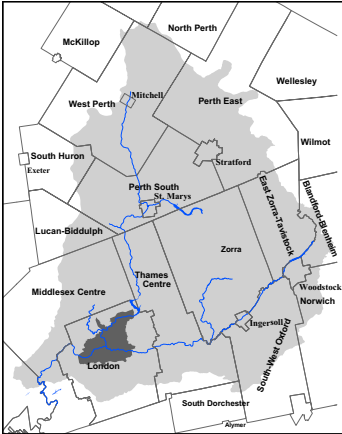


The Forks Watershed Report Card

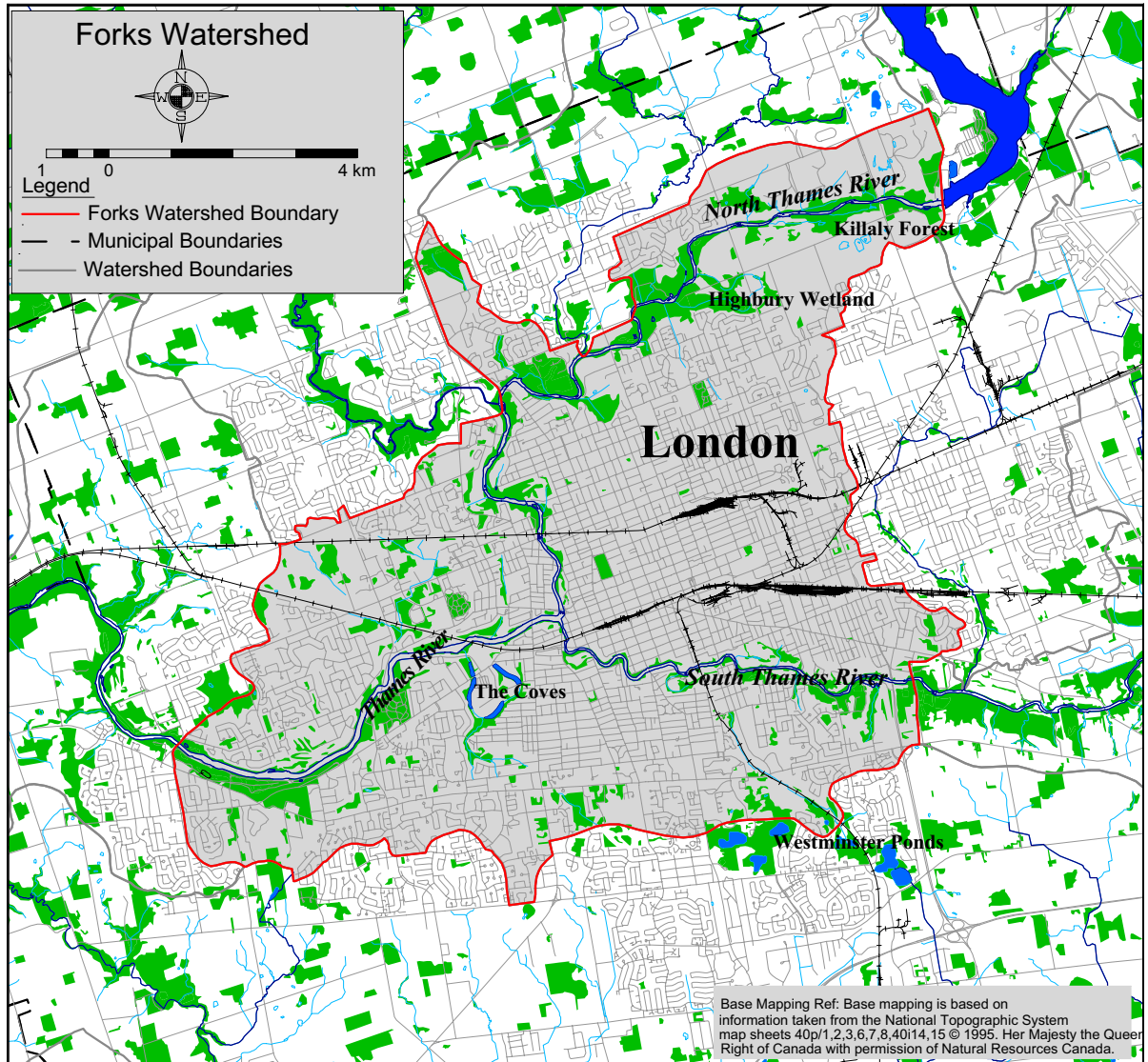


This report card outlines environmental information for the Forks watershed. This watershed is graded against 27 other subwatersheds within the Upper Thames River watershed. The information provides a description of forest and water parameters and ideas for local action to assist agency staff, municipalities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

D Surface Water Quality



Municipalities: City of London (87 sq. km)
Watercourses: North Thames River, South Thames River, Thames River, Mud Creek, Dayus Creek

Grade
D-

Forest Conditions

Overall, forest conditions in the Forks watershed score a D- grade and the three indicators have grades from D- to F (see table below). The amount of forest cover (13%) is about 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 poor indicating that most of the woodlots are isolated from each other, making it very difficult for seeds to be transported and

animals to move between them. Most of the woodlots in this watershed are found along the river and in scattered patches throughout the city, separated from each other by urban land uses. The amount of forest interior is also very low indicating that most woodlots are too small and narrow to support sensitive species that need to live in large protected habitats with a significant central area. In fact, 85% of the woodlots in this watershed are under 10 hectares in size.

