

Issue 8  
May 2005



# EdGEO

News from the National Workshop Program

## Let's Talk \$\$\$

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### How are we funded?

In 2004 EdGEO received \$26 500 of funding from the Canadian Society for Petroleum Geology (CSPG), Canadian Geoscience Council (CGEN), the Pacific Section of the Geological Association of Canada and the Calgary Local Organizing Committee of GeoSciEd IV. So far in 2005 we have received support from CSPG and CGEN. In the past EdGEO has also received funds from the Mineralogical Association of Canada and the Geological Association of Canada. Universities, federal and provincial governments provide in kind support in salaries of volunteer staff and by donating public outreach products (posters, maps, brochures etc.) given to teachers in their resource packages.

least one in every province and territory) have pretty much exceeded our ability to fund them. Our fund raising efforts have not been a howling success - letters of solicitation sent to EnCana and a funding application to PromoScience were not successful. Invitations to donate, sent to each of the GAC Divisions and Sections, yielded polite replies but no money. EdGEO is looking for ideas that could help it secure funding so ideally our annual expenditures can be supported by interest earned from a "nest egg". If you would like to donate, have fundraising suggestions, or know of a potential dowager, please contact Jane Wynne, EdGEO National Committee, [jwynne@nrcan.gc.ca](mailto:jwynne@nrcan.gc.ca) or (250) 363-6471.

### More with Less

Many EdGEO groups have been creative in finding local sponsors and serious in-kind support to subsidize workshops, minimizing what they have had to request from EdGEO. Our policy puts a ceiling of \$3,000 on the amount of financial support a workshop can apply for. Groups like the Atlantic Geology Society have delivered a three day workshop with field trips and teacher resource packages worth \$350 for 31 teachers using only \$642 in EdGEO funds!

### Dowager Dollars

The ideas we have to seed more EdGEO workshops across the country (at

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## EdGEO Sponsors



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EdGEO Website [www.edgeo.org](http://www.edgeo.org) (application & report forms online, other links)

## Build a Groundwater Model: An example of a Geoscape Toronto classroom activity

Geoscape Toronto is leading the way in developing classroom activities that relate to their Geoscape poster. The "Build a Groundwater Model" insert in this newsletter is one example of the great selection of activities developed by the Geoscape Toronto team to complement their poster. The activities were designed to provide experiential learning opportunities for students in Grades 7 to 9 and address a selection of curriculum expectations from the following Ontario Curriculum documents - Science and Technology: *Earth and Space Systems* (Grades 7 and 8), History and Geography: *Geography* (Grades 7 and 8), Canadian and World Studies: *Geography of Canada* (Grade 9).

This activity and many others are available on the Geoscape Toronto website [http://geoscape.nrcan.gc.ca/toronto/index\\_e.php](http://geoscape.nrcan.gc.ca/toronto/index_e.php).

## Thanks to the EdGEO Rockology Workshop

Diane Hanson, Regina Catholic Schools, [hansod99@rcs.sk.ca](mailto:hansod99@rcs.sk.ca)

I just wanted to let you know how much I appreciated the EdGeo Rockology workshops. I am a lay person and these workshops were just what I needed. I came away with a better understanding of the science of geology, of how everything is connected and how events like volcanoes and tsunamis work, as well as their effects, geologically speaking. The binder you provided us with was very informative, visual, and full of useful classroom activities and other available resources. I especially liked how things were linked to our curriculum. I particularly liked how you and Sarah conducted the workshops: your enthusiasm and knowledge were very inspiring and even though there was structure to the workshops you were flexible enough to let us meander our way through the information. And the rock kit was awesome - I now have information I can fall back on in the future! Thanks a lot!

## Planet Earth Workshop

Heather Scholz - Senator Patrick Burns Jr. High School, [rcscholz@telusplanet.net](mailto:rcscholz@telusplanet.net)

I was told that the "Planet Earth" workshop offered through the Calgary Science Network was outstanding, and though I have had experience teaching this unit, was encouraged to attend. The workshop was presented by Godfrey Nowlan, Beverly Ross, Mark Collard and Rod Smith and was held on Saturday, February 5, 2005 at Natural Resources Canada's Geological Survey of Canada office in Calgary.

