



# Conservation Halton

Watershed Report Card 2013



# Conservation Halton

Conservation Halton is a community based environmental agency that protects local ecosystems in partnership with its watershed municipalities. As an agency established under the Conservation Authorities Act of Ontario, Conservation Halton forms a partnership with the Province of Ontario and the Regional Municipalities of Halton and Peel, City of Hamilton, and Puslinch Township.



# 36 Conservation Authorities in Ontario

- Watershed-based agencies
- Mandate to ensure the conservation of Ontario's water, land and natural habitats
- Governed by Board of Directors selected by Member Municipalities

12 million people live in a watershed managed by a Conservation Authority





# Local Watershed Programs

- Flood control
- Land stewardship, water quality improvement
- Watershed planning and regulation
- Environmental monitoring
- Education and public involvement
- Natural heritage protection
- Drinking water source protection
- Recreation
- Others



# Conservation Authority Watershed Report Cards

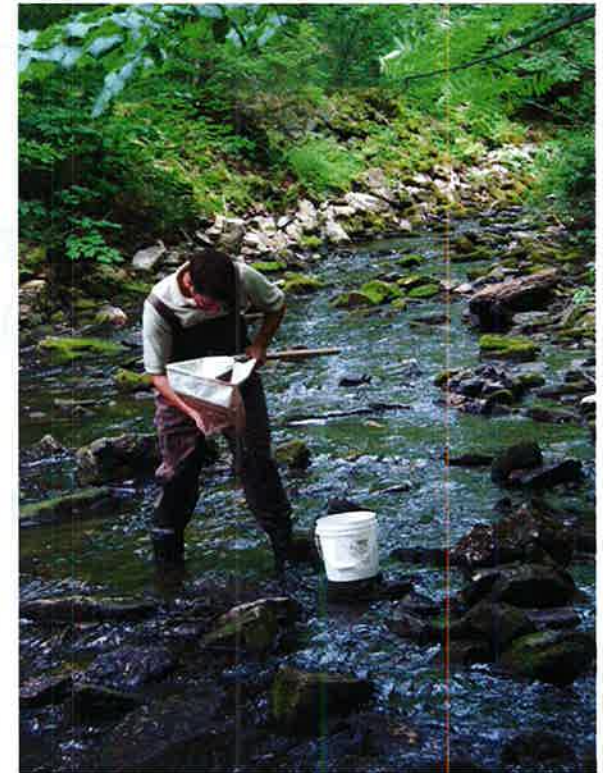


- A reporting process that gets scientific information to local decision-makers in watersheds across Ontario
- Concise, visual, public-friendly reports produced every 5 years using standardized environmental indicators
- Management and evaluation tool for CAs, municipalities and other partners to measure environmental change and target programs
- Improve local knowledge and motivate action



# Why Monitor and Report

- Monitoring helps us to identify issues, project future conditions, focus natural resource actions where needed, and track progress over time
- A healthy environment ensures safe drinking water, resilient biodiversity, and enables us to adapt to climate change







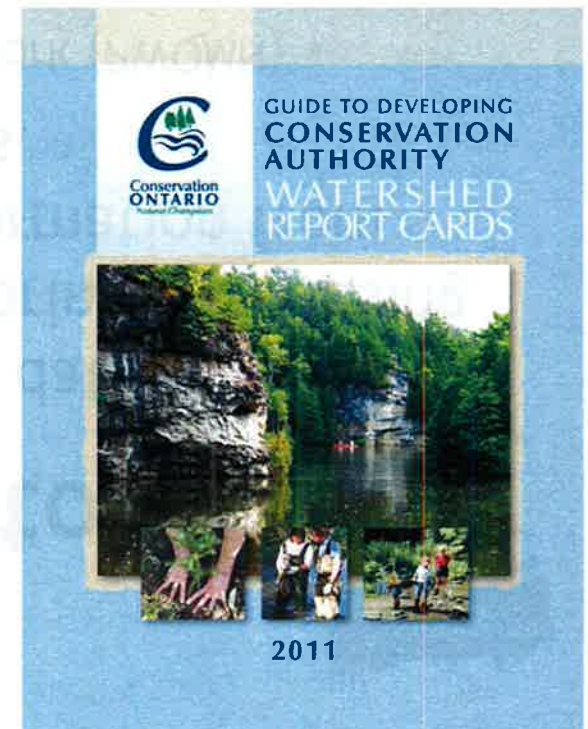
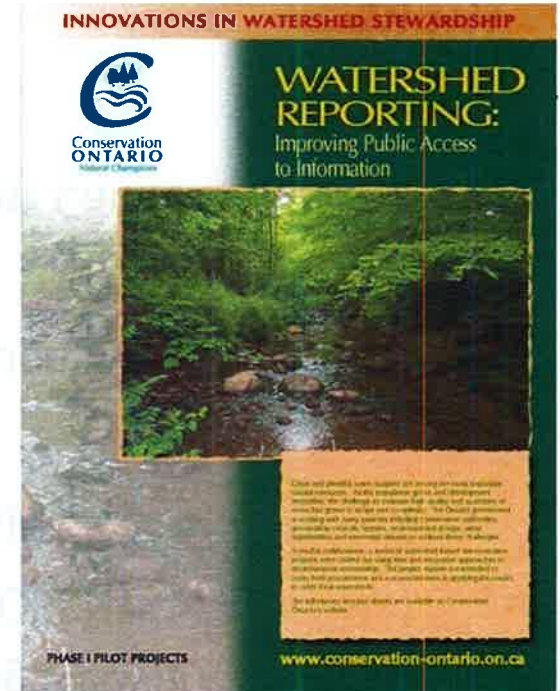
# How Do We Monitor?

