

Upper Sydenham River

SUBWATERSHED

Report Card 2018



The St. Clair Region Conservation Authority has prepared this series of 14 subwatershed report cards as a summary of the state of the forests, wetlands, and water resources in the St. Clair Region.





UPPER SYDENHAM RIVER SURFACE WATER QUALITY

D GRADE

Surface Water Quality

Using a provincial grading system, the three surface water quality indicators score one C grade and two D grades, producing an overall grade of D for the Upper Sydenham River subwatershed. Total phosphorus (TP) levels are below the average for the St. Clair Region but are still elevated at nearly four times the provincial guideline. Maintaining TP levels below the Interim Provincial Water Quality Objective is intended to control excessive plant growth in rivers and streams and to protect aquatic life. *Escherichia coli* (*E. coli*) levels are above average for the St. Clair Region and are three times the provincial guideline for safe recreational use of water, indicating ongoing fecal contamination. The stream health grade measured by sampling benthic invertebrate communities is better than the average for the St. Clair Region but still suggests that fairly substantial organic pollution is likely.

Local Actions to Improve Water Quality

- Develop an Environmental Farm Plan and implement agricultural Best Management Practices;
- Plant and maintain vegetated streamside buffers on one side of municipal drains and along both sides of other watercourses to stabilize the banks, shade the water, and capture nutrients;
- Fix faulty septic systems and establish a septic maintenance plan;
- Create or restore wetlands to trap nutrients, mitigate flooding, and improve habitat;
- Properly store chemicals and dispose of them through household hazardous waste days or drop-off locations.

INDICATOR	UPPER SYDENHAM RIVER			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Total Phosphorus (mg/L)	0.09 D	0.08 D	0.11 D	0.15 D	0.03 B	Phosphorus is found in products such as detergents, fertilizers, and pesticides. Phosphorus contributes to excess algae growth and low oxygen levels in streams and lakes.
Bacteria (CFU <i>E. coli</i> /100ml)	155 C	223 C	308 D	211 C	100 B (recreational use)	<i>Escherichia coli</i> (<i>E. coli</i>) bacteria is found in human and animal (e.g., livestock, wildlife) waste. Its presence in water indicates fecal contamination and is a strong indicator that other disease-causing pathogens are present in the watercourse.
Benthic Score (FBI)	5.90 D	6.01 D	5.31 C	5.73 C	<5.00 B (unofficial)	Benthic invertebrates are small animals without backbones that live in stream sediments. The pollution tolerances of taxa present in benthic samples are used to calculate the Family Biotic Index (FBI). The FBI ranges from 0 (excellent water quality) to 10 (very poor water quality).
Overall Grade	D	D	D	D		



UPPER SYDENHAM RIVER FOREST CONDITIONS

D GRADE

Forest Conditions

For the Upper Sydenham River subwatershed, the three forest conditions indicators score two C grades and an F grade, producing an overall grade of D. The percent forest cover (16.1%) is the second highest in the St. Clair Region but it is still only half the recommended cover needed to support natural species diversity and water quality. The percent forest interior (2.4%) is above the average for the St. Clair Region but still considered very poor as it is one-quarter of the recommended value. This indicates that most woodlots are too narrow to support area-sensitive species, such as Scarlet Tanager and Ovenbird. The Environment Canada guideline for southern Ontario is 10% forest interior. The percentage of the riparian zone that is forested (34.4%) is the second highest in the St. Clair Region, though lower than the target of 50%.

Any changes in forest cover, either from forest loss or reforestation efforts, is visible using aerial photography. Although there have been a significant number of recent tree planting projects in this subwatershed, forests grow slowly, and young trees are not considered to be forests until they are at least 3 m tall and are developing a canopy.

Local Actions to Improve Forest Conditions

- Establish and enlarge woodlots using a variety of native species to reduce the impact of aggressive insects and extreme weather events on tree health;
- Woodlot owners should prepare and follow Woodlot Management Plans;
- Connect woodlots by planting shelterbelts, windbreaks, and buffers along fields and watercourses to enhance wildlife habitat, protect against soil erosion, and improve water quality.

INDICATOR	UPPER SYDENHAM RIVER			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Percent Forest Cover (%)	15.5 C	16.0 C	16.1 C	12.0 D	30.0 B	Percent forest cover is the percentage of the watershed that is forested. Forests are necessary to produce oxygen, store carbon, and offer many ecological services that are essential to the well-being of both humans and wildlife.
Percent Forest Interior (%)	1.5 F	2.4 F	2.4 F	2.1 F	10.0 B	Percentage of the watershed that is forest interior. Forest interior is the core area inside a woodlot that is more than 100 m from the edge. The outer 100 m is 'edge' habitat and is prone to high predation, sun/wind damage, and alien species invasion.
Percent Forested Riparian Buffer (%)	No data	30.9 C	34.4 C	23.1 D	50.0 B	Percent forested riparian buffer is the percentage of forest cover within a 30 m zone along both sides of all open watercourses. Natural cover in this zone prevents sediment and nutrients from entering the water.
Overall Grade	D	D	D	D		



