

Black Creek

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.





BLACK CREEK SURFACE WATER QUALITY

D GRADE

Surface Water Quality

Using a provincial grading system, the three surface water quality indicators all score a D grade, producing an overall grade of D for the Black Creek subwatershed. Total phosphorus (TP) levels are slightly above the average for the St. Clair Region at over 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 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 worse than the average for the St. Clair Region and suggests that substantial organic pollution is likely and water quality is fairly poor.

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 (never dump down household or storm drains).

INDICATOR	BLACK CREEK			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001- 2005	2006- 2010	2011- 2015	2011- 2015		
Total Phosphorus (mg/L)	0.21 F	0.14 D	0.16 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)	219 C	146 C	304 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)	6.23 D	5.83 D	6.19 D	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		



BLACK CREEK FOREST CONDITIONS

D GRADE

Forest Conditions

For the Black Creek subwatershed, the three forest conditions indicators score two D grades and an F grade, producing an overall grade of D. The percent forest cover (13.4%) is above the average for the St. Clair Region but is still less than half the recommended cover needed to support natural species diversity and water quality. The percent forest interior (2.3%) is slightly above the average for the St. Clair Region but still considered very poor as it is less than 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 (22.9%) is close to the average for the St. Clair Region, though only 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 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	BLACK CREEK			ST. CLAIR REGION AVERAGE	PROVINCIAL GUIDELINE	INDICATOR DESCRIPTION
	2001- 2005	2006- 2010	2011- 2015	2011- 2015		
Percent Forest Cover (%)	13.0 D	13.5 D	13.4 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 (%)	2.1 F	2.3 F	2.3 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	22.4 D	22.9 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		