Indicators	The Forks 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	61%	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	4%	F	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 woodlots 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.
- Natural vegetation cover can be increased in urban areas by targeting the naturalization of school yards, manicured public parks and open spaces, river valleys, residential properties and open areas within industrial/commercial properties.
- Restoration projects should be targeted to the significant natural areas including The Coves, Kilally Forest, and Highbury Wetland to ensure their natural values are maintained.
- Educate landowners living next to natural areas regarding ways to minimize their impacts on these sensitive lands (e.g. illegal cutting, dumping, encroachment).
- Develop a city-wide encroachment strategy to deal with woodlot encroachment issues.
- The *Thames Valley Areas Study* (Aquafor Beech Limited, 1995) provides additional recommendations for stretches of the Thames River through London. Some of these include: designating a system of natural areas of biological or physical importance as Constraint Areas to restrict or prohibit development; creating Development Criteria to impose controls on new development; incorporating bike/fitness trails and parks along the river; and specific projects such as reconstruction of a natural stable channel in areas experiencing erosion problems.



South Thames River east of Adelaide Street, London

Grade
D

Surface Water Quality

Water quality ranks D overall, with the four indicator scores ranging from D to C (see chart below). Water quality shows a significant decline as it passes through the Forks watershed. It is affected by both its immediate urban setting and the 3,000 sq. km of watershed upstream of the Forks. The Benthic score is poor indicating that many of the invertebrate species found here are tolerant of pollution. Phosphorus levels are also poor (well above the Ministry of Environment guideline)

which suggests there are inputs such as fertilizers, eroded soil, spills and other effluent polluting the water. Bacteria levels, which are low coming into this watershed (from the North and South branches of the Thames), significantly increase to six times higher than the safe swimming guidelines. There have been 113 spills reported in this watershed since 1988, the largest number of all the 28 subwatersheds.

Indicators	The Forks Results		Upper Thames Watershed Average		Provincial Guideline	Indicator Description
Benthic Score (FBI)	6.17	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)	0.18**	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)	690**	D	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)	585**	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:

- Mud Creek and the North Thames River were part of the *City of London Subwatershed Study*. Implement the recommendations of the *City of London Subwatershed Studies Implementation Plan* (1995).
- Apply recommendations for an improved City erosion control plan, as outlined in *The Coves Urban Hydrology Update Study* (March 1991) which documents erosion problems in the Coves area.
- Plant buffers (grassed or treed) along creeks, rivers and open drains in this area to filter runoff and provide shade. Target rehabilitation of the coldwater McNay Drain.
- 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 the potential impacts of aggregate extraction on surface and groundwater.
- Address the high number of spills through education, regulation and improved response.
- Assess the purpose of each dam to determine if any should be removed or modified to improve river health. Review operations of Fanshawe and Springbank dams to optimize water quality (e.g. aeration).
- Encourage environmentally sustainable practices on golf courses (e.g. Audubon Cooperative Sanctuary Program).
- Target the following actions 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;

(continued on back)

- 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 Forks Watershed Features

Area	87 sq. km (2.5% of Upper Thames River watershed) (3016 sq. km lies upstream)
Land Use	77% urban, 13% wooded, 4% agriculture, 3% quarry (GIS derived using OMAFRA Landuse Systems, 1983)
Soil Type	95% not mapped (urban), 3% coarse sand, 1% silt loam, 1% bottomland (GIS derived using county soil maps)
Soil Erosion/Delivery	Soil erosion and delivery are not calculated for urban areas as most of the land is paved or sodded and the soil is only exposed during construction activity.
Physiography	54% spillway, 19% sand plain, 18% till moraine, 7% undrumlinized till plain, 2% water (Chapman and Putnam, 1984.)
Stream Flow	39 cubic metres/second is the mean annual flow at the Byron Station in west London.
Groundwater	Shallow (<18m), intermediate (18 to 45m) and deep (>45m) overburden aquifers are found throughout this watershed.
Fishery Resources	30 species of fish have been recorded in this watershed including Rock and Smallmouth Bass. Only one watercourse, the McNay Drain, has been identified as coldwater. (DFO, ROM and UTRCA databases)
Dams	3 dams or weirs impact this watershed. The Fanshawe Dam marks the upstream boundary of this watershed on the North Thames while the Springbank Dam marks the downstream boundary on the Thames River. There is also the Hunt Dam on the South Thames near Labatts. (UTRCA 1991).
Sewage Treatment	The Adelaide Pollution Control Plant (PCP), Greenway PCP, and Vauxhall PCP discharge treated effluent within this watershed. There are also a significant number of urban and near-urban properties that are serviced by septic systems such as the Springbank Drive area and east Hamilton Rd.
Woodlot Size	66% of the woodlots are very small (<4 ha), 20% are small (4-10 ha), 8% are mid-sized (10-30 ha), 2% are large (30-40 ha) and 4% are very large (>40 ha). (GIS derived using 1997 NTS maps)
Riparian Forest	43% of the riparian zone (20 metres on either side of all watercourses) is forested, the highest percentage in the Upper Thames watershed. The average for the Upper Thames watershed is 24%. (GIS derived using 1997 NTS maps)
Rare Species	Reptiles – Eastern Spiny Softshell Turtle, Eastern Hognose Snake, Queen Snake Birds – Acadian Flycatcher, Peregrine Falcon Plants – American Chestnut, False Rue-Anemone Fish – Greeside Darter, Silver Shiner Mussels – Wavy-rayed Lampmussel, Rayed Bean (NHIC, 2000 and UTRCA staff)
Significant Natural Sites	Provincially Significant Wetlands – Westminster Ponds - Pond Mills ESA Locally Significant Wetlands – Highbury Wetland Environmentally Significant Areas – The Coves, Kilally Forest (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).



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