Conservation Authorities collect data using a combination of their own monitoring sites, using standardized protocols, and information from outside sources and partnerships.

- Provincial Water Quality Monitoring Network (PWQMN)
- Provincial Groundwater Quality Monitoring Network (PGMN)
- Ontario Benthos Biomonitoring Network (OBBN)
- Ontario Stream Assessment Protocol (OSAP)
- GIS Mapping Data
- Southern Ontario Land Resource Information System (MNR)
- Ontario Invasive Plant Council
- Other sources: Municipalities, Environment Canada

# Background for Developing Watershed Report Cards

- 2003 - highly publicized issues around drinking water risks and drought/climate issues
- Good scientific data through established monitoring programs
- 2003 Pilot Project funded by MOE - Watershed Report Card guidelines produced
- 2007 - initial review of 2003 technical guidelines
- 2009 - CO reviewed WRCs
- 2011 - CAs/CO reviewed and produced 2011 Updated Guidelines

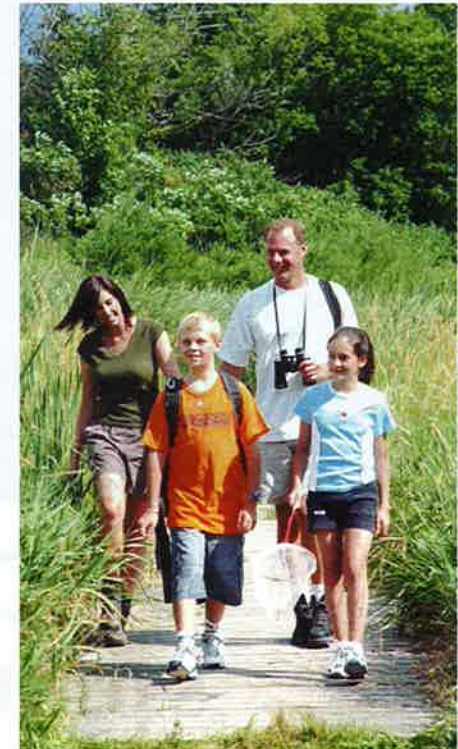






# Watershed Report Cards Link Health of Environment to People

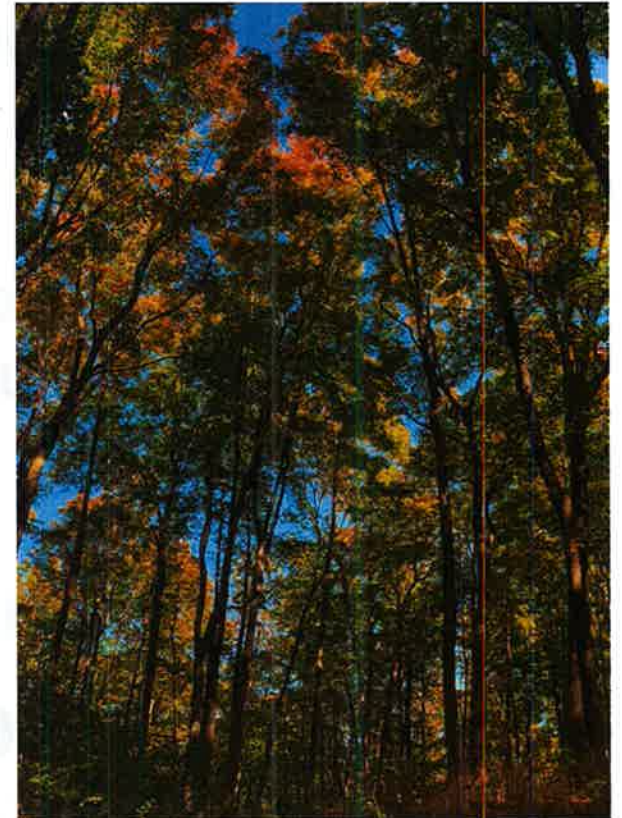
- Direct reporting on water quality, forest conditions and groundwater in Conservation Authority watersheds
- Report cards provide an opportunity to talk about how the health of our environment impacts public health





# Standardized Components of Watershed Report Cards

- Scale
- Indicators
- Grading
- Format and Products



# Indicators

Indicators used are environmental measures related to CA business functions:

- protect and enhance water quality
- preserve and manage natural areas

Criteria for selection:

- Is the indicator relevant and understandable?
- Is it responsive to change (improving, getting worse)?
- Is it applicable across CA watersheds?
- Is it at an appropriate scale?
- Is long-term monitoring feasible?







