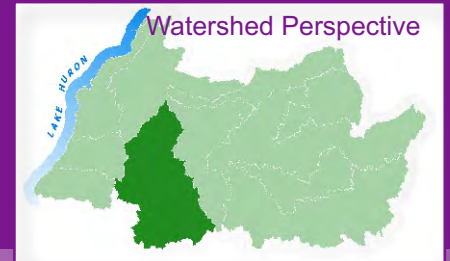




WATERSHED REPORT CARD



Teeswater River Watershed



The Teeswater River is 75 kms. in length with an average gradient of 3.56 metres per km. It drains a total area of 683 sq. kms. Tributaries include the Greenock, Formosa, Alps, Plum, Kinlough, Schmidt and Allen Creeks.

This watershed is predominantly agricultural with the exception of the Greenock Swamp, the single largest forested wetland in Southern Ontario at over 8,000 ha in size (20,000 acres). Included within this watershed are the communities of Paisley, Teeswater, Riversdale, Chepstow, Cargill, Kinlough and Formosa.



Working to Keep Your Future Green

Staff work with partners and organizations in implementing projects that aim to improve the local environment. Research, lab and field work, data analysis, observations,

testing, and so much more, is completed by staff in helping to determine the best and most applicable environmental measures to apply in each sub-watershed.

**Watersheds are complex systems
where everything is connected.
We all live downstream.**



Saugeen Conservation is a proud member of Conservation Ontario

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Alternative formats of this report are available upon request.

General Information

Area

683 sq. km

Municipalities

Municipality of Brockton, Municipality of South Bruce, Municipality of Kincardine, Township of Huron-Kinloss, Township of Howick, Municipality of Morris-Turnberry, Municipality of Arran-Elderlie

Physiography

29% till plain (drumlinized), 22% spillway, 12% peat and muck, 10% kame moraine, 8% sand plain, 6% clay plain, 5% till plain (undrumlinized), 5% till moraine, 3% drumlin, 1% water

Soils

37% medium to moderately fine loam, 19% organic material, 15% fine to moderately coarse sandy loam, 14% silty loam, 7% clay loam, 4% other (may include small percentages of alluvium, breypan, bottomlands etc), 3% silty clay

Dams

In total there are 14 dams in the watershed, of which 8 are considered large dams (greater than 3 metres in height).

Sewage Treatment Facilities

None

Woodlot Size

Varying sizes from very large healthy stands with great areas of forest interior to small fragmented or small and scarcely connected stands

Land Use

66% agriculture; 29% forested; 0.6% urban

Provincially Significant Natural Areas

- Turnberry Swamp, Greenock Swamp, Formosa North Road Cut, Glamis Bog, Chepstow Swamp, Kinloss Creek, Teeswater Wetland Complex

Groundwater Aquifer Sources

Salina Formation, Bass Island Formation, Bois Blanc Formation; Oriskany Formation, Detroit River Group; Onondage Formation

Stream Flow (mean)

Mean annual flow - 11.2 cubic metres per second (cms)

