

# Lambton Shores Tributaries

## **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.





# LAMBTON SHORES TRIBUTARIES SURFACE WATER QUALITY

# C GRADE

## Surface Water Quality

Using a provincial grading system, the three surface water quality indicators score two C grades and one D grade, producing an overall grade of C for the Lambton Shores Tributaries subwatershed. Total phosphorus (TP) levels are average for the St. Clair Region but still elevated at five 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 slightly below average for the St. Clair Region and are 1.5 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

- Fix faulty septic systems and establish a septic maintenance plan;
- 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;
- Limit use of equipment on sensitive areas like shorelines and stream banks;
- Properly store chemicals and dispose of them through household hazardous waste days or drop-off locations;
- Organize and participate in beach cleanups.

INDICATOR	LAMBTON SHORES TRIBUTARIES			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Total Phosphorus (mg/L)	No data	0.10 D	0.15 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)	No data	No data	148 C	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)	5.78 D	5.63 C	5.28 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).
<b>Overall Grade</b>	<b>D</b>	<b>C</b>	<b>C</b>	<b>D</b>		



# LAMBTON SHORES TRIBUTARIES FOREST CONDITIONS



## Forest Conditions

For the Lambton Shores Tributaries subwatershed, the three forest conditions indicators scored two C grades and a D producing an overall grade of C. The woodlands in the Lambton Shores Tributaries are concentrated near the shoreline, forming a significant natural area from the lakeshore marshes south of Kettle Point through the First Nation lands and Ipperwash area. The majority of the woodlands, including the largest woodlots in the St. Clair Region, are concentrated on First Nation lands. The percent forest cover (17.4%) is the highest in the St. Clair Region but it is just over half the recommended cover needed to support natural species diversity and water quality. The percent forest interior (3.8%) is the highest in the St. Clair Region but still considered poor as it is less than half 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 (32.8%) is above the average for 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 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;
- Plant native species such as dune grass, dogwood, and wild rose for landscaping along the shoreline to help prevent shoreline erosion without introducing exotic species.

INDICATOR	LAMBTON SHORES TRIBUTARIES			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Percent Forest Cover (%)	17.8 C	17.3 C	17.4 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 (%)	4.3 D	4.1 D	3.8 D	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	32.4 C	32.8 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.
<b>Overall Grade</b>	<b>C</b>	<b>C</b>	<b>C</b>	<b>D</b>		