# 2011 Indicators

Surface Water Quality	Forest Conditions	Groundwater Quality
Total Phosphorus	% Forest Cover	Nitrate + Nitrite
<i>E. coli</i> Bacteria	% Forest Interior	Chloride
Benthic Macroinvertebrates	% Riparian Zone Forested	

## Example: Surface Water Quality Indicators

- Key indicators of broad issues: nutrients, bacteria/waste, aquatic health
- Environmental measure of CA programs delivered such as stewardship/non-point source programs



# Grading for Surface Water Indicators

Total Phosphorus (mg/L)	<i>E. coli</i> (CFU/100 mL)	Benthic Invertebrates (Modified Family Biotic Index based on New York State tolerance values)	Point Score	Grade
<0.020	0 – 30	0.00 - 4.25	5	A
0.020 - 0.030	31 – 100	4.26 - 5.00	4	B
0.031 - 0.060	101 – 300	5.01 - 5.75	3	C
0.061 - 0.180	301 – 1000	5.76 - 6.50	2	D
>0.180	>1000	6.51 - 10.00	1	F

- Indicator ranges developed as a collaborative process with CAs with expert input from the province and other expertise
- A - Excellent, B - Very Good, C - Good, D - Poor, F - Very Poor

# The NEW Report Card Format

- Maps and Information relevant to subwatersheds
- Standardized grading
- Locally relevant information
- Accessible online





# Benefits of Watershed Report Cards



- Translates the science and familiarizes people with their watersheds & conditions or issues that impact them.
- Recognizes local partnerships & CA programs
- Informs decision-making and guides local planning
- Helps people to understand how broader issues such as climate change impacts them locally





# Benefits of Watershed Report Cards

- Reporting creates value for investment in monitoring and watershed implementation
- Long term commitment to reporting important - it reveals trends and enables us to track progress
- Contributes to watershed planning process





# Watershed Checkup

## Conservation Halton Watershed Report Card 2013

- Provides information on watershed health including:
  - Surface Water Quality (TP, Benthic Index)
  - Groundwater Quality (Nitrite + Nitrates, Chlorides)
  - Forest health (% forest cover, % forest interior and % riparian buffer 30m or more)
  - Impervious land cover

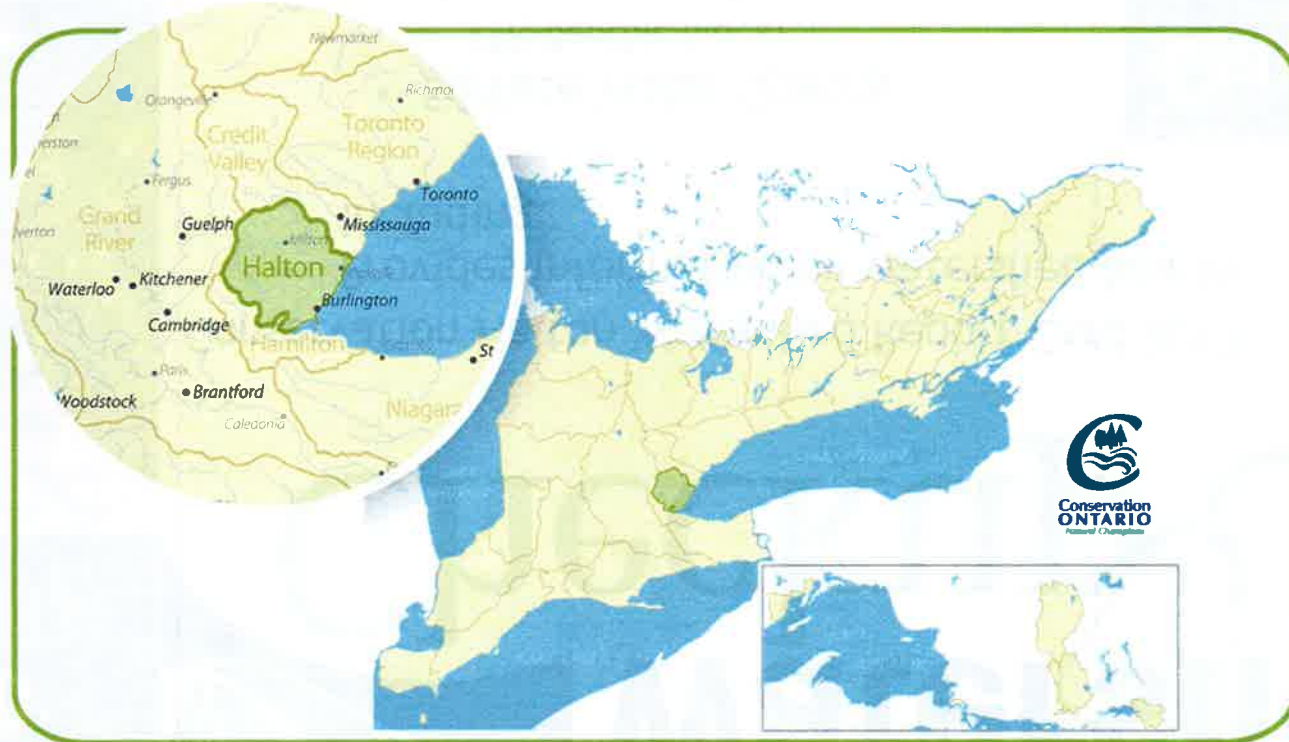
## Grading

A	Excellent
B	Good
C	Fair
D	Poor
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# Conservation Halton Watershed



