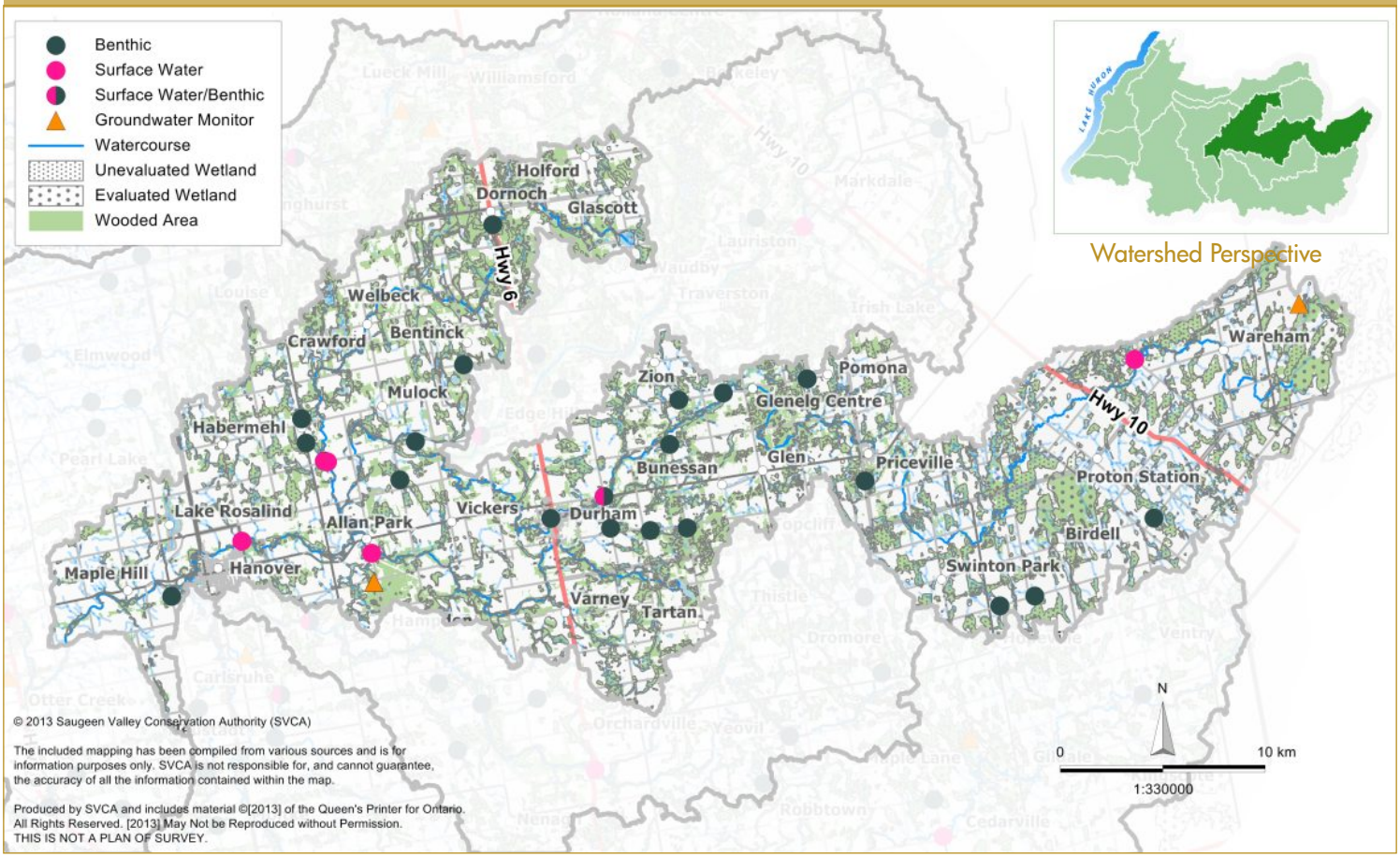
SAUGEEN CONSERVATION

2007-2011

Upper Main Saugeen River Watershed

REPORT CARD

A report on the general condition of the Upper Main Saugeen River Watershed 2013



AVERAGE GRADES

B	Forest Conditions
A	Wetland Conditions
B	Surface Water Quality
A	Groundwater Quality

The Saugeen River upstream of Walkerton drains 782 square kilometres. The river is 116 kilometres in length with an average gradient of 1.67 metres per kilometre. The main tributaries of the upper Saugeen River include Habermehl Creek, Camp Creek and the Styx River as well as numerous smaller unnamed streams.

The watershed is predominantly agricultural and forested land. It includes the communities of Hanover, Durham and Priceville.

Formed by glaciers, spillways are the predominant landscape feature in the lower end of the watershed while drumlinized till plains are found in the headwaters. Kame moraines and eskers can also be found.

Forest Conditions

The Upper Main Saugeen River Watershed scores an *average* grade of 'B' which is the same as the previous report card. Forest cover exceeds the Environment Canada guidelines of 30%, but this watershed falls short of the guidelines for forest interior and forested riparian cover scoring 'C' and 'B' grades, respectively. The recommendation is that 50% of the 30 metre wide riparian zone should have forest cover. The Upper Main Saugeen River Watershed has 43.6% of the riparian zone forested, falling short of the recommended 50%.

Tree planting along riparian zones and on marginal farmland should be considered to ensure the forest conditions are improved. From 2007-2011 there were 167,615 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 present results cannot be compared to the previous report card. When considering the presence of all wetlands, the Upper Main watershed scores an 'A' grade with 23.7% wetland cover. Care should be taken to protect existing wetlands to maintain this grade.

