

St. Clair River 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.





ST. CLAIR RIVER TRIBUTARIES SURFACE WATER QUALITY

D GRADE

Surface Water Quality

Using a provincial grading system, the three surface water quality indicators score two C grades and one F grade, producing an overall grade of D for the St. Clair River Tributaries subwatershed. Total phosphorus (TP) levels are the highest in the St. Clair Region at nearly nine 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 1.3 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 close to the average for the St. Clair Region but still suggests that fairly substantial organic pollution is likely.

Local Actions to Improve Water Quality;

- Support ongoing improvements to municipal infrastructure (e.g., sewers, wastewater treatment plants);
- 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;
- Develop an Environmental Farm Plan and implement agricultural Best Management Practices;
- Properly store chemicals and dispose of them through household hazardous waste days or drop-off locations;
- Organize and participate in shoreline cleanups.

INDICATOR	ST. CLAIR RIVER TRIBUTARIES			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Total Phosphorus (mg/L)	0.18 D	0.15 D	0.26 F	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	129 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)	6.92 F	5.68 C	5.74 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	C	D	D		



ST. CLAIR RIVER TRIBUTARIES FOREST CONDITIONS

D GRADE

Forest Conditions

For the St. Clair River Tributaries subwatershed, the three forest conditions indicators all score a D, producing an overall grade of D. This subwatershed has the second largest woodlot in the St. Clair Region at 261 ha. The majority of the woodlands, including the largest woodlots in the St. Clair Region, are concentrated on First Nation lands. The percent forest cover (14.1%) is above the average for the St. Clair Region but is still only half of the recommended cover needed to support natural species diversity and water quality. The percent forest interior (3.7%) is the second 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 (18.4%) is below the average for the St. Clair Region and is less than half of the 50% target.

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;
- 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	ST. CLAIR RIVER TRIBUTARIES			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001-2005	2006-2010	2011-2015	2011-2015		
Percent Forest Cover (%)	14.9 D	14.3 D	14.1 D	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 (%)	3.7 D	3.9 D	3.7 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	18.8 D	18.4 D	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		



ST. CLAIR RIVER TRIBUTARIES WATERSHED FEATURES

Area	262 km ² , 6.4% of the St. Clair Region watershed
Municipalities	St. Clair (216 km ² , 82%), Sarnia (27 km ² , 10%), Chatham-Kent (5 km ² , 2%), Point Edward (3 km ² , 1%)
First Nations	Aamjiwnaang First Nation (12 km ² , 4%)
Physiography	66% bevelled till plains; 28% clay plains; 6% sand plains; 1% beaches and shorecliffs
Soil Type	80% silt and clay; 7% loam; 5% silt and clay loams; 4% not mapped; 3% sand loams; 1% bottom land and beach
Streamflow	There are no flow monitoring stations in the St. Clair River tributaries.
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	50% not tiled; 17% randomly tiled; 33% systematically tiled
Watercourse Length and Type	Total length: 277 km Watercourse type: 13% natural, 55% municipal drain, 32% unclassified
Dams and Barriers	One public dam, the McKeough Drop structure located on the McKeough Channel
Sewage Treatment	The Point Edward, Sarnia, and Courtright Wastewater Treatment Plants (WWTPs) release treated effluent directly to the St. Clair River. In 2009, the Corunna WWTP was replaced with a sanitary pumping station to convey sewage from the community of Corunna to the Courtright Sewage Treatment Plant. The Sombra Sewage Lagoons release treated effluent seasonally to Meyers Drain, a tributary of the St. Clair River. The Port Lambton Lagoons release treated effluent seasonally to Marshy Creek, a tributary of the St. Clair River.