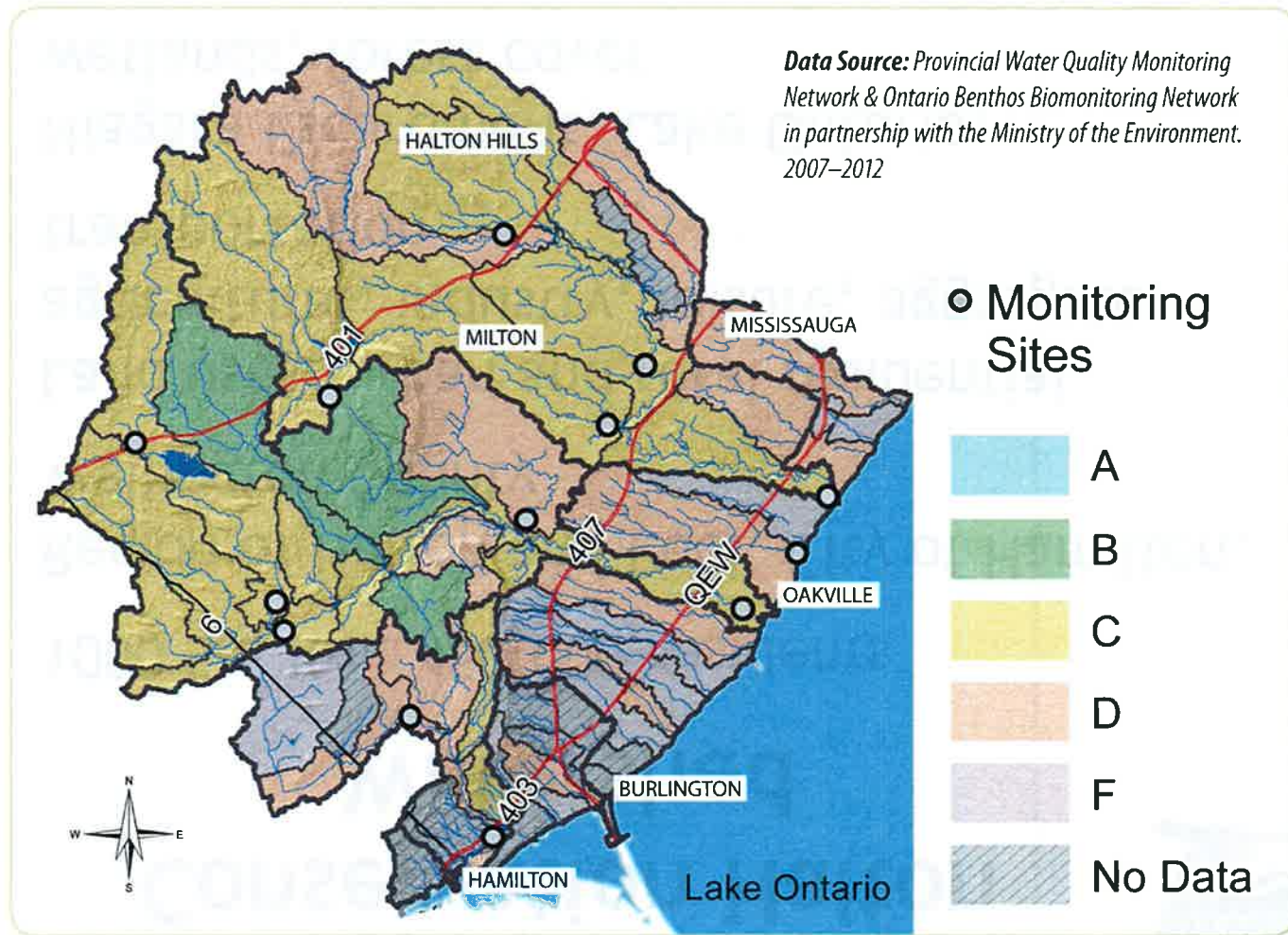
# Conservation Halton Watershed



- 1000 Sq. Km. 450,000 residents
- Region of Halton and Peel, City of Hamilton, Wellington County
- Land uses: urban and rural residential, agricultural, industry, leisure, aggregate, transportation
- Niagara Escarpment, Lake Ontario, wetlands, forest cover
- Lake water is dominant source of drinking water
- Rapidly expanding communities



