

# Chapter 1: Introduction

## 1.0 The Report Card

### 1.0.1 Background

Water has many uses. Millions of people in Canada and the United States rely on Lake Huron as the source of their drinking water. Groundwater in aquifers is a source of municipal drinking water and water in private wells. Water is a resource for public health, for recreation, and for our economy. Water is also the habitat for many species.

We can sometimes be affected by water issues such as flooding, droughts, or poor water quality conditions. An important link between water issues and individual actions is an understanding of your local watershed.

A watershed is an area of land drained by a creek or stream into a river which then drains into a body of water such as a lake or pond.

A report on the condition of the watershed is important. The report card primarily provides an opportunity to summarize data from existing monitoring programs. Watershed residents can learn about their local creeks, streams, and forests. This report card also identifies activities to improve watershed conditions. Finally, the report card provides baseline information for comparison with future conditions.

Reporting follows a five-year cycle. This frequency provides sufficient data for analysis of water quality data, but it also helps minimize seasonal variations.

This is the third *Watershed Report Card* for the Ausable Bayfield area so we compared data collected between 2012 and 2016 to the data from 2000 to 2011 (Veliz et al. 2006 and Brock and Veliz 2013).



The watersheds will be reassessed again in five years to determine if conditions are improving or deteriorating.

### 1.0.2 Objectives

The objectives of this report are to:

1. Provide environmental information about the area draining into the southeast shore of Lake Huron (Map 1);
2. Use environmental indicators to define the current conditions of the 16 local watersheds (subwatersheds) of the Ausable Bayfield area (Map 2), to compare to previous conditions; and
3. Provide opportunities to improve local water, soil, wetland, and forestry conditions.

### 1.0.3 Components of Report

The *Ausable Bayfield Watershed Report Card 2018* full report has three main components:

1. A section that describes the *Watershed Report Card* and the main watersheds in the Ausable Bayfield Conservation Authority (ABCA) area;
2. A section that describes the ecosystem indicators and results; and
3. The *Watershed Report Cards* for the 16 local watersheds (subwatersheds) that make up the larger watershed.

# 1.1 Background

## 1.1.1 Ausable Bayfield Conservation

The municipalities that are drained by the Ausable River identified the need for the Ausable River Conservation Authority (ARCA) and it was created in 1946.

The conservation authority was formed to address problems such as local flooding, soil erosion, and water quality and supply. The Bayfield watershed and lakeshore gullies were added to the ARCA's area in 1972, and the organization became the Ausable Bayfield Conservation Authority (ABCA).



**Map 1:** Municipal boundaries across the Ausable Bayfield watershed



The Ausable Bayfield Conservation Authority's area is about 2,430 km<sup>2</sup>.

This area not only includes the watersheds drained by the Ausable and Bayfield rivers, but also the area drained by Parkhill Creek (a former tributary of the Ausable River), and a

series of streams that drain directly into Lake Huron.

The *Watershed Report Card* updates you about environmental monitoring data for your local area, for each of 16 local watersheds or (Map 2) 'subwatersheds.'