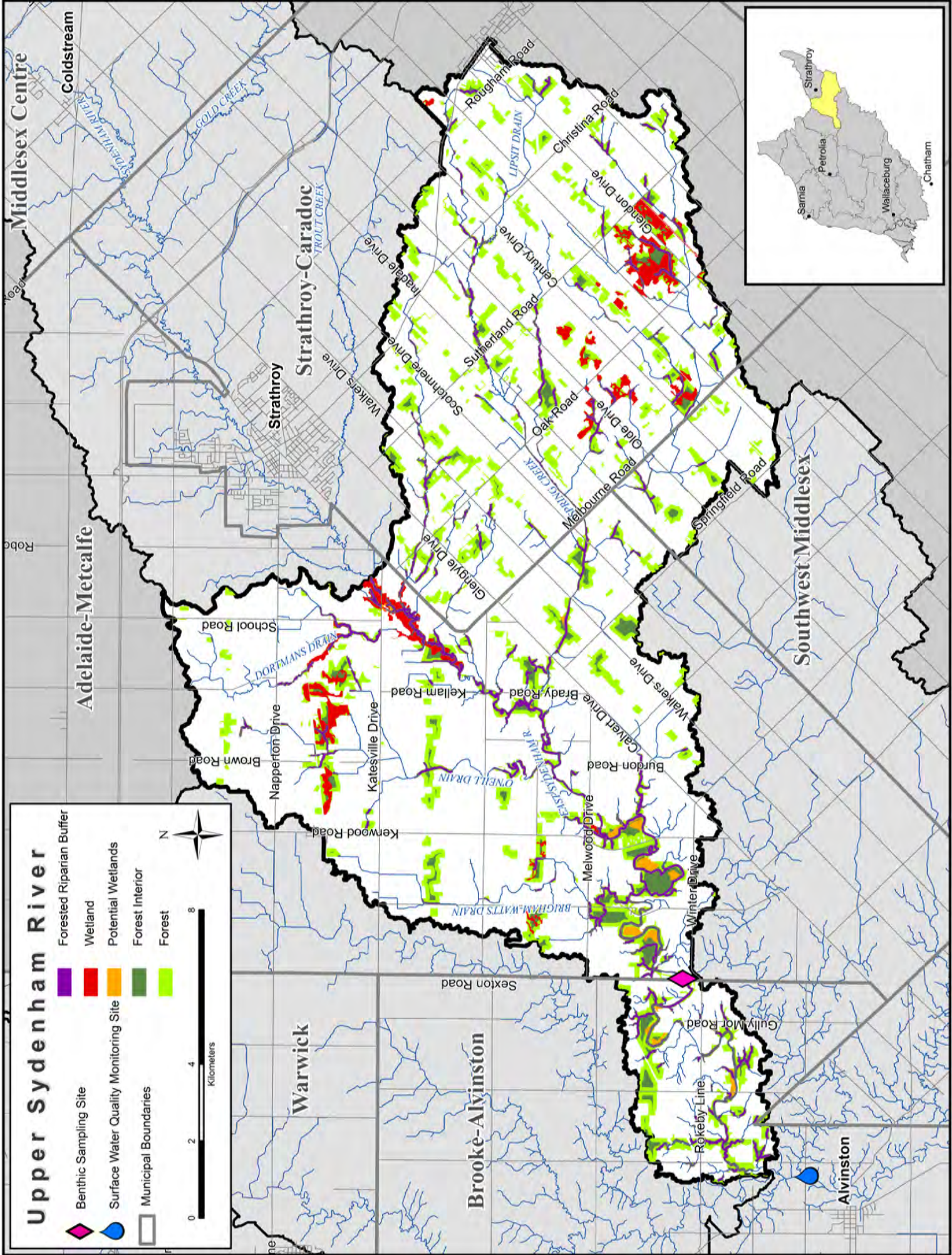
UPPER SYDENHAM RIVER WATERSHED FEATURES

Area	229 km ² , 5.5% of the St. Clair Region watershed
Municipalities	Adelaide Metcalfe (111 km ² or 48%), Strathroy-Caradoc (92 km ² or 40%), Brooke-Alvinston (17 km ² or 7%), Southwest Middlesex (10 km ² or 4%)
Physiography	56% clay plains; 43% sand plains; 1% till moraines
Soil Type	42% sand loams; 37% silt and clay; 10% loam; 8% bottom land and beach; 2% fine sand; <1% organic; <1% not mapped
Streamflow	The mean annual streamflow measured in the Sydenham at Strathroy from 2003 to 2015 was 2.08 m ³ /s. From 2011 to 2015, mean annual flows remained close to but slightly below this mean, ranging from 1.92 to 2.09 m ³ /s. During the previous period from 2006 to 2010, flows varied more widely around the mean ranging from 1.54 to 3.13 m ³ /s.
Precipitation	The average annual precipitation at Strathroy from 2002 to 2015 was 912 mm. From 2011 to 2015, the annual precipitation varied widely around this value ranging from 663 to 1,165 mm. The previous period, 2006 to 2010, was wetter ranging from 804 to 1,241 mm.
Air Temperature	The average annual temperature at Strathroy from 2002 to 2015 was 8.5°C. From 2011 to 2015, average annual temperatures ranged more widely from 6.6 to 10.0°C than during the previous period, 2006 to 2010, which experienced more stable temperatures ranging of 8.1 to 9.4°C.
Tile Drainage	61% not tiled; 15% randomly tiled; 24% systematically tiled
Watercourse Length & Type	Total length: 352 km Watercourse type: 21% natural, 43% municipal drain, 35% unclassified
Dams and Barriers	Six dams, including one public dam at Clark Wright CA
Sewage Treatment	Rural residences are serviced by private septic systems.



UPPER SYDENHAM RIVER WATERSHED FEATURES

Fisheries Resources	Fifty-two fish species and 19 freshwater mussel species recorded. Game fish include Northern Pike, Largemouth and Smallmouth Bass, and Rainbow Trout.					
Species at Risk	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, King Rail, Least Bittern, Prothonotary Warbler</p> <p>Fishes: Northern Madtom</p> <p>Mammals: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Mulloscs: Eastern Pondmussel, Kidneyshell, Northern Riffleshell, Rayed Bean, Round Hickorynut, Round Pigtoe, Salamander Mussel, Snuffbox, Wavy-rayed Lampmussel</p> <p>Plants: American Chestnut, American Ginseng, Butternut, Eastern Flowering Dogwood, False Hop Sedge, Green Dragon, Kentucky Coffee-tree, Large Whorled Pogonia, Riddell's Goldenrod, Willow-leaved Aster</p> <p>Reptiles: Snapping Turtle, Spiny Softshell</p>					