Surface Water Quality

The Upper Main Saugeen River scores an *average* grade of 'B' for surface water quality. The overall grade is the same as the last report card.

The *average* total phosphorus concentration is below the provincial water quality objective of 0.03 mg/L and has improved from a 'B' to an 'A' grade. *E. coli* continues to be below the recreational guidelines of 100 CFU/100mL maintaining a 'B' grade.

The grade for benthic invertebrates dropped from a 'B' to a 'C'. 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 three monitoring wells in this area continues to score an 'A' grade. The wells monitor three overburden 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. There have been no exceedences of the Ontario Drinking Water Standards 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.

Upper Main Saugeen River Watershed

	Indicators	2002-2006 % of AREA	2007-2011 % of AREA	2007-2011 Grade	Trend *	Indicator Description
Forest Conditions	Forest Cover	34.6	**35.9**	**A**	⇧	Forest cover is the percentage of the watershed that is forested or wooded. ***Environment Canada suggests that 30% forest cover is the minimum needed to support healthy wildlife habitat.***
	Forest Interior	7.3	**7.8**	**C**	⇔	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 plant and animal species.***
	Riparian Cover	**	**43.6**	**B**		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. The equivalent target is 50% of the riparian zone in forest cover.***
	Average Grade	B	**B**		⇔	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Wetland Conditions	Wetland Cover	**	**23.7**	**A**		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.***
	Average Grade	-	**A**			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 Result	2007-2011 Result	2007-2011 Grade	Trend *	Indicator Description
Surface Water Quality	Benthic Invertebrates	4.33	**5.46**	**C**	⇩	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. ***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).***
	Total Phosphorus	0.023 (mg/L)	**0.016 (mg/L)**	**A**	⇧	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.***
	E. coli	48 (CFU/ 100 mL)	**39 (CFU/ 100 mL)**	**B**	⇔	*E. coli* originate from the wastes of warm blooded animal, 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	B	**B**		⇔	Grade B indicates good ecosystem conditions. Some areas may require enhancement.
Groundwater Quality	Nitrite + Nitrate	0.26 (mg/L)	**0.61 (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. ***The Ontario Drinking Water Standard for nitrite + nitrate is 10 mg/L.***
	Chloride	2.18 (mg/L)	**1.67 (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. ***The Ontario Drinking Water Standard for chloride is only for aesthetic purposes with an objective of 250 mg/L.***
	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.

Upper Main Saugeen River Watershed General Information

Area
782 sq. km

Municipalities
Municipality of Brockton, Town of Hanover, Municipality of West Grey, Municipality of South Bruce, Township of Chatsworth, Township of Southgate, Municipality of Grey Highlands, Township of Melancthon

Physiography
40% spillway, 30% till plain (drumlinized), 13% kame moraine, 6% drumlin, 4% till moraine, 4% peat and muck, 1% esker, 1% water

Soils
38% medium to moderately fine loam, 27% silty loam, 15% organic material, 12% fine to moderately coarse sandy loam, 4% other (may include small percentages of alluvium, breypan, bottomlands etc), 3% coarse sandy loam and loamy sand, and 0.2% clay loam

Dams
In total there are 56 dams in the watershed, of which 13 are considered large dams (greater than 3 metres in height).

Sewage Treatment Facilities
Hanover, Durham

Woodlot Size
Many large forests with forest interior conditions

Land Use
58% agriculture; 35% forested; 1.4% urban

Areas of Natural and Scientific Interest (ANSI)
- Saugeen Kame Terrace, Allan Park Crevasse Fillings, Allan Park Ice - Marginal Delta

Groundwater Aquifer Sources
Guelph Formation, Salina Formation, Catfish Creek Till Formation, Glaciolacustrine Formation

Stream Flow (mean)
mean annual flow - 34.7 cubic metres per second (cms)

Stream Flow (low) *
7Q10 flow[1] - 4.37 cms 7Q20 flow[2] - 3.93 cms

Rare Species (obtained from the National Heritage Information Centre (NHIC) Website)
American Badger, Ebony Boghaunter, Redside Dace, Clamp-tipped Emerald, Small-footed Bat, Eastern Ribbonsnake, Harlequin Darner, Hart'stongue Fern, Milksnake, Northern Long-eared Bat, Scarlet Beebalm

* [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.

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 **167,615** trees.
- The **Ontario Steelheaders** in partnership with the **Ministry of Natural Resources** constructed a new fishway at the Maple Hill Power Dam to assist migratory rainbow trout to reach more productive spawning areas upstream. For more information see www.ontariosteelheaders.ca
- **Saugeen Conservation** partnered with **Trout Unlimited Canada** to complete the Yellow Fish Road program in Durham which is a nation-wide environmental education program with a goal to help Canadians understand that stormdrains are the doorways to our rivers, lakes and streams. For more information go to www.yellowfishroad.org
- The **Bruce Resource Stewardship Network** offered seed money, labour and technical support for landowners in the watershed interested in completing habitat enhancement projects within Bruce County. In general projects focused on water quality improvements.
- **Grey County Forest Stewardship Council** endeavoured to foster education and new initiatives that promote natural resource sustainability within Grey County. The main focus was to initiate and support stewardship projects.

SAUGEEN CONSERVATION
1078 Bruce Rd. 12, P.O. Box 150,
Formosa ON N0G 1W0
519-367-3040
www.svca.on.ca

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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.