

## Exploring and Evaluating our Impact on Local Watersheds

### Lesson Overview

- Students will explore and map the locations of Canadian Watersheds.
- Students will examine the importance of our local watershed and evaluate their own personal impact on local watersheds.

### Grade Level

Grade 9 Geography

### Time Required

Two 75 minute classes

### Link to Canadian National Standards for Geography

Essential Element #5: Environment and Society

- World patterns of resource distribution and utilization
- Use and sustainability of resources
- Environmental issues (e.g. global warming, loss of biodiversity, deforestation, ozone depletion, air pollution, water pollution, acid precipitation, disposal of solid waste)

Geographic Skill #2: Acquiring geographic information

- Systematically locate and gather geographic information from a variety of primary and secondary sources.

### Additional Resources, Materials and Equipment Required

- Appendix A: Halton Watershed Map in Ontario (attached)
- Appendix B: Protecting My Local Watershed Report Card Assignment (attached)
- Appendix C: Evaluation Rubric (attached)
- Appendix D: Report Card Template (attached)
- Watersheds of Canada poster-map
- Access to computers and the internet

#### Websites:

*Canadian Atlas Online Watersheds* theme

[http://www.canadiangeographic.ca/atlas/themes.aspx?id=watersheds&sub=watersheds\\_flow\\_canadaswatersheds&lang=En](http://www.canadiangeographic.ca/atlas/themes.aspx?id=watersheds&sub=watersheds_flow_canadaswatersheds&lang=En)

The Source of life

Canada's watershed protection action guide

[http://192.168.1.8/magazine/jun11/watershed\\_protection\\_guide.asp](http://192.168.1.8/magazine/jun11/watershed_protection_guide.asp)

Conservation Halton

<http://www.conservationhalton.on.ca/ShowCategory.cfm?subCatID=1001>

### Main Objective

Students will examine Canada's watersheds as well as their local watershed and use *The Source of life: Canada's watershed protection action guide* to evaluate what they currently do to protect it.

### Learning Outcomes

By the end of the lesson, students will be able to:

- define important terms associated with watersheds;
- locate and explain the significance of Canadian watersheds as well as their local watershed;
- outline what they are doing to protect the local watershed and what they could be doing to ensure the sustainability of that watershed.

The Lesson

The Lesson		
	Teacher Activity	Student Activity
<b>Introduction</b>	<p>Introduce the idea of water use and watersheds using current statistics. (Refer to the <i>Canadian Atlas Online Watershed Awareness and Watersheds</i> themes to prepare statistics or an introductory note on the topic.)</p> <p>Brainstorm or initiate a discussion on watershed issues to determine prior knowledge.</p>	<p>Listen actively to the lesson.</p> <p>Participate in the class discussion.</p>
<b>Lesson Development</b>	<p>Ask students to work in small groups to answer the following questions using the Watersheds of Canada poster-map:</p> <ul style="list-style-type: none"> <li>• Identify Canada's largest watershed.</li> <li>• Identify your local watershed.</li> <li>• Identify major cities in each watershed.</li> <li>• Locate areas with potential competing interests for fresh water.</li> <li>• Identify other information that is provided on the map such as exploitation and conservation citizen groups, diversions, water usage and case studies as they relate to the local area.</li> </ul> <p>Lead a class discussion about the health of their local watershed. Ensure that opinions are supported with evidence from the <i>Watersheds of Canada poster-map</i>. Where possible, compare the health of the province's watersheds to the health of the local watershed.</p> <p>Distribute a map that focuses on their local region. <i>Appendix A: Halton Watershed Map</i> is an example that can be used as a sample case study prior to investigating their local watershed.</p> <p>Ask students to work in pairs to identify important aspects of the region and the watershed (e.g. the location of the population, possible/probable points of water withdrawal, possible/probable points of water contamination etc...)</p> <p>Distribute copies of <i>The Source of life: Canada's watershed protection action guide</i>. Use the guide as a resource to discuss the</p>	<p>Work with 2-3 other students to locate and identify features of watersheds using the Watersheds of Canada poster-map. Be prepared to share findings with the class.</p> <p>Participate in the class discussion.</p> <p>Use <i>Appendix A: Halton Watershed Map</i> to identify important aspects of the watershed.</p> <p>Review <i>The Source of life: Canada's watershed protection action guide</i> and discuss how to</p>