Groundwater	The Caradoc Sand Plain Aquifer is extensive in the overburden layers of this area, and is generally of good quality and quantity. It is an unconfined aquifer, vulnerable to surface land uses and Mount Brydges has experienced elevated nitrates from agricultural land uses. The groundwater which occurs at the base of the overburden layer tends to have elevated sodium and chloride levels and high iron concentrations and low yield. Most residents rely on groundwater wells.					
Wetland Cover	504 ha or 2.2% of the subwatershed is identified as wetlands by the Ministry of Natural Resources and Forestry. An additional 95 ha (0.4% of the subwatershed) are identified by the St. Clair Region Conservation Authority (SCRCA) as potential wetlands. Wetlands are vital to the landscape as they reduce flooding and filter water. Environment Canada recommends a minimum of 6% wetland cover at a subwatershed scale.					
Woodlot Size	Size Category	Number of Woodlots	% of Woodlots	Total Woodland Area (ha)	% of Total Woodland Area	Largest Woodlot (ha)
	<5 ha	210	60	392	11	143
	5-10 ha	57	16	389	11	
	10-30 ha	51	14	904	24	
	>30 ha	31	8	2,007	54	
Total	349		3,692			



UPPER SYDENHAM RIVER HIGHLIGHTS

Highlights and Progress Since 2011

- There were 30 landowner stewardship projects completed in the Upper Sydenham River subwatershed from 2011 to 2018. These projects included upgrades to septic systems, the restoration of wetlands, stabilization of streambanks, creation of tall grass prairie habitat, and the planting of trees, windbreaks, and riparian buffers. More than 31,100 trees were planted and the total value of all the projects was \$304,900 (58% grants).
- Since 2015, volunteers have planted 600 native trees in Strathroy and Mount Brydges through the TD Tree Days event held each fall (left photo).



- The Salthaven Wildlife Rehabilitation and Education Centre, located in Mount Brydges, rehabilitates injured native wildlife including Species at Risk (SAR).
- Seven of the eight turtles native to Ontario are considered SAR. In an effort to support SAR turtle populations, the SCRCA enhances nesting habitat, performs turtle surveys, and has established a headstarting program where turtle nests that are under imminent threat are collected, incubated, and released. The SCRCA works with Salthaven as well as the Upper Thames River Conservation Authority throughout each nesting season to incubate the recovered eggs. In 2017, staff released 416 Spiny Softshell Turtle (right photo) and Northern Map Turtle hatchlings.
- Thames-Sydenham and Region Source Protection Plan was developed and implemented by the end of 2015. The Plan identifies potential threats to municipal drinking water sources, determines vulnerable areas, and requires the development of Risk Management Plans to address these threats.