# Surface Water Quality





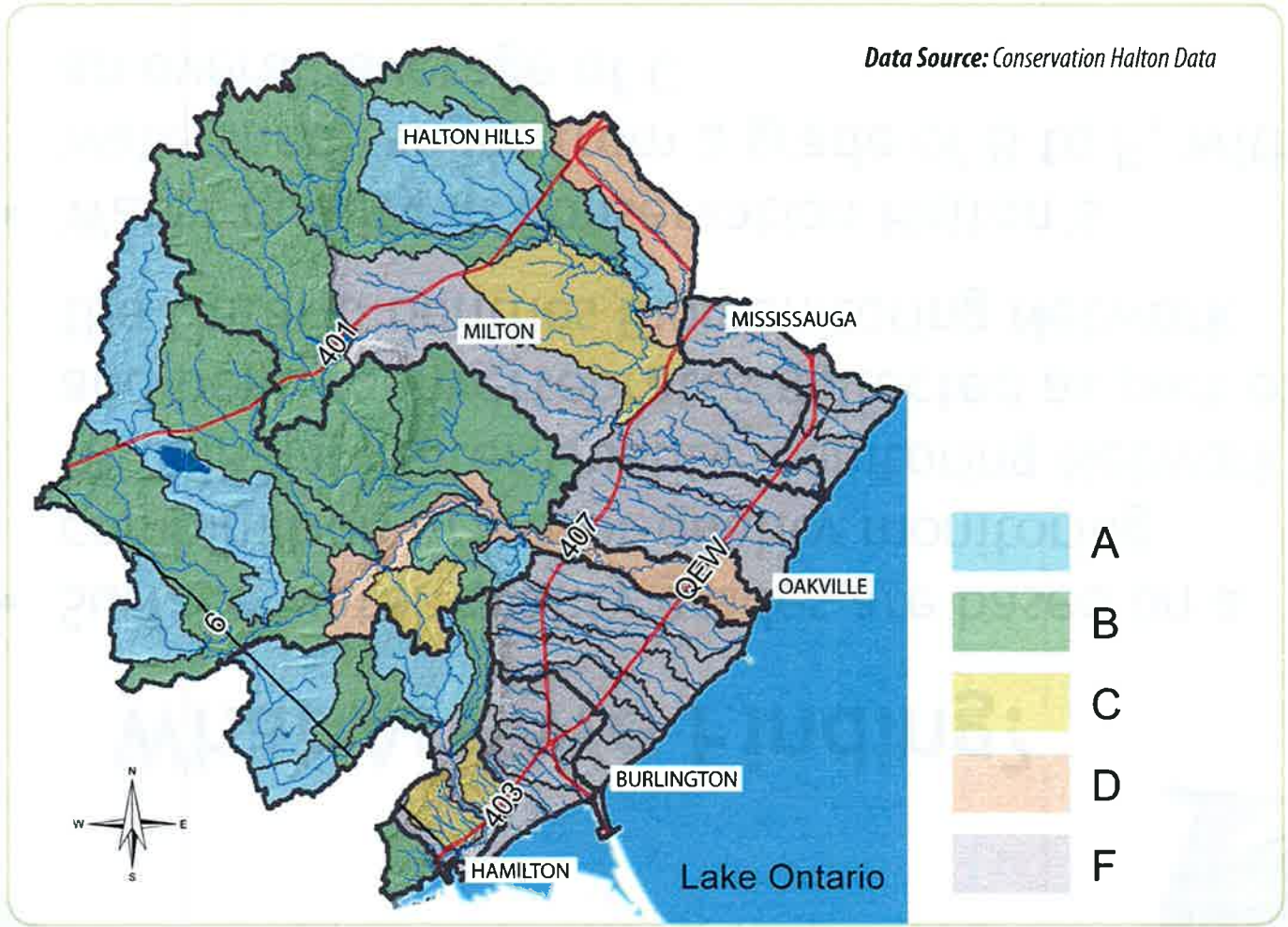


## What Are We Finding?

- Surface water quality grades are based on a combination of water quality monitoring (Provincial Water Quality Monitoring Network) and benthic invertebrates collected as part of the Ontario Benthos Biomonitoring Network
- Water quality in Conservation Halton's watershed ranges from a grade of B to F, with an overall average of C
- Best water quality is found in the headwaters where human activities have the least negative impact



