



# Lower Main Saugeen Watershed REPORT CARD

A report on the general condition of the Lower Main Saugeen Watershed

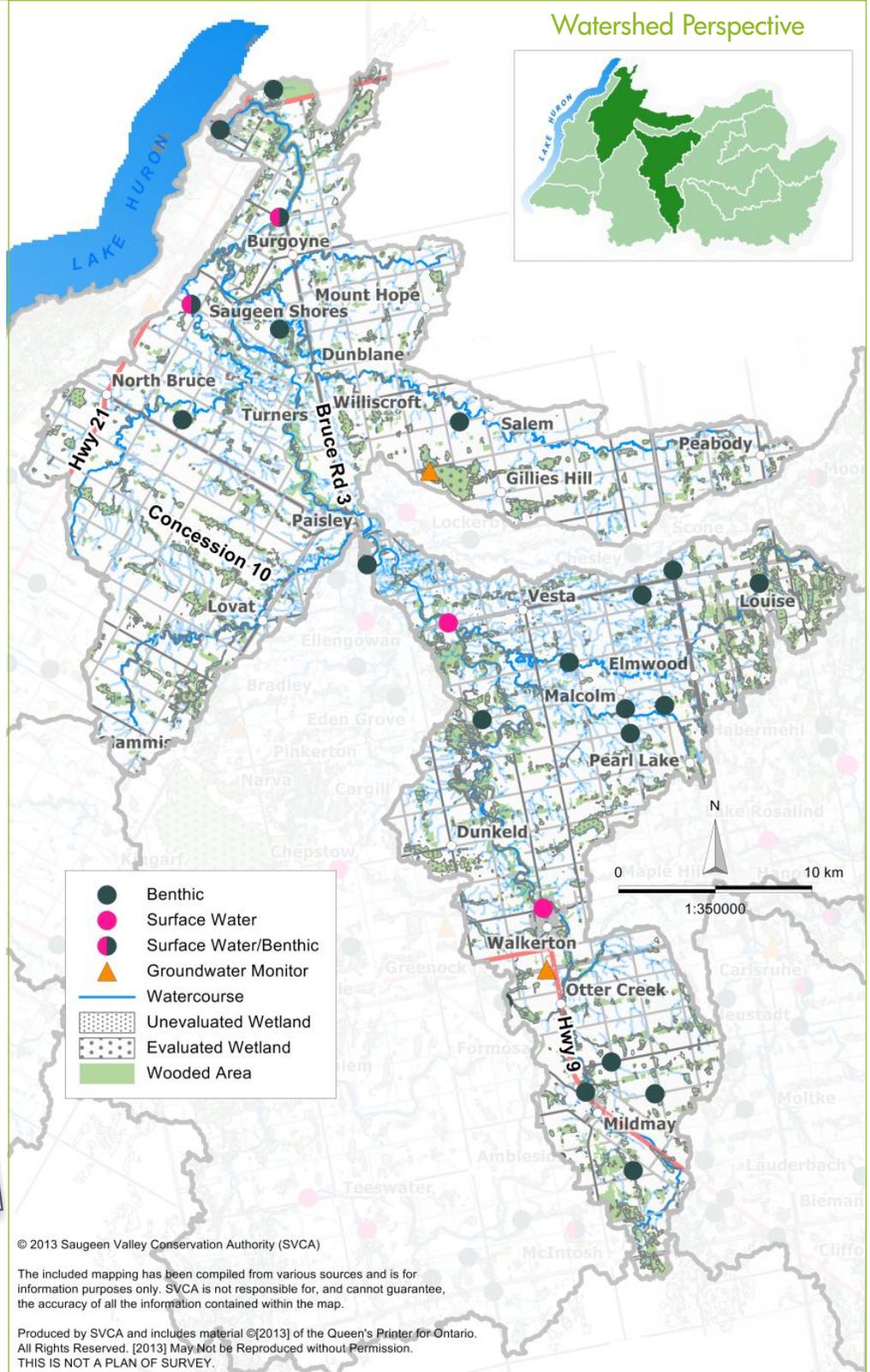
2013

## 2007-2011

The Main Saugeen River downstream of Walkerton drains 908 square kilometres. This section of the river is 76 kilometres in length with an average gradient of 0.88 metres per kilometre. The main tributaries of the Lower Saugeen River include Mill Creek, Burgoyne Creek, Snake Creek, Vesta Creek, Pearl Creek, Deer Creek, Otter Creek, Willow Creek, and Silver Creek as well as numerous smaller unnamed streams.