Stream Flow (low) *

7Q10 flow¹ - 0.75 cms 7Q20 flow² - 0.64 cms

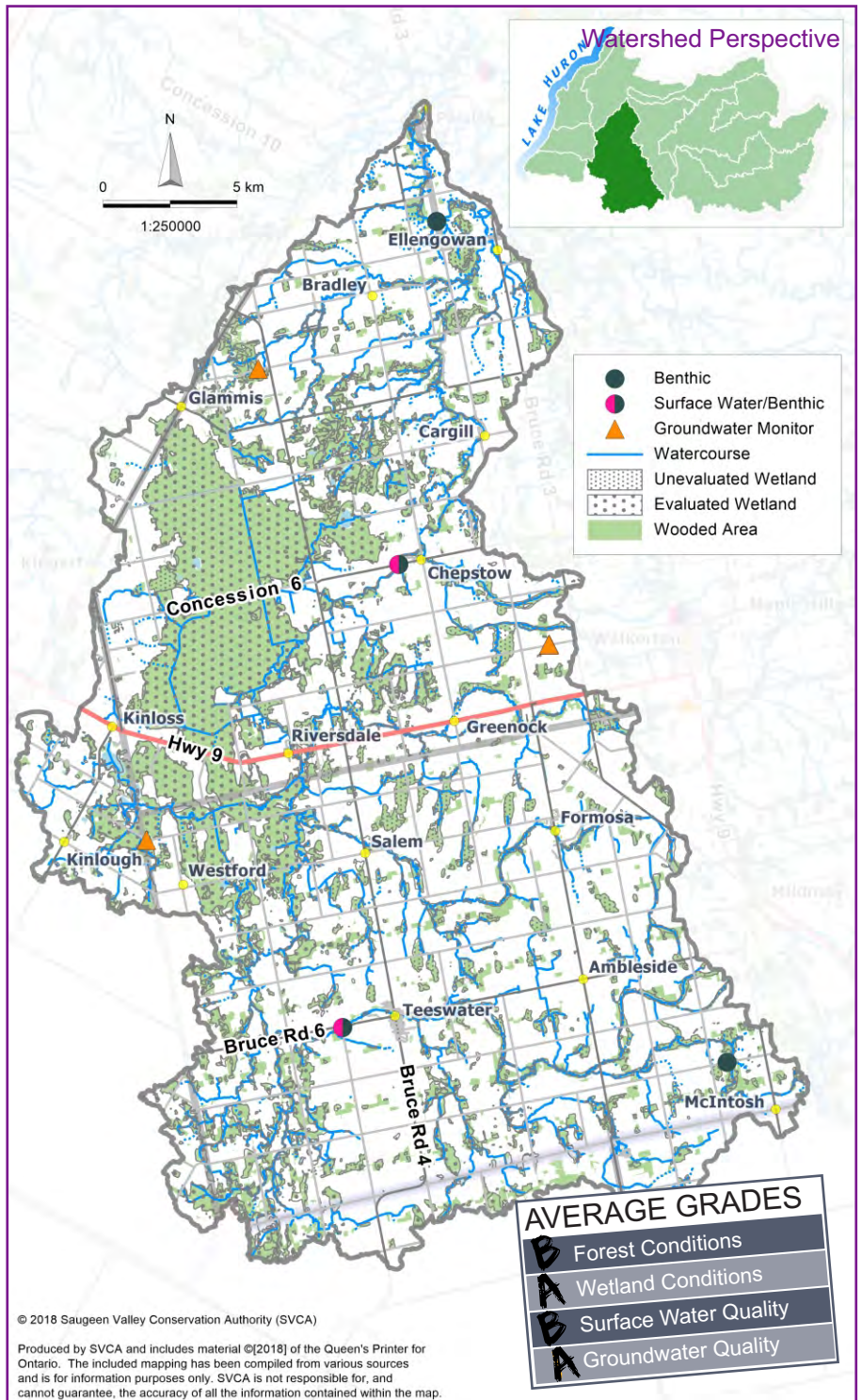
Rare Species (obtained from the National Heritage Information Centre (NHIC) Website)

American Badger, Blanding's Turtle, Least Bittern, Eastern Meadow Lark, Bobolink, Eastern Green-Violet, Eastern Prairie Fringed-orchid, Greater Round Leaved Orchid, Broad-leaved Puccoon, Soft-haired False Gromwell, Loggerhead Shrike, Clamp-tipped

Emerald, American Gromwell, Beaked Spike-rush, Cerulean Warbler, Eastern Ribbonsnake, Greater Redhorse, Golden Redhorse, Hart's-tongue Fern, Eastern Milksnake, Ram's-head Lady Slipper, Rigid Sedge, Scarlet Beebalm, Greenside Darter, Pugnose Shiner, Rainbow Mussel, Rusty Crayfish, Snapping Turtle

¹ 7Q10 - the lowest mean flow for seven consecutive days that has a 10-year recurrence interval period, or a 1 in 10 chance of occurring in any one year.