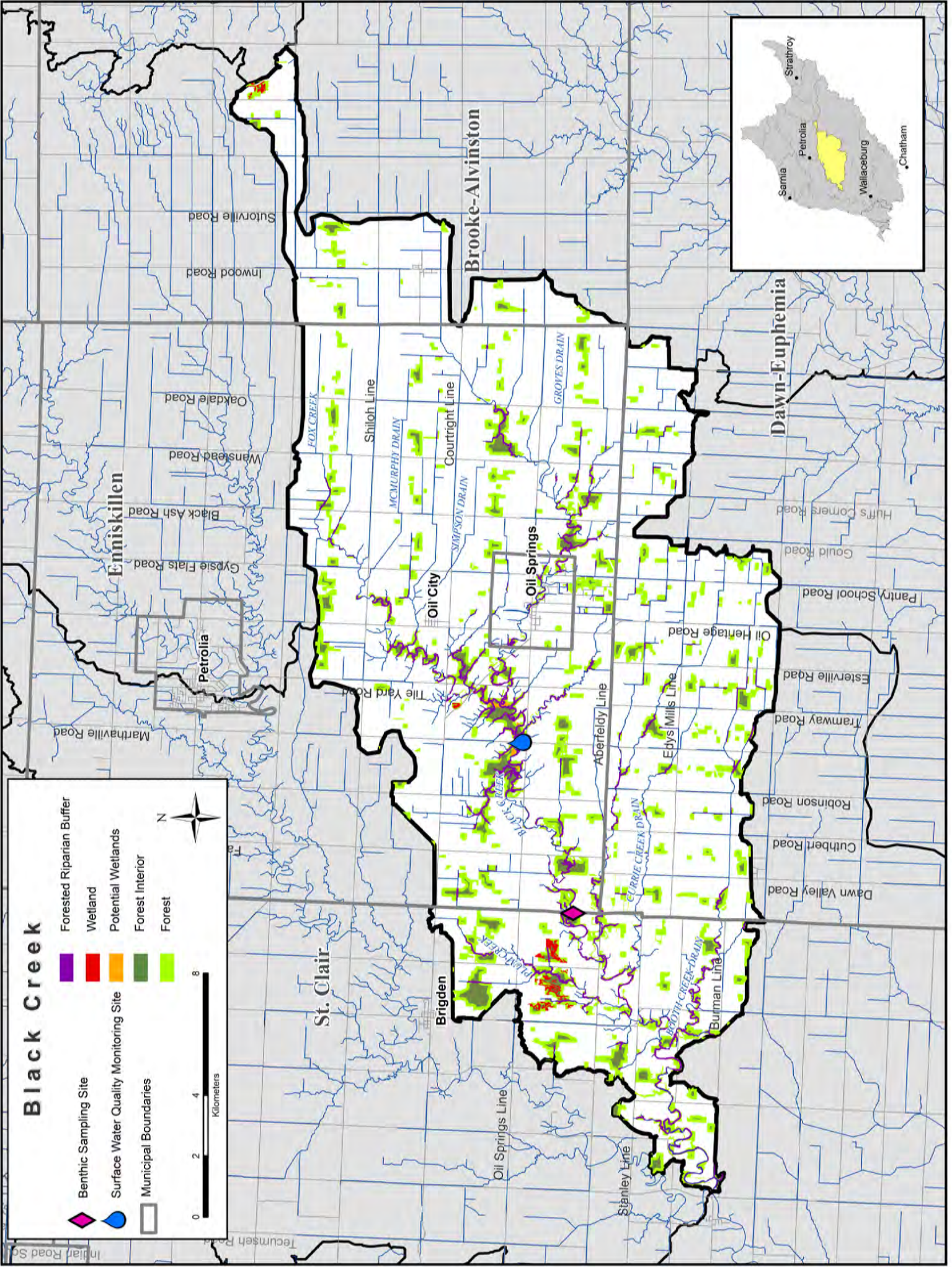
BLACK CREEK WATERSHED FEATURES

Area	324 km ² , 7.9% of the St. Clair Region watershed
Municipalities	Enniskillen (162 km ² , 50%), Dawn-Euphemia (73 km ² , 22%), St. Clair (51 km ² , 16%), Brooke-Alvinston (30 km ² , 9%), Oil Springs (8 km ² , 3%)
Physiography	100% bevelled till plains
Soil Type	96% silt and clay; 3% bottom land and beach; 1% silt and clay loams; <1% loam
Streamflow	The flow station was established on Black Creek at Bickford Line in 2006. The mean annual streamflow from 2006 to 2015 was 4.67 m ³ /s. From 2011 to 2015, mean annual flows remained slightly above this mean, ranging from 6.31 to 6.79 m ³ /s. During the previous period, from 2006 to 2010, flows were below the mean, ranging from 1.58 to 4.57 m ³ /s.
Precipitation	The average annual precipitation at Petrolia from 2002 to 2015 was 897 mm. From 2011 to 2015, the annual precipitation varied widely around this value ranging from 625 to 1,118 mm. The previous period, 2006 to 2010, was wetter with levels close to or above the mean ranging from 760 to 1,131 mm.
Air Temperature	The average annual temperature at Petrolia from 2002 to 2015 was 8.9°C. From 2011 to 2015, average annual temperatures ranged more widely (7.4 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	30% not tiled; 6% randomly tiled; 64% systematically tiled
Watercourse Length and Type	Total length: 553 km Watercourse type: 16% natural, 62% municipal drain, 22% unclassified
Dams and Barriers	No dams
Sewage Treatment	The Oil City Lagoons seasonally discharges treated effluent to Fox Creek, a tributary of Black Creek. The Oil Springs Lagoons seasonally outlet treated effluent to Black Creek. Rural residents are serviced by private septic systems.



BLACK CREEK WATERSHED FEATURES

<p>Fisheries Resources</p>	<p>Fifty-one fish species recorded; game fish include Northern Pike, Yellow Perch, and Largemouth Bass. Ten freshwater mussel species documented, but more sampling is needed.</p>					
<p>Species at Risk</p>	<p>Birds: Acadian Flycatcher, Bank Swallow, Barn Swallow, Bobolink, Chimney Swift, Eastern Meadowlark, Least Bittern, Prothonotary Warbler, Yellow-breasted Chat Fishes: Blackstripe Topminnow, Channel Darter, Eastern Sand Darter, Lake Sturgeon, Pugnose Minnow, Pugnose Shiner Mammals: American Badger, Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis Molloscs: Eastern Pondmussel, Fawnsfoot, Kidneyshell, Mapleleaf Mussel, Northern Riffleshell, Rayed Bean, Round Hickorynut, Round Pigtoe, Salamander Mussel, Snuffbox, Wavy-rayed Lampmussel Plants: American Chestnut, Blue Ash, Butternut, Common Hop-tree, Dense Blazing-star, Eastern Flowering Dogwood, False Hop Sedge, Goldenseal, Kentucky Coffee-tree, Purple Twayblade, Spoon-leaved Moss, Willow-leaved Aster Reptiles: Blanding's Turtle, Butler's Gartersnake, Common Five-lined Skink, Eastern Hog-nosed Snake, Spiny Softshell</p>					
<p>Groundwater</p>	<p>The only aquifer is at the interface between the overburden and the bedrock, and is known as the Fresh Water Aquifer. It has high sodium and chloride and is of limited quantity. Therefore, most of the residents are supplied by municipally-piped water from Lake Huron intakes.</p>					
<p>Wetland Cover</p>	<p>187 ha or 0.7% of the subwatershed is identified as wetlands by the Ministry of Natural Resources and Forestry. An additional 12 ha (0.05% 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.</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>189</p>	<p>53</p>	<p>399</p>	<p>9</p>	<p>155</p>
	<p>5-10 ha</p>	<p>64</p>	<p>18</p>	<p>434</p>	<p>10</p>	
	<p>10-30 ha</p>	<p>70</p>	<p>19</p>	<p>1,169</p>	<p>27</p>	
	<p>>30 ha</p>	<p>40</p>	<p>11</p>	<p>2,360</p>	<p>54</p>	
	<p>Total</p>	<p>363</p>		<p>4,361</p>		



BLACK CREEK HIGHLIGHTS

Highlights and Progress Since 2011

- There were 13 landowner stewardship projects completed in the Black Creek subwatershed from 2011 to 2018. These projects included the restoration of wetlands, stabilization of streambanks, installation of sediment traps, enhancement of upland habitat, and the planting of trees and windbreaks. More than 9,800 trees were planted and the total value of all the projects was \$109,400 (76% grants).
- Two local landowners took on a project to retire and naturalize unproductive floodplain farmland with the creation of 2.3 hectares of wetland and the planting of over 1,000 trees across their adjoining properties. The project was designed to allow for the continued farming of productive agricultural land but also increase wildlife habitat in the area and improve water quality in nearby watercourses.



- The South West Woodlot Association organizes educational events throughout the year to provide landowners with the skills and knowledge to manage their woodlots sustainably.
- From 2012 to 2018, restoration efforts on SCRCA-owned land in the Black Creek subwatershed included 1 hectare of streambank stabilization, the creation of two wetlands covering 1.4 hectares, the planting of 1,800 trees, and the installation of two sediment traps (left photo).
- For the Lambton Natural Heritage Study led by the County, North-South Environmental surveyed natural areas in nine municipalities from 2010 to 2012, providing records for over 350 plants species and 46 species of birds, reptiles, amphibians and mammals. Regionally rare birds or plants were noted at every site, highlighting the importance of maintaining and enhancing even small natural areas.
- To close research knowledge gaps, the SCRCA performed surveys of native mussel populations in 2017 and 2018, covering 28 km of the North Sydenham River (right photo: a Mapleleaf Mussel).