**Map 2:** Sixteen subwatersheds of the Ausable Bayfield watershed

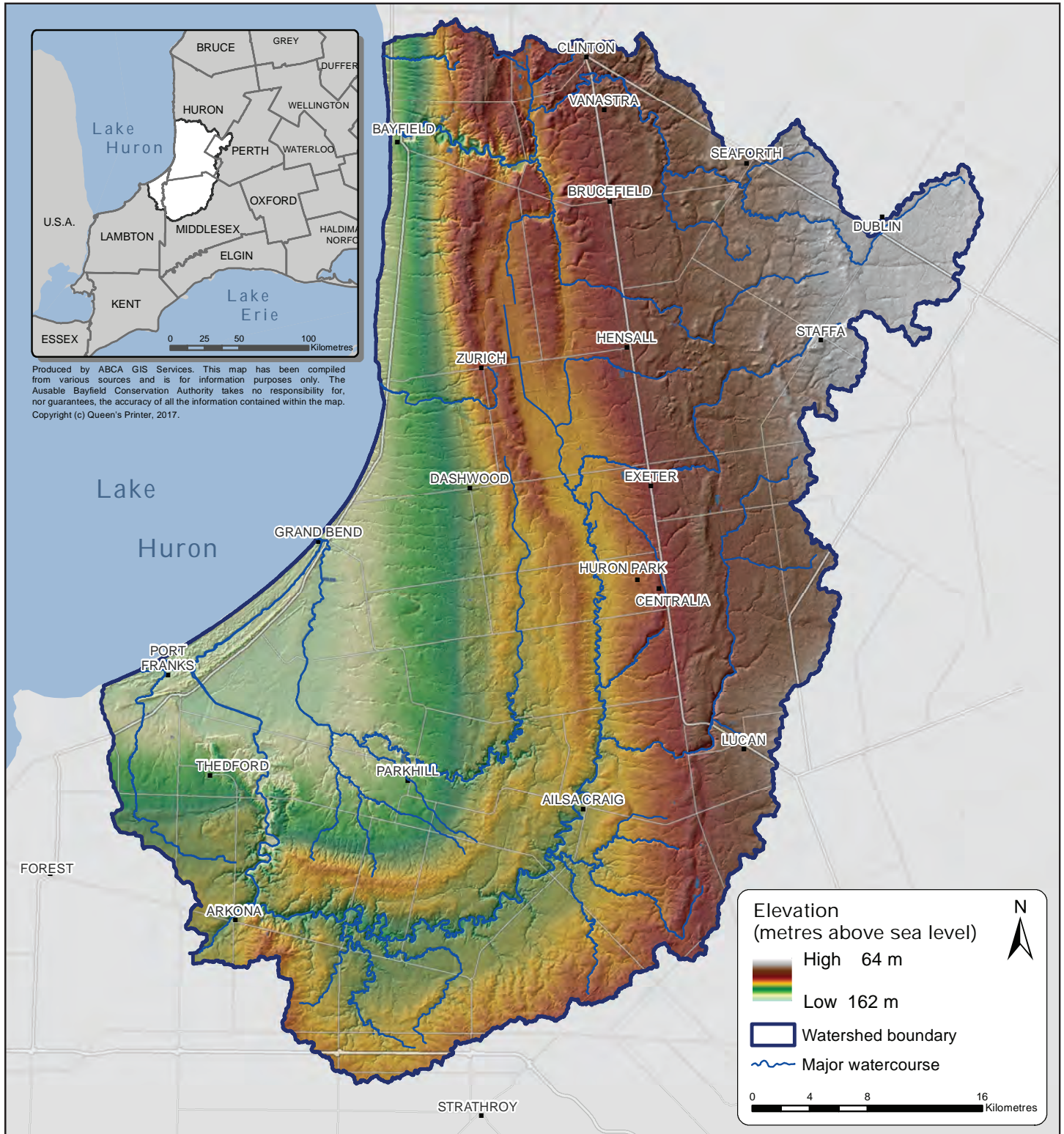


## 1.1.2 Watershed Features

The quality of freshwater is determined by topography, geology, soils, the location and quantity of woodlots and wetlands and land

use, and management practices.

The Ausable Bayfield watershed is generally level, with gently sloping moraines such as the Wyoming Moraine (dark red on Map 3).



**Map 3:** Topography of the Ausable Bayfield watershed





The steepest slopes occur at the Ausable Gorge (near Arkona), where the Ausable River cuts into the Wyoming Moraine, as well as along the lakeshore, where sand dunes and bluffs can be up to 20 metres in height.

Most of the Ausable Bayfield watershed consists of clay to silt-clay till plains with poor to very poor infiltration. Watercourses draining areas with poor infiltration typically have little groundwater input and, as a result, have low to intermittent base flows, flashy runoff, turbid waters, and warm temperatures. However, there are areas with coarse moraine deposits, most notably in the northwest area of the ABCA area, where groundwater may provide base water flow during low flow conditions to local rivers.

### 1.1.3 Introduction to the Watersheds

#### **Ausable River**

The Ausable River basin is 1,190 km<sup>2</sup> in area. This river begins near Staffa and flows south to Ailsa Craig, where it makes a wide

arc to the west (Map 4). Prior to 1873, the river traveled north and made a sharp turn in the aptly named Grand Bend. Originally the river flowed southwest to its outlet near Port Franks. Between 1873 and 1875, the course of the river was altered by excavating a channel from the boundary between the former townships of McGillivray and West Williams to Port Franks. 'The Cut' now diverts flow from Grand Bend towards the current river mouth at Port Franks. The main tributaries of the Ausable River include Black Creek, the Little Ausable River, and Nairn Creek (Map 2; Map 4).

Agriculture is the predominant land use, and forest covers about 14 per cent of the Ausable River watershed. Hay Swamp, the Ausable Gorge, and the valley immediately upstream of the gorge are areas with extensive forest cover. Woodlots are typically found in small areas of flood plain and in wetlands. The woodlots at the backs of farms tend to create strips of forest, a pattern common in the southwestern Ontario landscape.