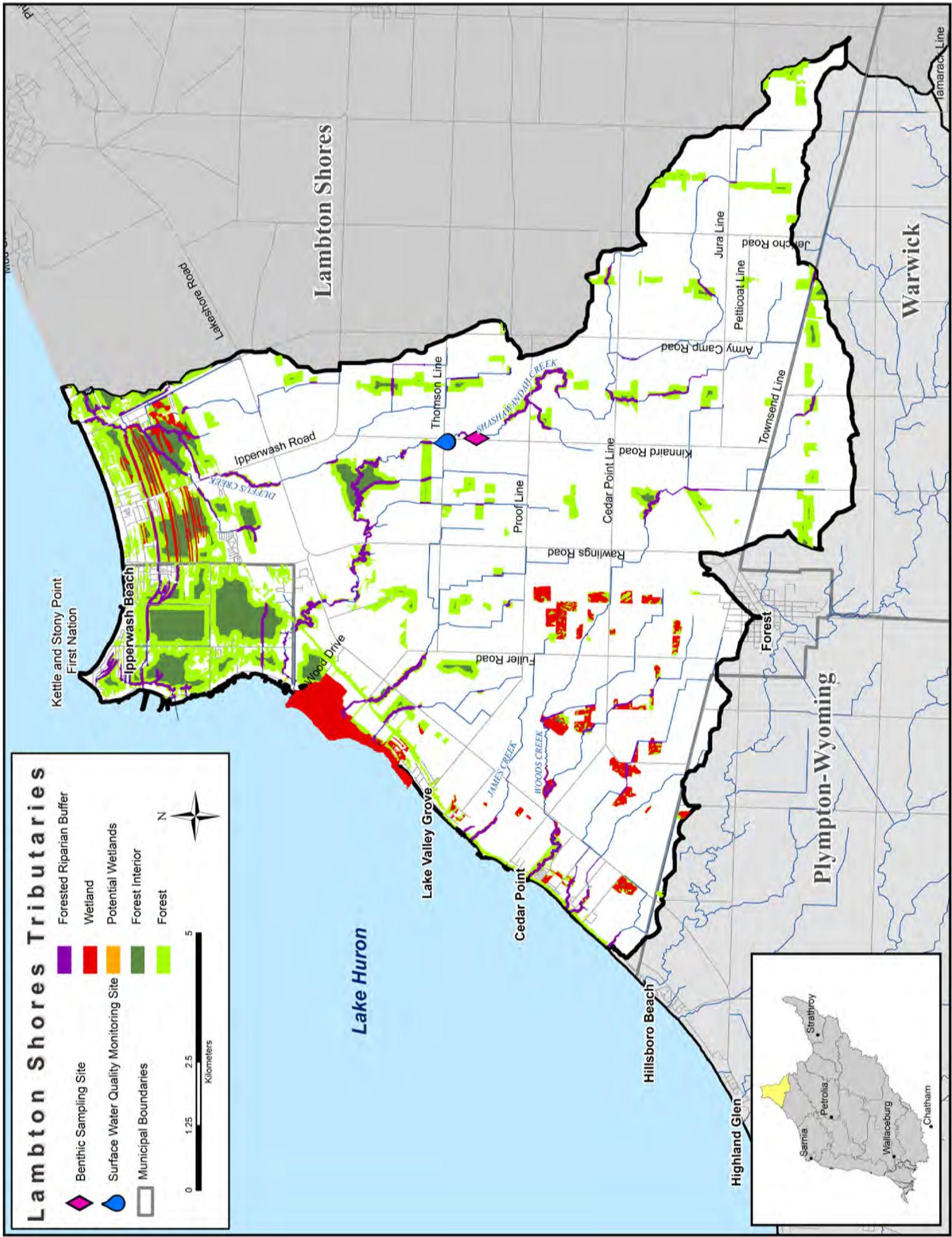
# LAMBTON SHORES TRIBUTARIES WATERSHED FEATURES

Area	127 km <sup>2</sup> , 3.1% of the St. Clair Region watershed
Municipalities	Lambton Shores (110 km <sup>2</sup> , 87%), Warwick (6 km <sup>2</sup> , 5%), Plympton-Wyoming (2 km <sup>2</sup> , 1%)
First Nations	Kettle and Stony Point First Nation (9 km <sup>2</sup> , 7%)
Physiography	54% bevelled till plains; 26% till moraines; 20% sand plains
Soil Type	80% silt and clay; 10% silt and clay loams; 6% loam; 3% bottom land and beach; 2% sand loams
Streamflow	There is no flow monitoring in this subwatershed
Precipitation	The average annual precipitation at Sarnia from 2002 to 2015 was 812 mm. From 2011 to 2015, the annual precipitation varied around this value ranging from 614 to 986 mm. The previous period, 2006 to 2010, was slightly wetter with the values ranging from 640 to 1,080 mm.
Air Temperature	The average annual temperature at Sarnia from 2002 to 2015 was 8.7°C. From 2011 to 2015, average annual temperatures ranged more widely from 7.1 to 10.4°C than during the previous period, 2006 to 2010, which experienced more stable temperatures ranging of 8.0 to 9.8°C.
Tile Drainage	43% not tiled; 11% randomly tiled; 47% systematically tiled
Watercourse Length and Type	Total length: 153 km Watercourse type: 20% natural, 80% municipal drain
Dams and Barriers	Two private dams
Sewage Treatment	Rural residents are serviced by private septic systems.
Fisheries Resources	Thirty-six fish species recorded; game fish include Northern Pike, Largemouth and Smallmouth Bass, and Rainbow Trout. Three freshwater mussel species have been documented including Giant Floater, Cylindrical Papershell, and Creeper.