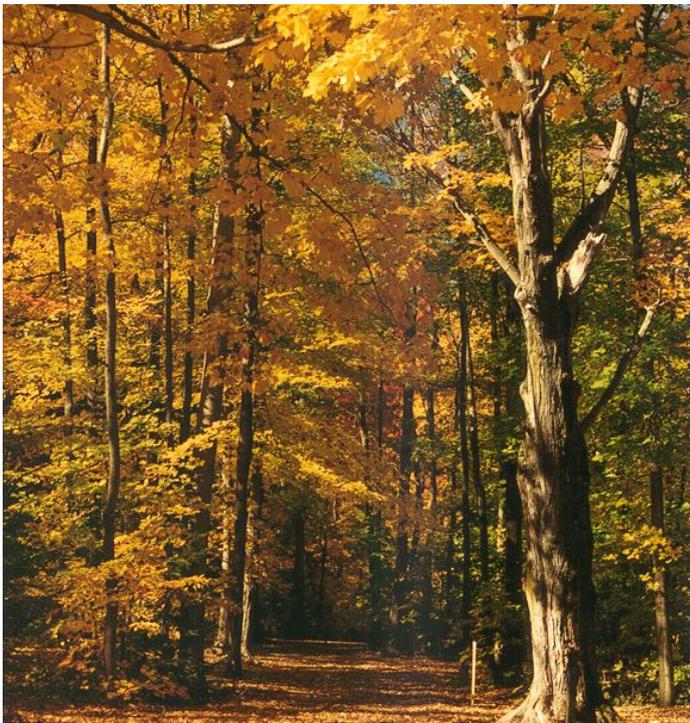
The watershed is predominantly agricultural but also includes the communities of Southampton, Mildmay, Paisley and Walkerton.

The landscape is glacial in origin with the lower end of the watershed sand plain, clay plain and till plain.



**AVERAGE GRADES**

- D** Forest Conditions
- B** Wetland Conditions
- C** Surface Water Quality
- A** Groundwater Quality



## Forest Conditions

Forest conditions of the Lower Main Saugeen River Watershed have not improved since the last report card, with the *average* grade dropping from a 'C' to a 'D'. Forest cover falls short of meeting the Environment Canada guidelines of 30% scoring an *average* grade of 'C'. Forest cover and forest interior grades did not change with a 'C' and a 'D', respectively. Forested riparian cover had only a 'D' grade. The recommendation is that 50% of the 30 metre wide riparian zone have forest cover. The Lower Main Saugeen River Watershed has only 24.4% of the riparian zone forested. Tree planting along riparian zones and on marginal farmland should be considered to ensure the forest conditions are improved. From 2007-2011 there were 94,740 trees planted in this watershed through the Grey Bruce Forestry Service.

## Wetland Conditions

This report card summarizes the conditions of both 'evaluated' and 'unevaluated' wetlands. Since the last set of report cards summarized only the 'evaluated' wetlands the present results cannot be compared to the previous report card. When considering the presence of all wetlands, the Lower Main Saugeen River Watershed scores an 'B' grade with 9.1% wetland cover. This is just below the Environment Canada recommendation of 10% as the minimum required for a healthy watershed. It would be advisable to allow low lying or wet areas to naturalize, thereby improving wetland scores. It is also important to restore previously drained wetlands where possible and existing wetlands should be protected.

## Surface Water Quality

The Lower Main Saugeen River scores an *average* grade of 'C' for surface water quality, the same as the last report card. The *average* total phosphorus concentration is now below the provincial water quality objective of 0.03 mg/L and has improved from a 'C' to a 'B' grade. *E. coli* continues to fall below the recreational guidelines of 100 CFU/100mL maintaining a 'B' grade.

The grade for benthic invertebrates, however, dropped from a 'C' to a 'D'. Changes in the benthic invertebrate community are seen as early indicators of deterioration in water quality that might not be seen in the chemistry results. Increased efforts should be made to encourage landowners and the agricultural community to preserve and enhance natural land cover. Current stressors such as climate change and invasive species could pose significant threats in this watershed, therefore, efforts should be made to address these stressors to maintain or improve the current scores.

