

Grand River Conservation Authority

Report number: GM-03-23-21

Date: March 24, 2023

To: Members of the Grand River Conservation Authority

Subject: Watershed Report Card

Recommendation:

THAT Report Number GM-03-23-21 – Watershed Report Card be received as information.

Summary:

The Grand River Conservation Authority (GRCA) has released a watershed report card, summarizing groundwater quality, surface water quality, and forest and wetland conditions.

Report:

Conservation Ontario (CO) coordinates a watershed report card program every five years – the Watershed Checkup. The program's purpose is to report on watershed health using standardized environmental indicators and letter grades. The target audience includes Conservation Authority (CA) board members, elected officials, government staff, watershed residents and organizations, and local media.

The GRCA has a long history of assessing and reporting on watershed conditions. In past years, GRCA published newsletters and technical reports. Reporting on watershed health has helped motivate collaborative water planning and municipal investment in wastewater treatment. Report cards can also highlight trends, future challenges, and actions taken by CAs and partners.

Improving the health of the watershed is a priority of GRCA's Strategic Plan. The main ways GRCA works to improve watershed health are:

- Supporting municipalities in optimizing wastewater treatment plant operations to improve the quality of the treated effluent discharged to the river.
- Delivering stewardship programs to rural landowners to keep soil and nutrients on the land, and plant trees.
- Working with municipalities and provincial agencies to protect the quality and quantity of sources of drinking water.
- Connecting people to the environment through outdoor recreation, environmental education, and events, to foster understanding and individual action.
- Managing and enhancing GRCA-owned natural areas.
- Major reservoirs on the Speed, Conestogo and Grand rivers supply the majority of flow in the summer, helping reduce impacts on aquatic systems.

Grand River Report Card

CO provides technical guidelines for reporting on indicators of groundwater quality, surface water quality, and forest and wetland conditions. Data sources include provincial surface water and groundwater monitoring networks and provincial and GRCA land cover mapping. Surface water and groundwater quality grades draw on 5 years, and a minimum of 10 years, of data respectively. Most indicators of watershed health change slowly over time, reflecting land and water management and the impacts of variable weather and climate conditions.

On March 22, the 2023 edition of the Watershed Checkup was released. Individual CAs produce report cards and CO draws on all the report cards to produce a provincial-scale [Story Map](#). GRCA's report card is on GRCA's [website](#).

Watershed report card grades are very simplified indicators of conditions. Grades communicate about watershed health in a familiar and engaging way. Grades provide a relative comparison across broad geographic areas, but do not capture local conditions, causes of conditions, or trends in condition. GRCA's report card includes additional metrics and findings from recent technical reports on water resources and natural heritage. The subwatersheds mentioned in the summary below are identified on Figure 1.

Groundwater quality

The report card indicators for groundwater quality are chloride and nitrate/nitrite. These constituents can occur naturally in groundwater, but can be elevated by road salt, water softeners, and fertilizers, respectively. Most provincial monitoring network wells received grades of A (excellent) for chlorides and nitrates. While concentrations are low in most provincial monitoring wells, some wells have increasing trends. Rising chloride and nitrate levels have been identified as issues for some municipal water supply wells.

Surface water quality

The main report card indicator for surface water quality is the nutrient phosphorus. Too much phosphorus in water can be harmful, causing algal blooms, which reduce the oxygen available for fish.

Grades were generally fair (C) in the upstream areas of the Grand River and most of the tributaries. The Speed River received a grade of B or good. Phosphorus levels are higher further downstream. Lower grades are the result of runoff from urban and rural areas and treated effluent from wastewater treatment plants. Downstream areas and the Conestogo River received poor (D) grades. These grades are comparable with other southwestern Ontario watersheds.

Concentrations of phosphorus in the Grand River have improved greatly since the 1970s. Recent improvements are a result of the combined efforts of municipalities, farmers, GRCA, and others. The amount of phosphorus released from municipal wastewater treatment plants has been declining. Municipalities have made investments in new treatment technologies. Many also take part in GRCA's optimization program to make the most efficient use of their equipment and people. These investments have played a key role in improving dissolved oxygen levels in the River, an important measure of the Grand River's ability to support fish and other aquatic life.

Farmers and rural landowners are taking action to improve water quality. By planting trees and enhancing stream buffers, they help keep sediment and nutrients on their land and out of watercourses. The Rural Water Quality Program helps farmers with projects to protect water quality and build healthy soils.

Chloride concentrations were assessed against a federal guideline for protecting aquatic life from chronic impacts, rather than assigned letter grades. Some sites on the lower Speed River, Schneider Creek, and Laurel Creek exceeded the guideline. Chloride levels have been increasing in the Speed and Grand rivers downstream of urban areas since the 1970s. Too much chloride can affect human and animal health and damage vegetation, crops, and infrastructure.

Forests and wetlands

Forests help to clean our air and water, prevent erosion and flooding, and provide habitat for plants and animals. Forests help make our watershed more resilient in the face of climate change. The proportion of forest cover, interior forest cover, and riparian forest cover in each

river basin determined the grades. Overall grades ranged from fair (C) to poor (D). Some areas scored higher for specific components. For example, the McKenzie Creek basin scored B, or good, for forest cover.

Wetlands store and filter water and provide habitat for many plants and animals. By absorbing rain, wetlands help make our watershed more resilient to climate change. The proportion of wetland coverage in each river basin determined the grades. Wetland cover grades ranged from excellent (A) to poor (D). The Upper Grand River, Speed River, and Whiteman's Creek basins had the highest grades. The Conestogo River and lower Grand River basins had the lowest grades.

Next Steps

Protecting and improving environmental health in the Grand River watershed is a shared responsibility among municipalities, industry, landowners, residents, organizations, and the conservation authority. The watershed report card helps GRCA benchmark conditions, inform decision-makers, advocate for key programs, and connect the public with the environment.

As a next step, GRCA will share the report card with the Water Managers Working Group, a collaborative of municipal and First Nations leaders for water, wastewater, and stormwater utilities. The group advances implementation of the Grand River Water Management Plan. A goal of the Plan is to improve water quality and river health.

GRCA is establishing agreements with watershed municipalities to continue implementation of key watershed health programs and services, including the Wastewater Optimization Program and conservation and stewardship programs.

Conservation Ontario will promote the Watershed Checkup through a social media campaign and will hold a webinar in April.

Financial Implications:

The watershed report card was prepared by staff using data collected under GRCA's existing monitoring programs and leveraging information from municipal, provincial, and federal partners and Conservation Ontario.

Other Department Considerations:

Staff from the Water, Land, and Administration divisions helped develop the watershed report card.

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FIGURE 1: SUBWATERSHEDS OF THE GRAND RIVER WATERSHED.