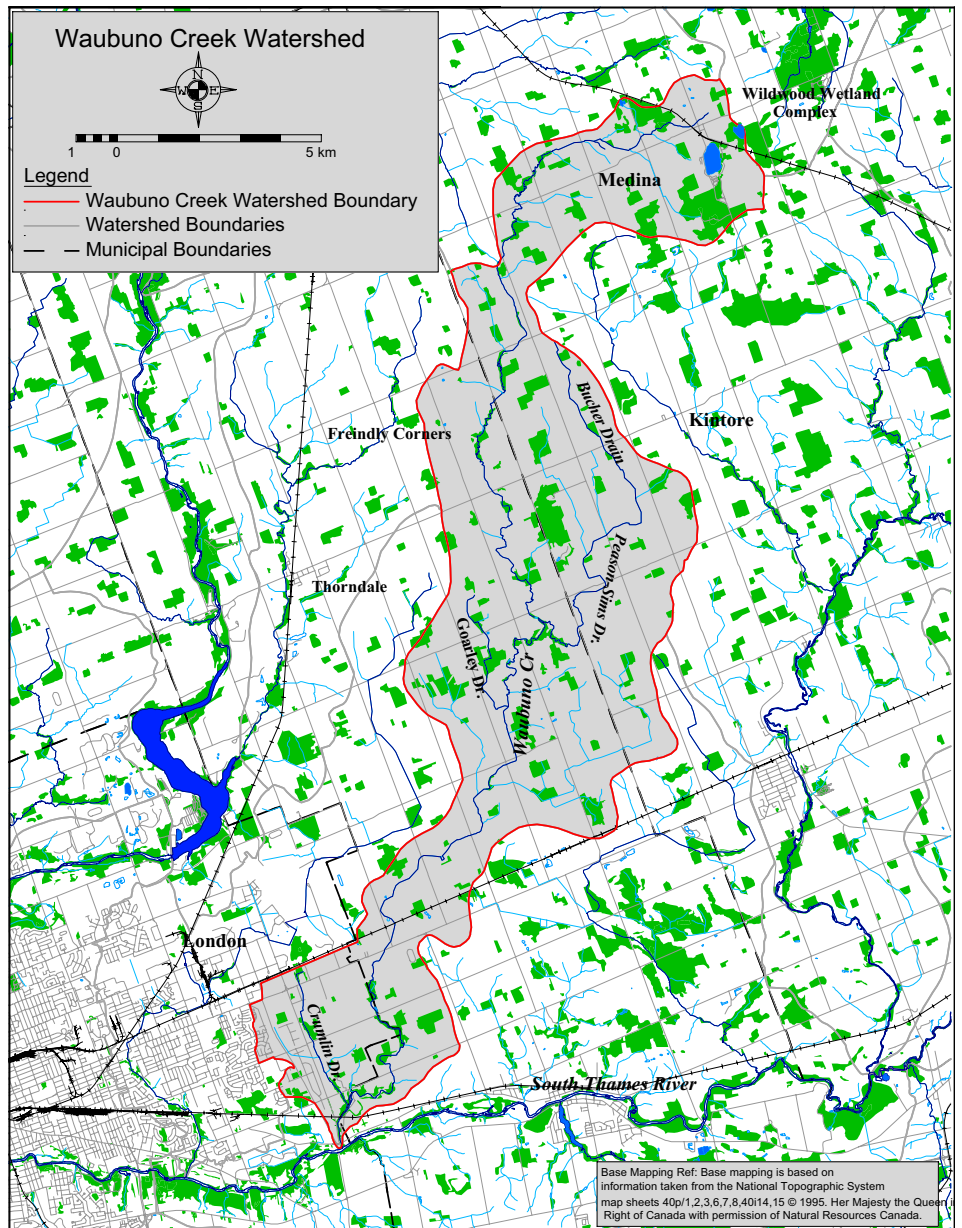


This report card outlines environmental information for the Waubuno Creek watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff,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

C Surface Water Quality*



Municipalities: Thames Centre Township (50 sq. km), Zorra Twp (48 sq. km), City of London (9 sq. km)
Watercourses: Waubuno Creek (tributary of South Thames River), Bucher Drain, Crumlin Drain, Peason-Sims Drain, Goarley Drain

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

Grade
C

Forest Conditions

Overall, forest conditions in the Waubuno Creek watershed rank a C grade and the grades for the three indicators range from B to D (see table below). The amount of forest cover (12%) is 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 fair, indicating some or most of 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 low indicating that most of the woodlots are too small and narrow to support sensitive species that need to live in large protected forests.