	sustainability of a local watershed with students.	sustain a local watershed.
<b>Conclusion</b>	<p>Distribute a copy <i>Appendix B: Protecting My Local Watershed Report Card, Appendix C: Evaluation rubric</i> and <i>Appendix D: Report Card Template</i>.</p> <p>Students will recognize the format of this report card as this is the format used to report on their personal progress. Explain to the class that they are going to report on their local watershed. Students can use this activity to assess their personal connection and the level of protection they provide for their local watershed, or they can approach this in a more general way that reflects their community's connection to and protection of, their local watershed.</p> <p>Review the instructions in <i>Appendix B</i> and assist students as required.</p> <p><b>Notes:</b>  <b>Student and school data and teacher names:</b> Here students will record fictional (Sea-cil) or real data for student name, school name and address, grade Principal etc. For each course student's will record a teacher's name – encourage creativity here.  <b>Courses:</b> These have been taken directly from <i>The Source of life: Canada's watershed protection action guide</i>. The names have been slightly modified.  <b>Comments:</b> Here students will reflect on the strengths, areas for improvement and next steps for their local watershed. The following prompts can help students assess their local situation:  <b>Sample entry:</b> "Sea-cil has had remarkable success this semester! He clearly demonstrated his knowledge of our local waterway during class discussions. He knows how our local river connects to other watersheds and drainage basins. He has a good grasp of the terminology associated with this topic. Now Sea-cil needs to go further with the analysis of the facts he has learned. He needs to be able to predict the impact that current local activities may have on the sustainability of our watershed."</p>	<p>Complete a "report card" on themselves evaluating what they are currently doing and what they could be doing to protect their watershed.</p>

	Set a due date to submit the completed report card.	Submit the completed report card.
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### Lesson Extension

- Watch the film *Waterlife* and take notes using the following format. (Complete the first two columns while viewing the film. Complete the third column during a class discussion after viewing the film.)

Location in the Great Lakes	Local Issue	Similar issues in my local watershed

- Create a Personal Action Plan Campaign to improve a watershed within the local community.
- Organize a field trip to a examine issues affecting a local watershed.

### Assessment of Student Learning

- Assess aspects of the discussion with students to determine their readiness to continue to the next step in the lesson.
- Evaluate *Appendix C: Protecting My Local Watershed Report card* using the rubric provided.

### Further Reading

- Protect Your Watershed: An interactive guide to taking action  
<http://www.canadiangeographic.ca/watersheds>
- RBC Bluewater Foundation  
<http://bluewater.rbc.com/>
- Bakker, Karen J. *Eau Canada: the Future of Canada's Water*. Vancouver, BC: UBC, 2007. Print.

**Appendix A:  
 Halton Watershed Map (in Ontario)**



Source: Conservation Halton  
<http://www.conservationhalton.on.ca/uploads/Homepage/Parks%20and%20Recreation/Maps%20and%20Trail%20Guides/revisedmapforpage11.jpg>

**Appendix B:**

# Protecting My Local Watershed Report Card

NAME: \_\_\_\_\_

DUE DATE: \_\_\_\_\_

## THE ASSIGNMENT:

The objective of this assignment is to evaluate what you are currently doing to protect your local watershed and to propose ways that you could improve your current behaviours to ensure that our local watershed is able to sustain itself for future generations.