*For further details, refer to the Watershed Characterization prepared by the Ausable Bayfield Maitland Valley Drinking Water Source Protection Region at [sourcewaterinfo.on.ca](http://sourcewaterinfo.on.ca) at this link: [www.sourcewaterinfo.on.ca/images/uploaded/uploadedDownloads/WC\\_Chap1.pdf](http://www.sourcewaterinfo.on.ca/images/uploaded/uploadedDownloads/WC_Chap1.pdf).*



The Ausable River, located at the northern edge of the Carolinian Zone, supports animals that are not found in many Canadian rivers. At least 26 species of mussels, 94 species of fish, and 18 reptile species have been found here (Ausable Bayfield Conservation Authority 2017; Ontario Ministry of Natural Resources 2011). Many of these species are rare (Appendix A). Since 2002, Ausable Bayfield Conservation and Fisheries and Oceans Canada have been working with local landowners and agencies to implement a recovery strategy for the Ausable River (<http://www.abca.ca/page.php?page=ausable-river-recovery-strategy-ARRS>).

Due to channel diversions in the latter part of the 19th century, the Old Ausable Channel (OAC) is now a tributary of the Ausable River (Map 4). Nearly 80 per cent of this 24 km<sup>2</sup> watershed is within Pinery Provincial Park, one of the most visited campgrounds in Ontario. No longer a river channel, the wetland habitat of the OAC supports three species-at-risk (SAR) fishes (Pugnose Shiner, Lake Chubsucker, and Grass Pickerel). Threats to this habitat include nutrient inputs, low oxygen concentrations, and fluctuating water levels.

The OAC watershed also contains other rare plants (e.g., Oak Savanna community) and animals. The Grand Bend community and local, provincial, and federal agencies, are monitoring management actions in this unique ecosystem.

Visit [abca.ca/page.php?page=old-ausable-channel](http://abca.ca/page.php?page=old-ausable-channel) for more information.

### ***Bayfield River***

The Bayfield River basin is 500 km<sup>2</sup>, beginning north of Dublin and outletting at Bayfield (Map 4). The Bayfield's main tributary is the Bannockburn River. Trick's Creek is also a significant tributary as it contributes baseflow to the Bayfield River, which is important during periods of low rainfall and to the local recreational fishery.

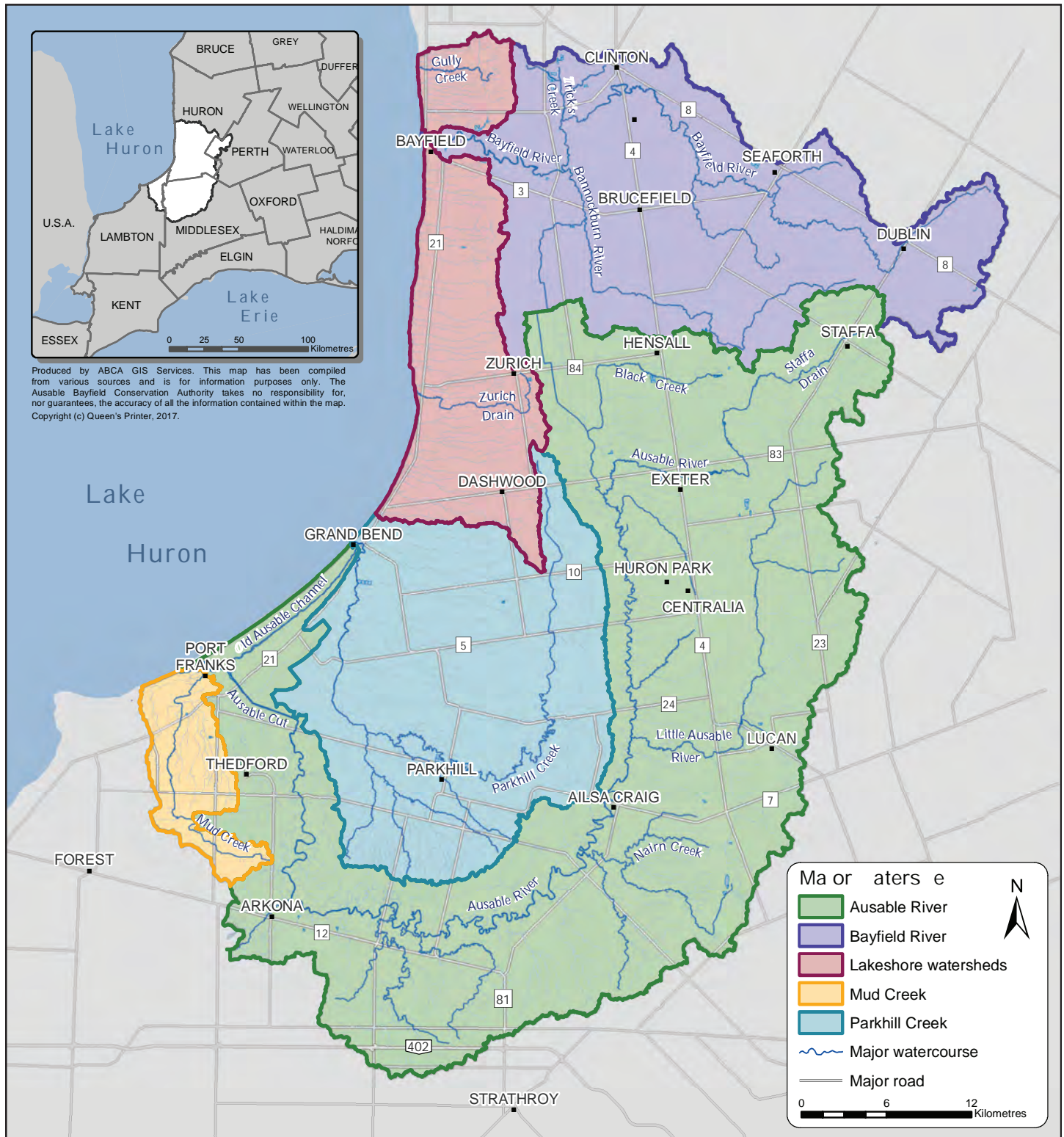
Land use is mainly agriculture, and total forest cover in this watershed is approximately 11 per cent. Most of the wooded areas generally occur in the river valleys, but are most common in the Bayfield River valley downstream of Clinton, and the lower reaches of Trick's Creek and Bannockburn River. Elsewhere, the remaining woodlots tend to be broken mid-concession corridors running perpendicular to the stream systems.