# LAMBTON SHORES TRIBUTARIES WATERSHED FEATURES

<p>Species at Risk</p>	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, Eastern Whip-poor-will, Forster's Tern, Hooded Warbler, Least Bittern, Yellow-breasted Chat</p> <p>Fishes: Lake Chubsucker, Lake Sturgeon, Pugnose Shiner</p> <p>Insects: Mottled Duskywing, Northern Barrens Tiger Beetle, Rusty-patched Bumble Bee</p> <p>Mammals: American Badger, Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Mulloscs: Mapleleaf Mussel, Round Pigtoe, Salamander Mussel, Snuffbox</p> <p>Plants: American Bluehearts, American Chestnut, American Ginseng, Broad Beech Fern, Butternut, Dense Blazing-star, Dwarf Hackberry, Eastern False Rue-anemone, Eastern Flowering Dogwood, Green Dragon, Heart-leaved Plantain, Pitcher's Thistle, Shumard Oak</p> <p>Reptiles: Common Five-lined Skink, Eastern Milksnake, Eastern Ribbonsnake, Queensnake, Snapping Turtle, Spiny Softshell</p>					
<p>Groundwater</p>	<p>There is a shallow sand aquifer from Kettle Point to Ipperwash that has high levels of iron and manganese and is vulnerable to surface land use influences. The deep aquifer at the interface between the overburden and the bedrock, known as the Fresh Water Aquifer, has high sodium and chloride and is of limited quantity. The residents along the lake and in Forest are supplied by municipally-piped water from Lake Huron. The First Nation is supplied by their own Lake Huron intake.</p>					
<p>Wetland Cover</p>	<p>362 ha or 2.9% of the subwatershed is identified as wetlands by the Ministry of Natural Resources and Forestry. Screening by the St. Clair Region Conservation Authority (SCRCA) did not identify any other 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.</p>					
<p>Woodlot Size</p>	<p>Size Category</p>	<p>Number of Woodlots</p>	<p>% of Woodlots</p>	<p>Total Woodland Area (ha)</p>	<p>% of Total Woodland Area</p>	<p>Largest Woodlot (ha)</p>
	<p>&lt;5 ha</p>	<p>89</p>	<p>55</p>	<p>171</p>	<p>8</p>	
	<p>5-10 ha</p>	<p>22</p>	<p>13</p>	<p>164</p>	<p>7</p>	
	<p>10-30 ha</p>	<p>37</p>	<p>23</p>	<p>597</p>	<p>27</p>	<p>244</p>
	<p>&gt;30 ha</p>	<p>11</p>	<p>6</p>	<p>1,276</p>	<p>58</p>	
	<p>Total</p>	<p>159</p>		<p>2,208</p>		



# LAMBTON SHORES TRIBUTARIES HIGHLIGHTS

## Highlights and Progress Since 2011

- There were 25 landowner stewardship projects completed in the Lambton Shores Tributaries subwatershed from 2011 to 2018. These projects included upgrades to septic systems, the installation of a stream crossing, modification of farm equipment, and the planting of trees, windbreaks, and cover crops. More than 7,200 trees were planted and the total value of all the projects was \$131,800 (74% grants).
- The SCRCA has been organizing the Annual Great Canadian Shoreline Cleanup at Centre Ipperwash Beach since 2012 (left photo).
- Kettle and Stony Point First Nation, the Lambton Shores Phragmites Community Group, Ipperwash Phrag Phighters, and the SCRCA have all worked to control the invasive species, *Phragmites australis*, along the Lake Huron shoreline.



- Each year, the SCRCA organizes a two-day hands-on outdoor education event with Hillside Public School to introduce students to water quality indicators and Ontario's reptile Species at Risk (right photo).
- For over 20 years, Doug Rogers has used grassed waterways, strip tillage, and cover crops to reduce erosion and maintain soil health on his farm. Mr. Rogers has also been working with SCRCA staff to promote soil conservation by hosting tours of his property for other local farmers.
- An automatic water sampler was installed on Shashawandah Creek in 2012 to gather data on nutrient runoff monthly and during storm events.
- In 2017, the SCRCA identified areas of high erosion potential in the Shashawandah Headwaters using GIS modelling. This will aid staff when working with landowners to reduce erosion and improve water quality.