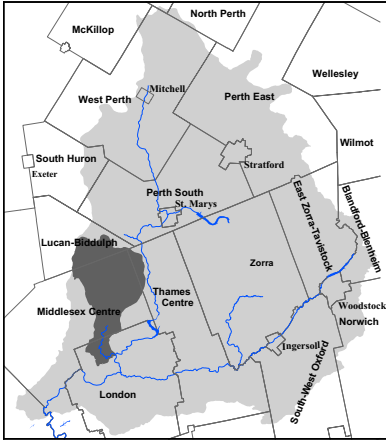


Medway Creek Watershed Report Card

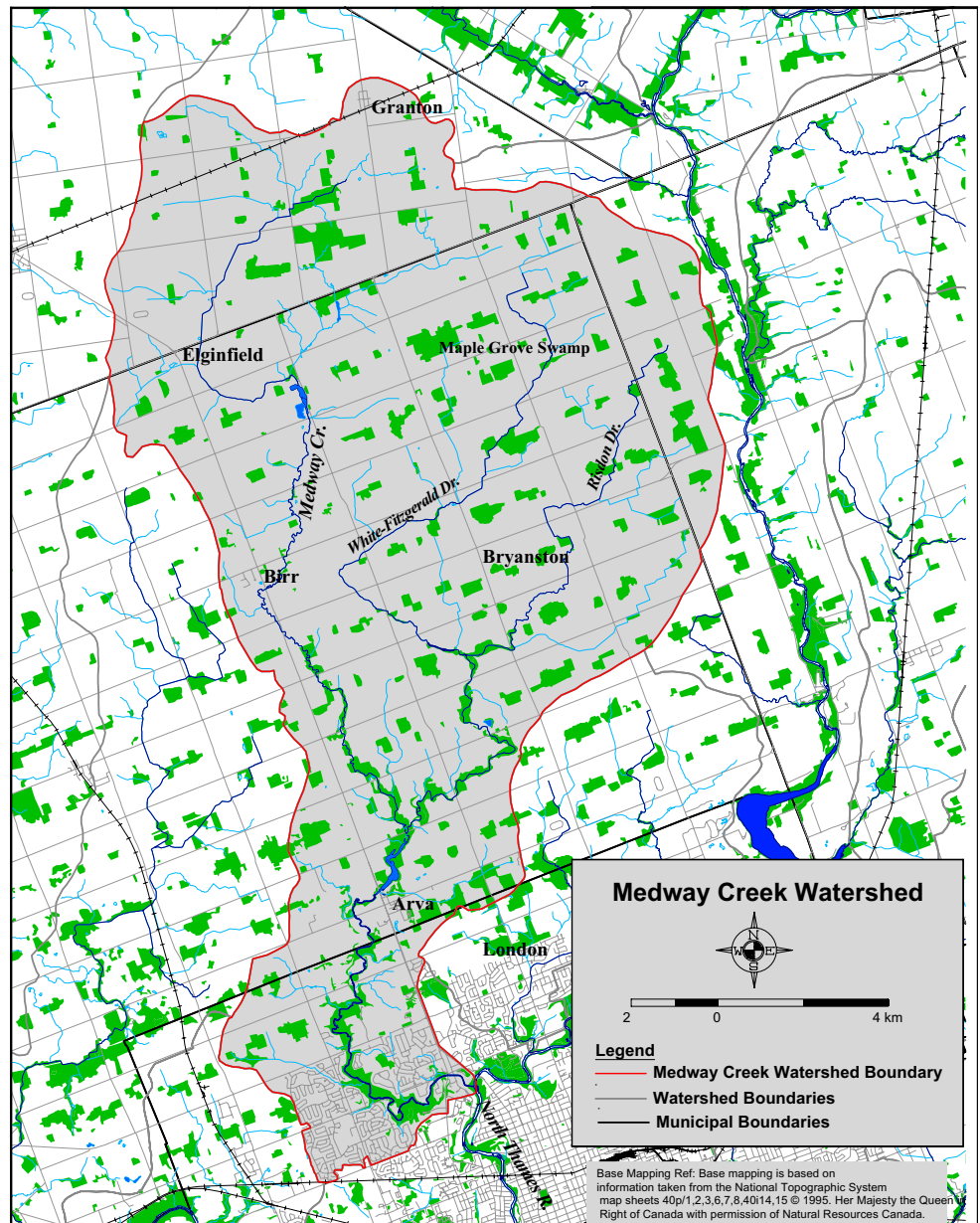


This report card outlines environmental information for the Medway Creek watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff,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

D Forest Conditions

C Surface Water Quality



Municipalities: Middlesex Centre (135 sq. km), Lucan-Biddulph (38 sq. km), City of London (20 sq. km), Thames Centre (13 sq. km)
Watercourses: Medway Creek, White-Fitzgerald Drain, Risdon Drain