² 7Q20 - the lowest mean flow for seven consecutive days that has a 20-year recurrence interval period, or a 1 in 20 chance of occurring in any one year.



	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Forest Conditions	Forest Cover (% of Area)	B 29.2	B 29.4	B 29.3	Forest cover is the percentage of the watershed that is forested or wooded. Environment Canada suggests that 30% forest cover is the minimum required to support healthy wildlife habitat.
	Forest Interior (% of Area)	B 11.5	B 11.1	B 10.8	Forest interior refers to the protected core area found inside a woodlot. It is the sheltered, secluded environment away from forest edges and open habitats. Environment Canada recommends that a minimum of 10% of a watershed should be interior forest cover to sustain healthy plant and animal species.
	Riparian Cover (% of Area)	B 47.0	C 37.4	C 42.1	Riparian Cover is the percentage of forested habitat along a given waterway. Environment Canada guidelines suggest that at least 75% of stream length should have 30 metre naturally vegetated buffers. Forested vegetation represents about two-thirds with the rest being marsh, meadow, and shrub thicket.
	Average Grade	B	B	B	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Wetland Conditions	Wetland Cover	No Data	A 24.4	A 24.4	Wetland cover is the percentage of existing wetland in a watershed. Environment Canada suggests that 10% wetland cover is the minimum needed for a healthy watershed. Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.

	Indicators	2002 - 2006	2007 - 2011	2012 - 2016	Indicator Description
Surface Water Quality	Benthic Invertebrates (FBI)	C 5.52	C 5.63	C 5.50	Benthos or benthic invertebrates are bottom dwelling insects, crustaceans, worms, mollusks, and related aquatic animals that live in watercourses. They are good indicators of water quality, responding quickly to environmental stressors such as pollutants. The Modified Family Biotic Index (FBI) using New York State tolerance values provide stream health information and values ranging from 1 (healthy) to 10 (degraded).
	Total Phosphorus (mg/L)	C 0.040	B 0.028	B 0.024	Total phosphorus is indicative of nutrient levels within a watercourse. Phosphorus is required for the growth of aquatic plants and algae, however, concentrations above the Provincial Water Quality Objective may result in unhealthy stream conditions. The Provincial Water Quality Objective is 0.03 mg/L.
	<i>E. coli</i> (cfu/100mL)	C 178	C 178	B 33	<i>E. coli</i> originate from the wastes of warm blooded animals, including humans, livestock, wildlife, pets and waterfowl. The Ontario Recreational Water Quality Guidelines suggest that waters with less than 100 CFUs/100mL are safe for swimming.
	Average Grade	C	C	B	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Groundwater Quality	Nitrite + Nitrate (mg/L)	No Data	A 2.42	A 1.67	Nitrates are present in water as a result of decaying plant or animal material, the use of fertilizers, domestic sewage or treated wastewater, as well as geological formations containing soluble nitrogen compounds. The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.
	Chloride (mg/L)	No Data	A 14.0	A 15.0	While chloride can be naturally occurring, the presence of elevated chloride may indicate contamination from road salt, industrial discharges, or landfill leachate. The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.
	Average Grade	No Data	A	A	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.



Forest Conditions

This watershed scores a 'B' for forest conditions, falling just short of the Environment Canada guidelines of 30% and just surpasses the guideline of 10% forest interior. Both forest cover and forest interior scored a 'B' grade which is the same as the last report card. The riparian cover maintained a 'C' grade. The recommendation is that 50% of the 30 metre wide riparian zone should have forest cover. This watershed has only 42.1% of the riparian zone forested, despite the extensive cover in the Greenock Swamp. Tree planting along riparian zones and on marginal farmland should be considered to ensure the forest conditions are maintained or improved.