Since 2011, local citizens have been preparing and implementing a community-developed watershed plan to protect and enhance the Bayfield River.

The Main Bayfield watershed is one of five

priority areas – sentinel watersheds for long-term monitoring, project implementation and evaluation – identified along the southeast shore of Lake Huron as part of the *Healthy Lake Huron – Clean Water, Clean Beaches* partnership ([healthylakehuron.ca](http://healthylakehuron.ca)).



**Map 4:** Major watersheds of the Ausable Bayfield Conservation Authority



Photo by Brian Lasenby

### ***Parkhill Creek***

The Parkhill Creek basin covers 460 km<sup>2</sup> (Map 4). Parkhill Creek begins near Dashwood and flows southward, then westward towards Parkhill. The creek was a former tributary of the Ausable River, but it now empties into Lake Huron at Grand Bend through a channel constructed in 1892.

Agriculture is the prime land use and forest covers approximately 14 per cent of the Parkhill Creek watershed. Wooded areas are concentrated in the Parkhill Creek valley, particularly downstream of McGillivray Drive, and several kilometres on either side of the Parkhill Dam. The remaining woodlots are scattered at the backs of farms.

### ***Mud Creek***

This watershed refers to the Mud Creek flowing through Port Franks, not to the tributaries of the Ausable River and Parkhill Creek, which have the same name.

The Mud Creek basin is a 70 km<sup>2</sup> area at the southwestern edge of the Ausable Bayfield area (Map 4). Mud Creek itself flows northwards through the basin and empties into Lake Huron at Port Franks.

Agriculture is the main land use.

Approximately 24 per cent of the Mud Creek watershed is forested, most of which occurs in the dunes between Highway 21 and Lake Huron.

### ***Lakeshore Watersheds***

Within the ABCA area, there are nearly 70 smaller watersheds that outlet directly into Lake Huron (Map 4). These smaller watersheds are found from Grand Bend north to the boundary between the ABCA and the Maitland Valley Conservation Authority. The average catchment area for these small watersheds is three square kilometres.

The watersheds north of Bayfield (Bayfield North) cover a 40 km<sup>2</sup> area that has a higher percentage of forest cover (30 per cent), compared to the watersheds south of Bayfield (South Gullies) (199 km<sup>2</sup> area with forest covering 11 per cent). The community north of Bayfield has been working with the ABCA and provincial and federal agencies to implement and monitor agricultural best management practices since 2008 (<http://www.abca.ca/page.php?page=bayfield-north>).