Indicators	Waubuno 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	80%	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	1.4%	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).
- Habitat enhancement projects should be targeted to the significant woodlands and wetlands (listed on page 4), most of which are located in the north end of the watershed. With landowner cooperation, strategies should be put in place for the protection and management of these sites.
- Woodlot owners can maintain and improve the health of their woodlots by preparing and following Woodlot Management Plans.
- Connections can be made between woodlots and other habitats in rural areas by planting hedgerows and windbreaks along fields, roads, and watercourses.
- Natural vegetation cover can be increased in urban areas by targeting the naturalization of school yards, public parks and open spaces, river valleys, residential properties and open areas within industrial/commercial properties.



Grade
C

Surface Water Quality

Water quality in the Waubuno Creek watershed ranks a C based on benthic scores (see chart below). Much of the headwater area of this watershed is channelized but the main branches are improved with more natural stream conditions and well vegetated buffers. Waubuno

Creek supports a diverse warmwater fish community with 26 species recorded including two “at risk” species. There is a lack of water quality data for bacteria and chemistry parameters in this watershed.

Indicators	Waubuno Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	5.22	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)	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 (e.g. install at the present flow monitoring station on Waubuno Creek).
- Plant buffers (grassed or treed) along creeks, rivers and open drains to filter runoff and provide shade. Target the rehabilitation of the headwater tributaries of Waubuno Creek.
- Identify groundwater recharge and discharge zones and develop protection strategies for these areas in Middlesex County. In the Oxford County portion of the watershed, protect 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.
- Assess the purpose of the dams (2) in this watershed to determine if any should be modified or removed to improve river health. Assess the impact of the recent beaver population in Waubuno Creek and determine any need for management.
- Assess water taking (e.g. for irrigation) and promote water conservation practices.
- Address water balance and water quality issues at Lake Sunova (a kettle lake).
- 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 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.
- Implement recommendations for the Crumlin Drain as outlined in the *City of London Subwatershed Study* (see *Pottersburg Creek and Crumlin Drain Subwatershed Study*, 1995, and *City of London Subwatershed Studies Implementation Plan*, 1995).

(continued on back)

- The following actions should be targeted within the City of 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);

- 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.



Waubuno Creek Watershed Features

Area	106 sq. km (3% of Upper Thames River watershed)
Land Use	83% agriculture, 12% wooded, 5% urban (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	58% silt loam, 13% clay loam, 6% bottomland, 5% sandy loam, 5% not mapped, 5% coarse sand, 4% very fine sand, 3% fine sandy loam, 2% silty clay loam, 1% organic (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	45% undrumlinized till plain, 22% spillway, 18% sand plain, 9% eskers, 4% kame moraine, and 1% till moraine (Chapman and Putnam, 1984)
Stream Flow	1.2 cubic metres/second is the mean annual flow in Waubuno Creek. The creek contributes about 3% of the flow in the Thames downstream of London. (Environment Canada, 1998)
Groundwater	Pockets of shallow overburden aquifers (< 18 m) are found in the Crumlin, Evelyn and Cobble Hills area. A larger intermediate overburden aquifer (18 - 45 m) can be found at the bottom end of the subwatershed. (MOE 1981)
Fishery Resources	Waubuno Creek supports a diverse warmwater fish community with 26 species recorded. Fish habitat is compromised by a barrier near the outlet and may be impacted by a recent beaver invasion.
Dams	2 dams are documented in this watershed, one near the mouth, another on a tributary near the mouth. (UTRCA, 1991)
Sewage Treatment	There are no sewage treatment plants discharging to Waubuno Creek. All rural residences in the watershed are serviced by private septic systems. Urban residences in east London are serviced by the Pottersburg Pollution Control Plant that discharges to the South Thames.
Woodlot Size	48% of the woodlots are very small (<4 ha), 21% are small (4-10 ha), 22% are mid-sized (10-30 ha), 2% are large (30-40) and 6% 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, Black Redhorse Ecosystems – Tallgrass Prairie (ROM/UTRCA and NHIC, 2000)
Significant Natural Sites	Provincially Significant Wetlands – Lakeside Dump/Swamp, Medina Bush, Wetland SW of Uniondale Locally Significant Wetlands – Wetland WN2D Significant Natural Area – Cobble Hills (MNR and UTRCA 1996, County ESA reports)
References:	For a complete listing of references, see the full report: <i>The Upper Thames River Watershed Report Cards</i> (UTRCA, 2001).