Wetland Conditions

This report card summarizes the conditions of both 'evaluated' and 'unevaluated' wetlands. Looking at all of the wetlands the Teeswater watershed scores an 'A' grade with 24.4% wetland cover in the watershed. Existing wetlands should be protected to maintain this grade.

Surface Water

The wetland evaluation system was created to protect important wetlands valued at a provincial scale. Under the Planning Act, provincially significant wetlands are protected from development and alteration.

Quality

This watershed scores an average grade of 'B' for surface water quality. The overall grade is an improvement from the last report card. Contributing significantly to this grade is the presence of the Greenock Swamp which helps to filter impurities from the water. The average total phosphorus concentration is below the Provincial Water Quality Objective of 0.03 mg/L. The E. coli count is now below the recreational guidelines of 100 CFU/100mL showing an improvement from the last report card. The grade for benthic invertebrates remained at a 'C'. Increased efforts should be made to encourage landowners and the agricultural community to preserve and enhance natural land cover.

Groundwater Quality

The groundwater quality in the four monitoring wells in this area continues to score an 'A' grade. It should be noted that groundwater aquifers do not conform to watershed boundaries but rather flow in an east to west direction through the watershed. The average nitrate concentration in three of the wells is approaching a 'B' grade while one scores an 'F' grade due to its elevated concentrations of nitrate. There have been exceedences of the Ontario Drinking Water Standards for fluoride, sodium, and nitrate during this study period.

Ecosystem Grade Description	
A	Excellent conditions.
B	Good conditions. Some areas may require enhancement and/or improvements.
C	Conditions that warrant general improvements.
D	Poor conditions. Overall improvements necessary.
F	Degraded conditions, in need of considerable improvement.

What is being done *in this Watershed?*

- ✓ **Saugeen Conservation** aims to improve watershed health through virtually all its programs.
- ✓ **Saugeen Conservation** is a key player in providing assistance and technical expertise to local groups, committees, ministries etc. that work to improve the local environment.
- ✓ Through **Saugeen Conservation's tree planting efforts and Ontario's 50 Million Tree Program**, a total of 41,531 trees were planted during this report period.
- ✓ **Saugeen Conservation** works closely with **local agricultural organizations** to provide ongoing workshops and seminars for farmers on a variety of different conservation topics.
- ✓ **Saugeen Conservation** leads numerous groups (formally and informally), through the Greenock Swamp to create awareness about the Swamp and the value of wetlands.
- ✓ **Grey Bruce Sustainability Network** works closely with Saugeen Conservation on several different environmental and educational projects.
- ✓ The **Forest Health Collaborative** helps to educate municipalities and the public on forest health issues.
- ✓ **Stewardship Grey Bruce** offers funding and technical support for landowners in the watershed interested in completing habitat enhancement projects.



What is being done *in this Watershed?*



- ✓ The **Lake Huron Fishing Club** (with funding from Bruce Power), works with local schools in setting up fish aquariums to educate students about the importance of a healthy fishery.
- ✓ Saugeen Conservation offers over **50 different hands-on environmental programs** to over 10,000 children annually, including the Grey Bruce Children's Water Festival and the Bruce Grey Forest Festival.
- ✓ Saugeen Conservation partnered with **Trout Unlimited Canada** to complete the **Yellow Fish Road** program in the Village of Teeswater with grade 4 students from the elementary schools. Yellow Fish Road is a nation-wide environmental education program whose goal is to help Canadians understand that stormdrains are corridors to our rivers, lakes and streams.
- ✓ The **Grey-Bruce ALUS** program recognizes land stewardship and assists farmers in implementing and funding projects to produce ecosystem services. ALUS aims to improve the biodiversity on the agricultural landscape.



- ✓ **Bruce Grey Woodlands Association** educates the community through workshops and tours on forest related topics.

Recognizing our Important Partners