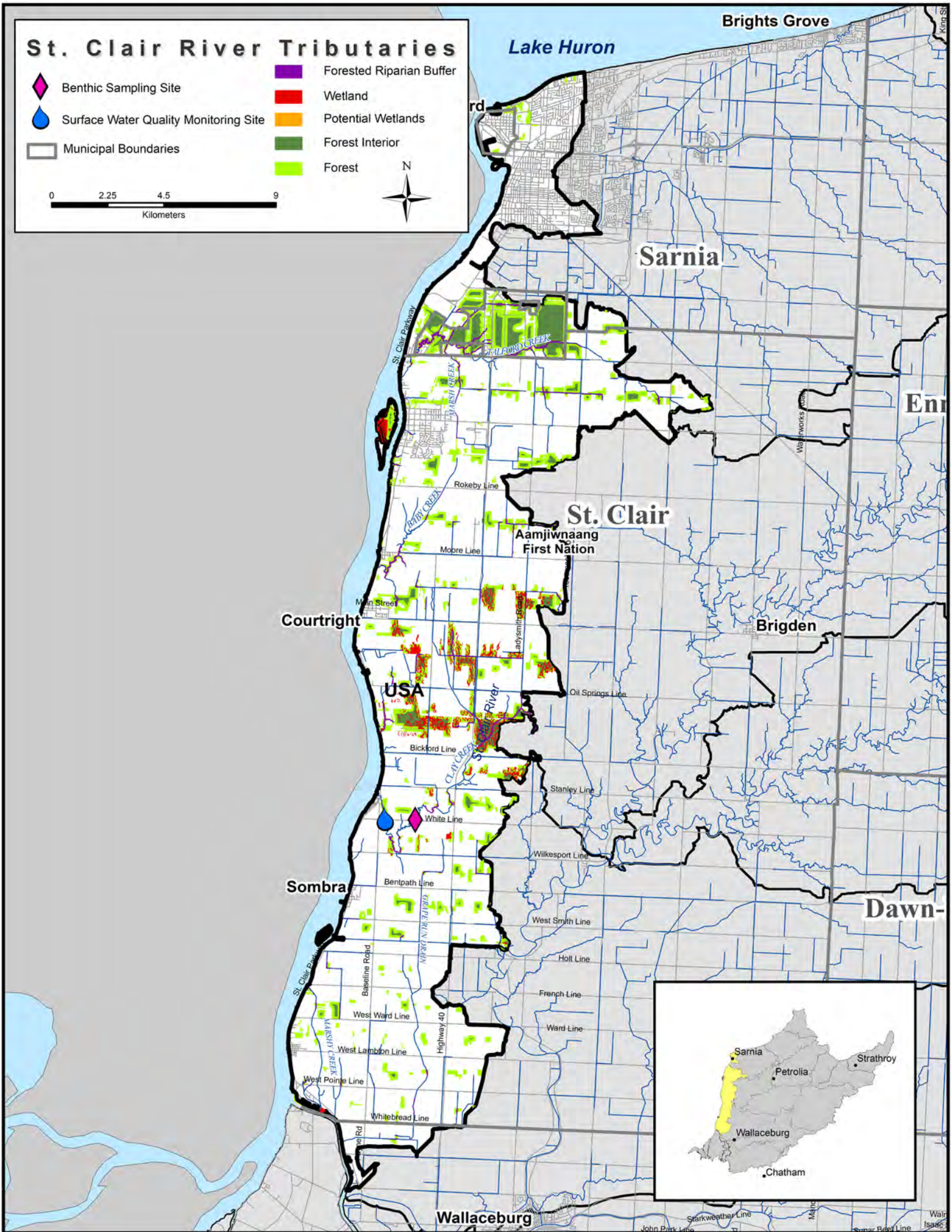
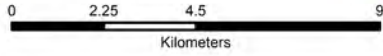