Grade
D

Forest Conditions

Overall, forest conditions in the Medway Creek watershed score a D grade and the three indicators each score a D or D- (see table below). The amount of forest cover (11%) is close to the average for the Upper Thames watershed, but still considered too low for sustainability. The ideal amount of natural cover for southern Ontario is 25-30% (Carolinian Canada, 2000). Forest density is low, indicating most of the woodlots

are isolated and too far from other woodlots to allow seeds to be transported easily and animals to move between them. Forest interior is also very 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	Medway Creek Results		Upper Thames Watershed Average		Indicator Description
	Value	Grade	Value	Grade	
Forest Cover	11%	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	56%	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	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). Since forest interior is very low in this watershed, this action is very important.
- Woodlot size can be increased by reconnecting woodlots that have been fragmented but are still very close to each other. This action can be accomplished by planting the narrow gaps with native species or allowing the space to naturalize on its own.
- The Maple Grove Swamp in the upper part of the watershed is one of the largest wooded areas in the watershed, but it is still relatively small. To increase its habitat value, woodlot and wildlife enhancement projects should be targeted in and around the swamp, with landowner cooperation. Projects could include planting hedgerows or windbreaks to connect it to nearby habitats, retiring farmland around swamp to enlarge it, and examining drain management practices to protect the swamp's hydrology.
- The Arva Moraine Wetlands located east of Arva along Sunningdale Road have been designated by the City of London as a Candidate Environmentally Significant Area and Category 2 Corridor. This wetland is made up a many fragmented woodlots and has the potential to be joined, thus providing an excellent natural corridor between the Medway and Stoney Creek watersheds. Since urban development pressure is high in this area, establishing priority corridors for protection and rehabilitation is an excellent way to plan for both human growth and natural heritage.
- Forest cover along Medway Creek is very sparse in the upper reaches, but relatively good in the middle to lower stretch (e.g. below 10 Mile Road). Further tree planting to connect and widen the forest cover would protect the creek and create an excellent wildlife corridor.

Grade
C

Surface Water Quality

The Medway Creek watershed ranks a C with respect to overall water quality with the four indicators ranging from C to D (see table below). Fecal coliform bacteria levels in Medway Creek are about average for the Upper Thames watershed indicating on-going contamination from human/animal waste. Bacteria concentrations increase through the

downstream urban section of the watershed, while benthic conditions improve downstream. The urban areas of the watershed tend to have higher heavy metal concentrations which is indicative of urban runoff. Aluminum, iron, copper, manganese and sodium are all found in higher concentrations (*London Subwatershed Study, 1995*).

Indicators	Medway Creek Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
	Value	Grade	Value	Grade		
Benthic Score (FBI)	5.46	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)	0.09**	D	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)	303**	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)	486**	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)

** 10 year average concentration, 1990-2000 (City of London data)

Local Actions Needed for Improvement:

- Implement the recommendations of the *City of London Subwatershed Studies Implementation Plan* (1995) and the *City of London Subwatershed Studies Group 1: Subwatersheds Medway, Stanton, and Mud Creeks* (1994).
- Plant buffers (grassed or treed) along creeks, rivers and open drains to filter runoff and provide shade. Target the rehabilitation of the five coldwater streams.
- Encourage drain maintenance and design procedures that protect water quality (e.g. careful timing of work, use of silt traps, maintaining existing vegetation where possible, use of natural channel design principles).
- Identify groundwater recharge and discharge zones and develop protection strategies for these areas.
- Encourage the decommissioning of abandoned wells according to Ministry of the Environment standards.
- Assess the purpose of the 9 dams to determine if any should be removed or modified to improve river health. Target removal of the barrier preventing migration of fish.
- Encourage environmentally sustainable practices on golf courses (e.g. Audubon Cooperative Sanctuary Program).
- The following actions should be targeted in urban areas:
 - 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.



Medway Creek Watershed Features

Area	206 sq. km (6% of Upper Thames River watershed)
Land Use	83% agriculture, 11% wooded, 6% urban (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	33% clay loam, 32% silt loam, 20% silty clay loam, 6% bottomland, 6% not mapped (urban), 3% coarse sand (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	67% undruminized till plain, 16% till moraine (Arva moraine), 16% spillway (GIS derived using digitized physiographic maps, OMAFRA)
Stream Flow	2.6 cubic metres per second is the mean annual flow in the Medway near London. The Medway Creek contributes about 7% of the flow in the Thames downstream of London. (Environment Canada, 1998)
Groundwater	There is a large shallow overburden aquifer (<18m) and a larger intermediate system (18 - 45m) in the watershed. (MOE 1981)
Fishery Resources	38 species of fish have been recorded, including Northern Pike and Smallmouth Bass. There are five coldwater tributaries in this watershed. (UTRCA/ ROM, 1998; OMNR, 1981; City of London subwatershed studies, 1993)
Dams	9 privately owned dams have been documented in the watershed. There is also beaver activity. (UTRCA, 1991)
Sewage Treatment	The Granton Sewage Treatment Plant discharges treated effluent into Medway Creek. All rural properties are serviced by private septic systems. The portion of the watershed within London is serviced by the Adelaide Pollution Plant and Greenway PCP, both of which discharge treated effluent to the North Thames River.
Woodlot Size	45% of the woodlots are very small (<4 ha), 23% are small (4-10 ha), 22% are mid-sized (10-30 ha), 4% are large (30-40 ha) and 6% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	24% 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 – Greenside Darter, Silver Shiner, Black Redhorse Reptiles — Spotted Turtle, Eastern Hognose Snake, Queen Snake, Eastern Spiny Softshell Turtle Plants — Green Dragon, Handsome Sedge, False Rue-Anemone (ROM data, UTRCA data, and NHIC, 2000)
Significant Natural Sites	Provincially Significant Wetlands – Arva Moraine Wetlands Locally Significant Wetlands – Elginfield Swamp, Maple Grove Swamp, West Nissouri Wetland WN18D Significant Natural Areas – Arva ESA, DeVizes Woodlot, Medway Valley Heritage Forest Earth Science Areas of Natural and Scientific Interest – Elginfield Area Moraines (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).



Upper Thames River Conservation Authority
 1424 Clarke Road, London, Ontario N5V 5B9
 Phone: (519) 451-2800 Fax: (519) 451-1188
 Email: infoline@thamesriver.on.ca
 Web Site: www.thamesriver.on.ca