# Impervious Land Cover





## What Are We Finding?

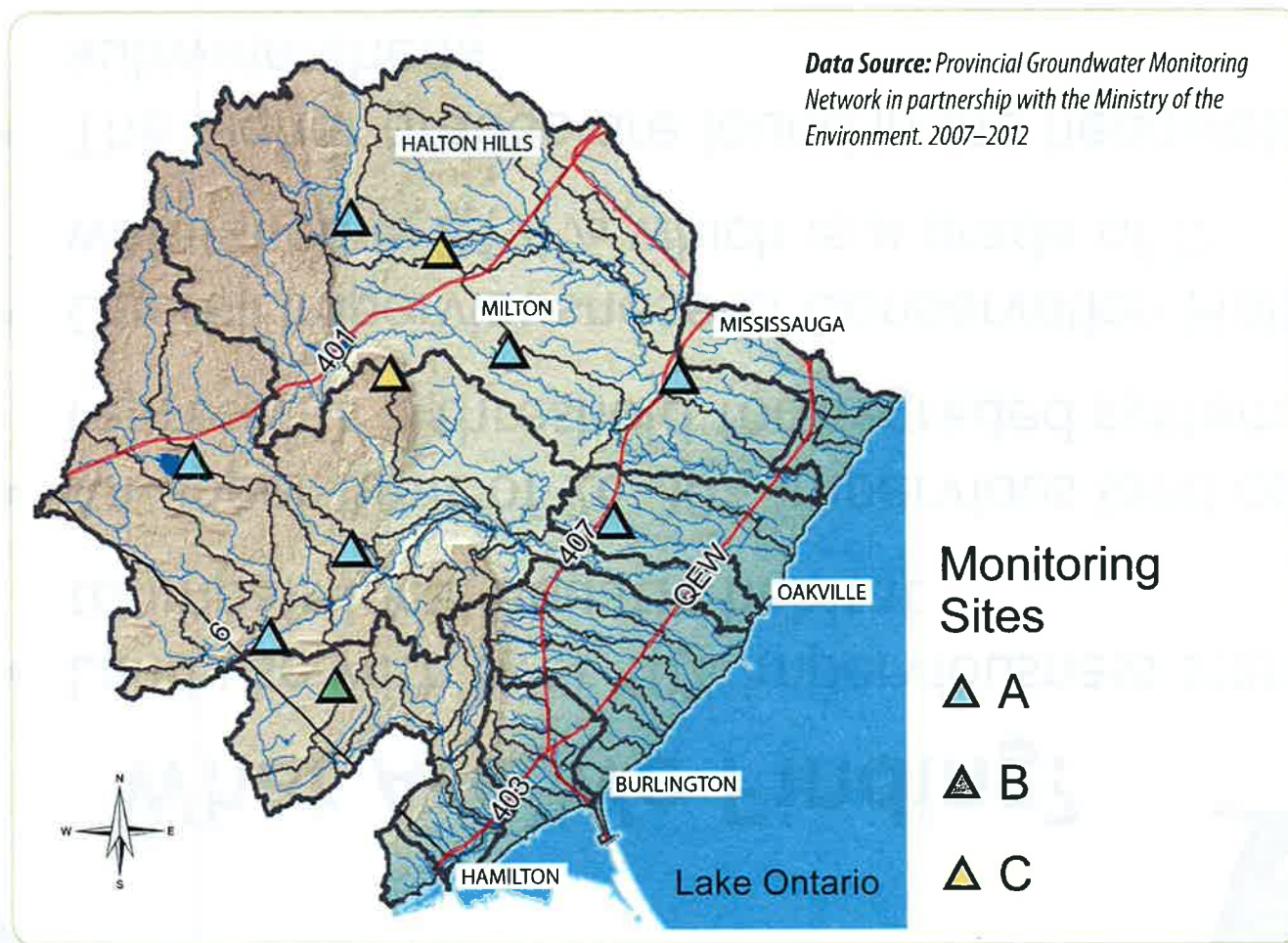
- Land use with over 10% imperviousness starts to impair local aquatic habitat
- An upper limit of 26-30% impervious land cover represents a threshold for degraded systems
- Overall imperviousness in Conservation Halton watershed is 21.4% which is a grade of D
- The higher grades are found in the headwater subwatersheds
- Urban areas have the lowest grades