ST. CLAIR RIVER TRIBUTARIES WATERSHED FEATURES

<p>Fisheries Resources</p>	<p>Seventy-four fish species recorded; game fish include Northern Pike, Walleye, Smallmouth and Largemouth Bass, and Yellow Perch.</p> <p>Six freshwater mussel species have been documented including Pink Heelsplitter, Paper Pondshell, Mapleleaf, Giant Floater and Fragile Papershell.</p>					
<p>Species at Risk</p>	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Cerulean Warbler, Chimney Swift, Eastern Meadowlark, Peregrine Falcon, Prothonotary Warbler, Yellow-breasted Chat</p> <p>Fishes: Channel Darter, Grass Pickerel, Lake Sturgeon, Northern Brook Lamprey, Pugnose Minnow, Spotted Sucker</p> <p>Mammals: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis</p> <p>Plants: American Chestnut, American Ginseng, Blue Ash, Butternut, Climbing Prairie Rose, Common Hop-tree, Dense Blazing-star, False Hop Sedge, Goldenseal, Kentucky Coffee-tree, Spoon-leaved Moss, Stiff-leaved Showy Goldenrod, Swamp Rose-mallow, White Prairie Gentian</p> <p>Reptiles: Blanding's Turtle, Butler's Gartersnake, Common Five-lined Skink, Eastern Foxsnake, Snapping Turtle</p>					
<p>Groundwater</p>	<p>There is a deep bedrock aquifer between Sombra and Port Lambton, created from rainfall that occurred thousands of years ago. The groundwater has methane and hydrogen sulfide and is brackish with a high sodium and chloride content. Aamjiwnaang and most municipal residents received their water from the Lambton Area Water Supply System on Lake Huron.</p>					
<p>Wetland Cover</p>	<p>382 ha or 1.5% 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><5 ha</p>	<p>167</p>	<p>56</p>	<p>346</p>	<p>9</p>	<p>261</p>
	<p>5-10 ha</p>	<p>46</p>	<p>15</p>	<p>319</p>	<p>9</p>	
	<p>10-30 ha</p>	<p>49</p>	<p>16</p>	<p>848</p>	<p>23</p>	
	<p>>30 ha</p>	<p>33</p>	<p>11</p>	<p>2,183</p>	<p>59</p>	
	<p>Total</p>	<p>295</p>		<p>3,696</p>		

St. Clair River Tributaries

-  Benthic Sampling Site
-  Surface Water Quality Monitoring Site
-  Municipal Boundaries
-  Forested Riparian Buffer
-  Wetland
-  Potential Wetlands
-  Forest Interior
-  Forest



ST. CLAIR RIVER TRIBUTARIES HIGHLIGHTS

Highlights and Progress Since 2011

- There were 12 landowner stewardship projects completed in the St. Clair River Tributaries subwatershed from 2011 to 2018. These projects included tree and windbreak plantings. More than 67,600 trees were planted and the total value of all the projects was \$205,800 (65% grants).
- In 2013-2014, the Aamjiwnaang First Nation Environment Committee coordinated efforts to restore a stretch of Talfourd Creek adjacent to the Community Centre in Bear Park.



- Since 2016, the SCRCA has held an annual educational St. Clair River Day with a local elementary school where students learn about various topics relating to water quality, wetlands, and the Great Lakes.
- In an effort to increase Great Lakes literacy, the SCRCA organized a Great Lakes Student Conference in 2017 with the Lambton Kent District School Board and the Ministry of the Environment and Climate Change (left photo).
- For the 2010-2012 Lambton Natural Heritage Study, regionally rare birds or plants were noted at every survey site, stressing the importance of maintaining and enhancing even small natural areas.
- The SCRCA worked with various groups to complete shoreline erosion control and restoration projects at Guthrie Park (2011; right photo), Lambton Area Water Supply System (2015), Cathcart Park (2015), Aamjiwnaang First Nation Shoreline (2017), Courtright Waterfront Park (2018-present).
- Friends of the St. Clair River is a local volunteer and charitable organization that works to promote conservation, beautification, and restoration efforts along the St. Clair River.
- Ontario NativeScape has been fundraising and supporting landowners undertaking stewardship projects across Lambton County since 1994.



St. Clair Region Conservation Authority
205 Mill Pond Crescent Strathroy, ON N7G 3P9
stclair@scrca.on.ca
519-245-3710
scrca.on.ca