Use what you have learned about watersheds as well as what is proposed in *The Source of life: Canada's watershed protection action guide* to evaluate your current impact on our local watershed. You will not only need to give yourself a mark you must:

- Write a comment that explains your mark. A level 4 comment will include specific examples that support the report card comment. Also it will suggest how you might improve your mark.
- Complete the learning skills section of the report card.

Remember that all three parts of the report card should fit together. It is unlikely that a student would have a report where the learning skills are all excellent yet the mark is extremely low!

**Your Waterway:** Explain what you know about your local Watershed, how well you understand it and what you might need to learn more about to become help preserve it and help sustain it for future generations. Remember to include proof of your knowledge!

**Writing 101:** Have you ever written a letter to the government (local or national) about the use of water by Canadians? Have you been a part of a conservation group for water? Have you been a part of a group that promotes the sustained use of water?

**Water Culture:** Evaluate how you and your community are connected to the local watershed. How valued is water in your community? Are rain barrels common or very rare? Are events held to celebrate or enjoy elements of the local watershed? (Festivals in water side parks, events that promote sustainable use of water etc.) Is the local community dependant on the local water shed for cultural activities or for economic activities? Is the connection sustainable?

**Good Resident:** What practices do you and your family have when it comes to water use in the home? Do you use water bottles? Do you leave the taps running? Do you use a dishwasher? Do you pick up after your dog? How often is your car washed?

For the learning skills section, take time to think about your everyday actions and how they relate to the aspects of Citizen Action guide. Be sure to be honest about your current behaviours.

**Appendix C: Evaluation Rubric**

Criteria	Level 1	Level 2	Level 3	Level 4	Mark
<p><b>Thinking</b></p> <ul style="list-style-type: none"> <li>- Provision of supporting evidence in comments</li> <li>- Use of facts to support evaluation and judgments</li> </ul>	<ul style="list-style-type: none"> <li>- information is not clear as evidence;</li> <li>-limited accuracy or relevance of facts</li> </ul>	<ul style="list-style-type: none"> <li>- evidence is clear and supports point of view, though not consistently; few factual inaccuracies</li> </ul>	<ul style="list-style-type: none"> <li>- evidence is clear, consistently accurate, and supports factual point of view</li> </ul>	<ul style="list-style-type: none"> <li>- rich and persuasive evidence; strongly supports a clear and consistent point of view; highly accurate and factual</li> </ul>	/15
<p><b>Application</b></p> <ul style="list-style-type: none"> <li>- soundness of judgments in grades and learning skills</li> <li>- Logical, reasonable, insightful evaluation of how student is protecting the local water shed.</li> </ul>	<p>Evaluation of the student is based on illogical or unreasonable judgments about the actions they are taking to protect the local watershed.</p>	<p>Evaluation of the student is based on shallow judgments about the actions they are taking to protect the local watershed.</p>	<p>Evaluation of the student is based on reasonable judgments about the actions they are taking to protect the local watershed.</p>	<p>Evaluation of the student is based on clear, logical judgments about the actions they are taking to protect the local watershed.</p>	/10



# Protecting My Local Watershed Report Card

Grade:

Report Period:

Date:

Student  
Full name  
School  
Address

Grade:

Telephone:  
Fax:

Principal  
School Council Chair  
Board  
Address



Course	Marked Points	Percentage Score	Comments (Strengths/Weakness of Improvement/Next Steps)	Learning Skills 3 = Excellent 2 = Good, 1 = Fair, 0 = Needs Improvement														
				Communication	Collaboration	Critical Thinking	Creativity	Personal Responsibility	Self-Management									
Course Title: Year 10/11 Geography Course Code: KNOW IT 101 Teacher:	Final	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Course Title: Writing 101 Course Code: FENF00201 Teacher:	Final	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Course Title: Water Culture Course Code: WTR101 Teacher:	Final	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Course Title: Good Resident Course Code: RCG101 Teacher:	Final	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
Student's Average				Principal's Recommendation:														

Principal's Signature