# Groundwater Quality



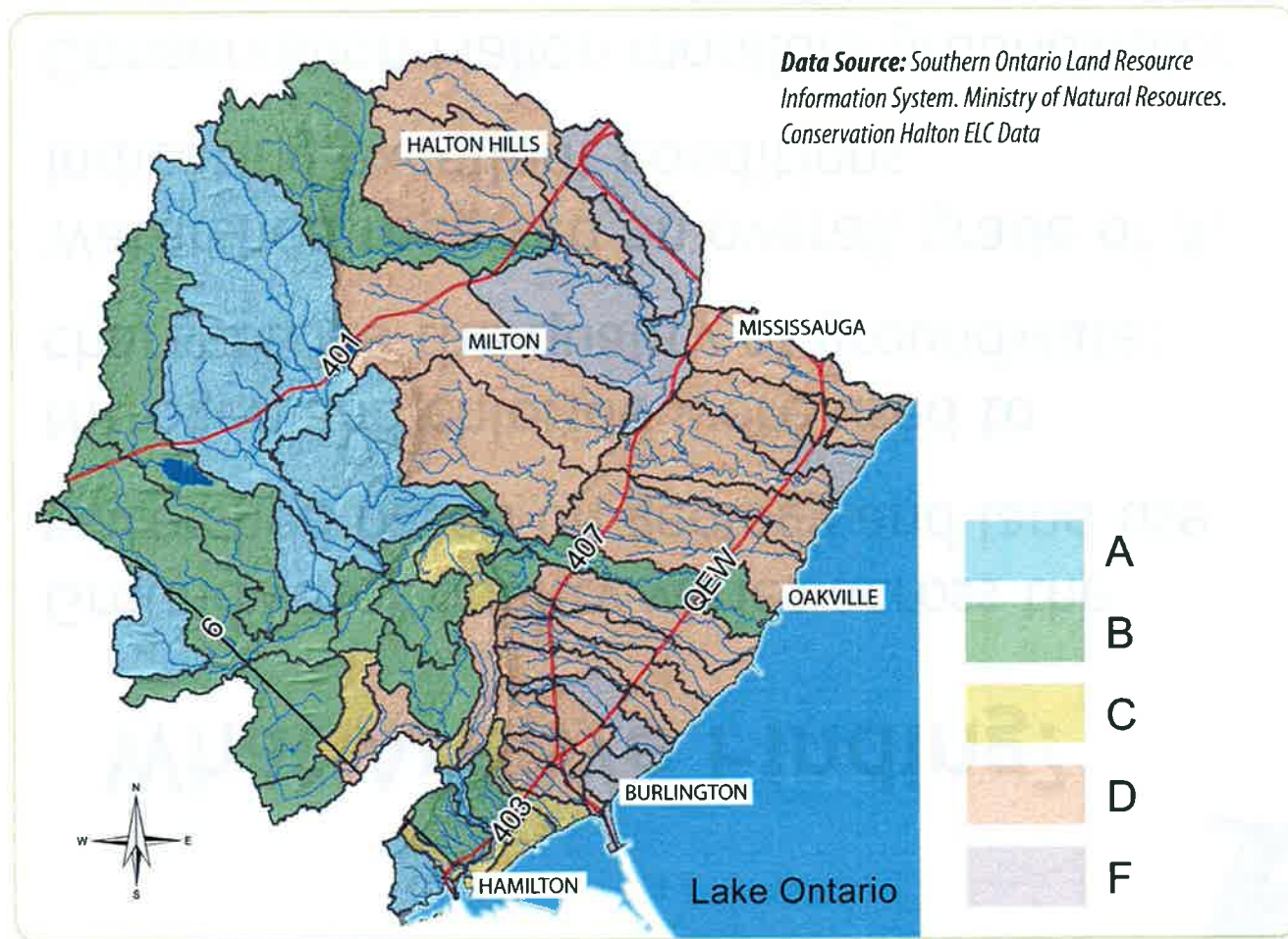


## What Are We Finding?

- Groundwater quality varies across the watershed based on geology and land use
- Nitrogen and chloride were used to characterize the quality of groundwater
- Watershed received an overall grade of A, indicating excellent conditions.
- Conservation Halton monitors groundwater quality using eleven wells (Provincial Groundwater Monitoring Network) across the watershed



# Forest Conditions







## What Are We Finding?

- Forests provide many ecological functions such as wildlife habitat, air purification, erosion control, and recreational opportunities
- Overall forest cover in our watershed is 26.4% or a grade of C
- The majority of large forested areas are located above the Niagara Escarpment
- A minimum of 30% forest cover is typically necessary to sustain species biodiversity within a watershed



## What Can We Do To Improve the Health of our Watersheds...Our Communities

- Increase natural vegetation around our creeks and streams; providing naturalized buffers
- Don't mow lawns to the edge of creeks; allow natural vegetation to filter sediment before water enters our creeks
- Participate in community tree planting events
- Reduce the use of fertilizers
- Reduce road salt
- Educate ourselves on good land and water stewardship practices



## What Can We Do To Improve the Health of our Watersheds...Our Communities

- **Redevelopment Activities in Urban Areas:**
  - Encourage the use of permeable paving in parking lots; implement other low impact development techniques in commercial, residential and industrial areas when property upgrades are planned





## What Can We Do To Improve the Health of our Watersheds...Our Communities

- **New Development Activities:**
  - Protect and enhance green corridors and natural habitats for birds, fish and animals and to help cool the air in urban environments
  - Encourage native plantings
  - Educate new land owners about the natural areas adjacent to them & about good land and water stewardship practices



# Conservation Authority Programs and Services

- Environmental land-use planning
- Administration of Ontario Regulation 162/06, which ensures that development does not impact wetlands, shorelines or waterways
- Ecological monitoring
- Sustainable forest management
- Education and recreation experiences
- Stewardship program to provide landowner assistance.



Thank you

# Natural Champions for a Healthy Watershed





## What Are We Doing?

Conservation Halton is a community-based environmental agency that protects, restores and manages natural resources, such as creeks, forests and Niagara Escarpment lands through science-based programs and services. Our watershed region covers approximately 1000 square kilometers and includes Milton, Burlington, Oakville and parts of Mississauga, Hamilton, Halton Hills and Puslinch. There are three major watersheds in our jurisdiction – the Sixteen Mile Creek, Bronte Creek and Grindstone Creek.

### Environmental Planning

Conservation Halton protects local ecosystems and contributes to the quality of life in communities throughout the watershed. We provide land-use planning input and administration of Ontario Regulation 162/06, which ensures that development does not impact wetlands, shorelines or waterways. We also collect data through a number of ecological monitoring activities and use it to evaluate and report on existing conditions within the watershed and help establish targets for protection and rehabilitation activities.

### Water Resources Management

We manage water resources using multiple techniques, such as operating dams and overflow channels, flood forecasting, and the Source Water Protection program. These services help maintain secure supplies of clean water to protect communities from flooding and erosion, and to ensure that environmental planning is an integral part of community development.

### Forest Resources Management

We monitor and enhance forest resources using sustainable forest management practices and wildlife habitat improvements which contribute to the health of our watershed's natural environment.

### Lifelong Education and Recreation

We offer education and recreation experiences in natural environments that enrich the lives of people of all ages by increasing awareness and appreciation of the watershed's natural and cultural heritage.



## What You Can Do.

### Be a Watershed Steward

If we all work together, we can make a difference. Imagine if close to 500,000 people living in our watershed all made wise environmental choices! Collectively, private landowners own the majority of natural areas in Conservation Halton's watershed. Each parcel of land, whether it is urban or rural, and each individual action, can make a real difference to the health of our environment. Ultimately, we must balance human demand with the earth's ability to regenerate resources and provide services. Whether you live in a city, or close to a forest, wetland, meadow or stream, there are lots of actions you can do to help our natural environment thrive!

- Plant native species on your property
- Keep yard waste and garbage out of natural areas
- Avoid using toxic pesticides and fertilizers
- Resist the urge to "tidy up" the forest floor
- Learn to recognize and control the spread of invasive species
- Protect your well from contamination
- Regularly maintain and upgrade your septic system

### We are here to help

Our website has information on everything from planting trees, to selecting native species of plants, to helping protect critical fish and wildlife habitats. We also have a number of community action and volunteer programs, education programs for children, and stewardship tips. We can offer suggestions about how to make your property more environmentally friendly and guide you to available funding opportunities.