## Groundwater Quality

The groundwater quality in the two wells in this area continues to score an 'A' grade. The wells monitor two bedrock aquifers. 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. Different types of aquifers exist throughout the region and the quality of individual wells on private property may vary from that of the provincial monitoring wells in this report. There have been exceedences of the Ontario Drinking Water Standards for sodium and fluoride during this study period.



### GRADE DESCRIPTION

- A** = Excellent ecosystem conditions. Some protection and enhancement may be required.
- B** = Good ecosystem conditions. Some areas may require enhancement and/or improvements.
- C** = Ecosystem conditions that warrant general improvements.
- D** = Poor ecosystem conditions. Overall improvements necessary.
- F** = Degraded ecosystem. Conditions in need of considerable improvement.

# Lower Main Saugeen River Watershed

	Indicators	2002-2006 % of AREA	2007-2011 % of AREA	2007-2011 Grade	Trend *	Indicator Description
Forest Conditions	Forest Cover	19.0	19.5	C	↔	Forest cover is the percentage of the watershed that is forested or wooded. <i>Environment Canada suggests that 30% forest cover is the minimum needed to support healthy wildlife habitat.</i>
	Forest Interior	3.4	3.5	D	↔	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. <i>Environment Canada recommends that a minimum of 10% of a watershed should be interior forest cover to sustain plant and animal species.</i>
	Riparian Cover	**	24.4	D		Riparian Cover is the percentage of forested habitat along a given waterway. <i>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. The equivalent target is 50% of the riparian zone in forest cover.</i>
	Average Grade	C	D		↓	Grade D indicates poor ecosystem conditions and overall improvements are necessary.
Wetland Conditions	Wetland Cover	**	9.1	B		Wetland cover is the percentage of existing wetland in a watershed. <i>Environment Canada suggests that 10% wetland cover is the minimum needed for a healthy watershed.</i>
	Average Grade	-	B			Grade B indicates good ecosystem conditions. Some areas may require enhancement.

	Indicators	2002-2006 Result	2007-2011 Result	2007-2011 Grade	Trend *	Indicator Description
Surface Water Quality	Benthic Invertebrates	5.47	5.97	D	↓	Benthos or benthic macroinvertebrates are large 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. <i>The Modified Family Biotic Index (FBI) using New York State tolerance values provide stream health information and values range from 1 (healthy) to 10 (degraded).</i>
	Total Phosphorus	0.038 (mg/L)	0.026 (mg/L)	B	↑	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. <i>The Provincial Water Quality Objective is 0.03 mg/L.</i>
	<i>E. coli</i>	81 (CFU/ 100 mL)	50 (CFU/ 100 mL)	B	↔	<i>E. coli</i> originate from the wastes of warm blooded animal, including humans, livestock, wildlife, pets and waterfowl. <i>The Ontario Recreational Water Quality Guidelines suggest that waters with less than 100 CFUs/100mL are safe for swimming.</i>
	Average Grade	C	C		↔	Grade C indicates ecosystem conditions that need to be enhanced.
Groundwater Quality	Nitrite + Nitrate	0.07 (mg/L)	0.06 (mg/L)	A	***	Nitrates are present in water as a result of decay of plant or animal material, the use of fertilizers, domestic sewage or treated wastewater, as well as geological formations containing soluble nitrogen compounds. <i>The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.</i>
	Chloride	1.2 (mg/L)	1.0 (mg/L)	A	***	While chloride can be naturally occurring, the presence of elevated chloride may indicate contamination from road salt, industrial discharges, or landfill leachate. <i>The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.</i>
	Average Grade	A	A		***	Grade A indicates excellent ecosystem conditions and protection may be required. Some areas may require enhancement to maintain this level of quality.

\* For the 2007-2011 report cards the grading system has changed. To be able to compare the results, the scores from the 2002-2006 report cards were included. The new grading system was applied to these former scores and it was then determined whether the grades have stayed the same ↔, improved ↑, or declined ↓.

\*\* The data was calculated differently for the previous set of report cards so it is not possible to compare to the 2007-2011 data.

\*\*\* Insufficient data to establish trends.

**Surface water data** used for this interpretation were obtained through the Provincial Water Quality Monitoring Network (PWQMN), the Ontario Benthos Biomonitoring Network (OBBN) and Saugeen Conservation's Water Quality Monitoring Network.

**Groundwater data** used for this interpretation were obtained through the Provincial Groundwater Monitoring Network (PGMN). 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.

# Lower Main Saugeen River Watershed General Information

## Area

908 sq. km

## Municipalities

Town of Saugeen Shores, Municipality of Arran-Elderslie, Municipality of Brockton, Municipality of South Bruce, Howick Township, Municipality of West Grey, Township of Chatsworth, Municipality of Kincardine, Town of South Bruce Peninsula

## Physiography

23% till plain (undrumlined), 23% clay plain, 19% till plain (drumlined), 12% sand plain, 11% till moraine, 5% spillway, 3% kame moraine, 2% drumlin, 1% beaches and shorecliffs, 1% water

## Soils

33% silty clay, 23% medium to moderately fine loam, 16% fine to moderately coarse sandy loam, 12% silty loam, 6% other (may include small percentages of alluvium, breypan, bottomlands etc), 5% clay loam, 3% organic material, 1% coarse sandy loam and loamy sand

## Dams

There are 21 dams in the watershed, of which 7 are considered large dams (greater than 3 metres in height).

## Sewage Treatment Facilities

Paisley, Port Elgin, Walkerton, Mildmay (Southampton has a plant that discharges directly to Lake Huron)

## Woodlot Size

Small and fragmented forests are largely limited to the back of farm lots, many connected by corridors - also some areas with larger forests providing forest interior conditions

## Land Use

76% agriculture; 20% forested; 1.2% urban

## Areas of Natural and Scientific Interest (ANSI) - Murray's Bog, Glamis Bog

## Groundwater Aquifer Sources

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

## Stream Flow (mean)

Mean annual flow - 59 cubic metres per second (cms)

## Stream Flow (low) \*

7Q10 flow<sup>1</sup> - 8.19 cms 7Q20 flow<sup>2</sup> - 7.71 cms

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

Hungerford's Crawling Beetle, American Badger, Lake Sturgeon, Stiff Gentian, Loggerhead Shrike, Short-eared Owl, Beaked Spike-rush, Butternut, Dwarf Lake Iris, Eastern Ribbon Snake, Great Lakes Wild Rye, Greene's Rush, Green-striped Darner, Low Nutrush, Massasauga Rattlesnake, Milksnake, Northern Brook Lamprey, Northern Map Turtle, Ram's-head Lady's-slipper, Rigid Sedge, Scarlet Beebalm, Tuberosus Indian-plaintain

\* <sup>1</sup> 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.

<sup>2</sup> 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.

## Environmental Initiatives from 2007-2011

- **Saugeen Conservation** through its various programs continually monitors watershed and subwatershed conditions. From 2007 to 2011 conservation efforts included water quality monitoring and the planting of **94,740** trees.
- **SauGREEN for the Environment** is a local environmental community group focused in the Saugeen Shores area. Projects include waste diversion, rain barrels, other eco-friendly projects and tree planting (under **Trees for Saugeen**).
- **Ducks Unlimited Canada** supported a wetland creation project in the Lower Main watershed partnering with a private landowner to allow a marginally farmed area to revert back to a wetland. For more information go to [www.ducks.ca](http://www.ducks.ca)
- The **Ontario Steelheaders** operate a fish ladder at Denny's Dam to help native fish access spawning habitat and prevent invasive species including Sea Lamprey from moving upstream. In partnership with the **Ministry of Natural Resources** the Walkerton fishway was constructed to assist migratory rainbow trout reach more productive spawning areas. The **Lake Huron Fishing Club** (in conjunction with the Ontario Steelheaders) actively stocks steelhead salmon in the Saugeen River. The Club operates a fish hatchery in Port Elgin, rearing young fish to augment the fishery.
- The **Bruce Resource Stewardship Network** has offered seed money, labour and technical support for landowners that were interested in completing habitat enhancement projects. Projects were typically focused on actions to improve water quality.



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For more information about the report card process, indicators and how grades were calculated, please refer to the **Background** document.

Alternative formats of this report are available upon request.