For a more detailed discussion please visit  
[www.conservationhalton.ca/reportcard](http://www.conservationhalton.ca/reportcard)



### Conservation Halton

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# Halton WATERSHED Report Card 2012



## Where Are We?



We are one of 36 Conservation Authorities across Ontario under the umbrella organization of Conservation Ontario.

### What Does This Report Card Measure?



### Why Measure?

Measuring helps us better understand our watershed. It helps us to focus our efforts where they are needed most and track progress. It also helps us to identify healthy and ecologically important areas that require protection or enhancement.

### What is a Watershed?

A watershed is an area of land drained by a river or stream.



Similar to the branch of a tree, creeks empty into streams, which then empty into larger streams, eventually forming one main trunk.

Within this system, everything is connected to everything else. In other words, actions which take place at the top of the system can and do affect those downstream.

### Grading

- A Excellent
- B Good
- C Fair
- D Poor
- F Very Poor

The standards used in this report card were developed by Conservation Authorities to ensure consistent reportings across the Province of Ontario and are intended to provide watershed residents with information to protect, enhance and improve the precious resources that surround us.

Conservation Halton has prepared this report card as a summary on the state of our forests, impervious land cover, surface water, and ground water resources.



Conservation  
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## Surface Water Quality

Water quality in Conservation Halton's watershed ranges from a grade of B to F, with an overall average of C. The best water quality is found in the headwater areas where human activities have the least negative impact.



## Forest Conditions

Forests provide many ecological functions such as wildlife habitat, air purification, erosion control, and recreational opportunities. The overall forest cover in our watershed is 26.4% or a grade of C. The majority of large forested areas are located above the Niagara Escarpment.



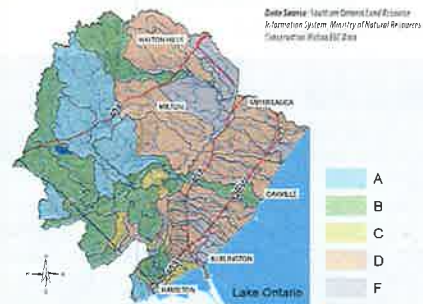
## Impervious Land Cover

If 10% of a watershed's land cover is impervious it can begin to result in the loss of aquatic species. By the time you reach 26 to 30% imperviousness, entire aquatic ecosystems can be permanently damaged. Overall imperviousness in our watershed is 21.4% which is a grade of D.



## Groundwater Quality

Groundwater quality varies across the watershed based on geology and land use. Nitrogen and chloride were used to characterize the quality of groundwater with the watershed, receiving an overall grade of A, indicating excellent conditions.



Conservation Halton monitors surface water quality as part of the Provincial Water Quality Monitoring Network (PWQMN) and the Ontario Benthos Biomonitoring Network (OBBN). The overall surface water quality grades are a combination of both scores.

As part of the PWQMN, water samples are collected monthly from March to October at locations across the watershed and analyzed for 37 parameters (e.g. total phosphorus, chlorides and nitrates). As Conservation Halton does not monitor for *E.coli*, it was not a factor in the final grading.

Benthic invertebrates, collected as part of OBPN, are aquatic organisms that live in the stream bed. They are excellent indicators of water and habitat quality because they tolerate a range of conditions and can reflect long term trends in water quality.

A minimum of 30% forest cover is typically required to sustain species biodiversity within a watershed. The size and shape of individual forests are also important because some species require large forested areas with breeding habitat that is well buffered from the edge of the forest. In addition, the specific species of plants within a forest help determine which wildlife species can live there.

The location of individual forests in relation to one another is also an important factor in the distribution of plants and wildlife. In fragmented landscapes such as in southern Ontario, the maintenance and restoration of natural corridors to link forest patches is valuable in creating natural heritage systems which are more resilient to disturbance.

Impervious land cover includes hard surfaces that do not allow water to absorb into the soil, such as roads, driveways, parking lots and rooftops. Runoff can carry pollutants as it runs along these surfaces and reach local creeks, lakes and aquifers. These pollutants can include gasoline, fertilizers, detergents, salts, pet waste and other toxic chemicals.

Runoff from hard surfaces also increases the amount of water that would naturally occur in a stream, since less is absorbed by the ground. This can cause higher, faster flows resulting in flooding, erosion and habitat degradation.

Areas with natural vegetation absorb runoff from rain and snow and help to filter impurities before they impact water quality, quantity and stream health. Natural vegetation also helps to moderate stream temperatures and flows, and supports aquatic life.

Groundwater is the water found beneath the earth's surface in layers known as aquifers. We monitor the quality of groundwater using eleven wells of the Provincial Groundwater Monitoring Network (PGMN) across the watershed. Samples are collected annually and are analyzed for calcium, magnesium, chloride, sodium, nitrogen, phosphorous and metals.

Nitrogen and chloride were used as the basis for grading the watershed since they are influenced by human activities. For example, fertilizers and septic systems can increase nitrogen concentrations. Similarly, chloride in groundwater is the result of both natural and human influences, and can be released by septic systems, water softeners and through the salting of roads.

Base maps: TopographiQue's Pro 11r