What impressed me immediately when I walked into the workshop was the abundance of resources that were brought by our presenters. All around the room were maps and posters hanging on the walls, a front table filled with minerals, rocks and fossils, as well as the floor filled with bins and baskets of lab activities and assorted materials.

This workshop was prepared in such a way that the teachers

could understand the details of the concepts and learn how to present the information with terminology suited to students at the grade seven level. All too often I have attended sessions that present information that is beyond the capabilities of my students.

The workshop included several hands-on experiments that I could conduct with my students. The activities and corresponding lesson plans, diagrams and worksheets provided were very practical. As teachers we are recognizing that more and more of our students are visual and kinesthetic learners. Each concept that is introduced in the Planet Earth unit had at least one visual and/or kinesthetic aid that we could take back to share with our students in the classroom. Besides posters, books and diagrams each teacher was given a

"grab bag" of various manipulatives to demonstrate the many abstract concepts in the unit. A big "thank you" to EdGeo for providing all of us with the rock and mineral kits and fossils to begin our own collection!

As an experienced teacher, I was envious of the university education students with whom I was sitting. They will begin their careers with information, materials and activities that I've spent years trying to find. Any teacher without a geology background would have left this workshop with more than a basic understanding of the Planet Earth unit and the materials needed to initiate students' learning.

Like our students, teachers love motivating, visual, hands-on learning and that's exactly what we received in the "Planet Earth" workshop.

# The Oak Ridges Moraine



## Build a Groundwater Model

In this activity you will be given materials to create your own groundwater model. You will be able to watch how water and contaminants interact with the different layers of gravel, sand and clay and the potential environmental implications.

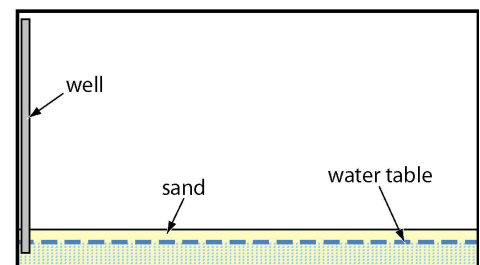
Carefully read and follow the instructions below to build your model. Complete the questions in your notebook.

### Materials

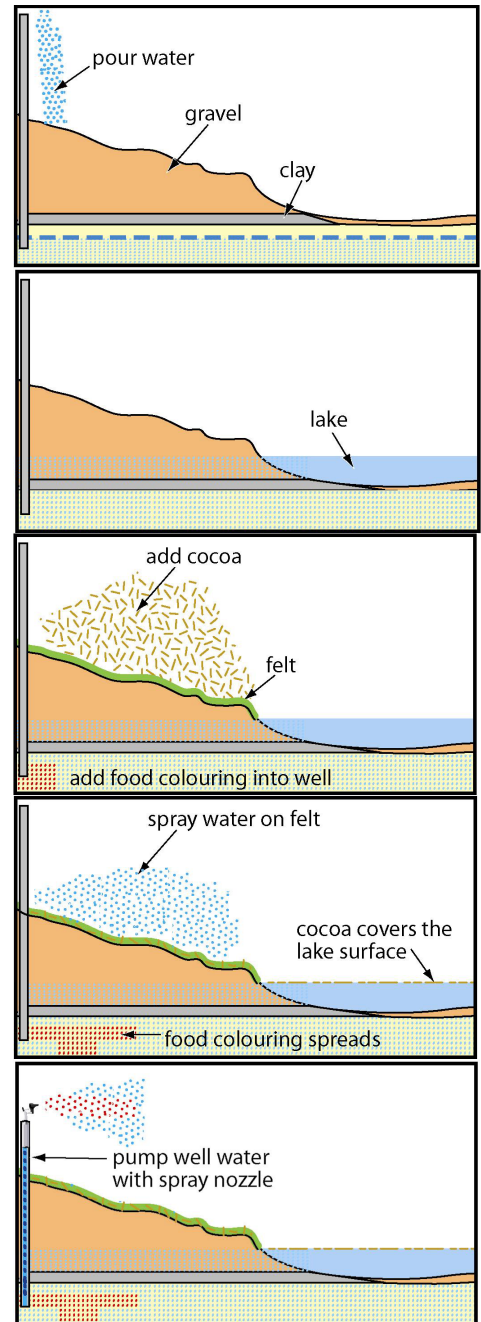
- 15 cm x 20 cm clear plastic container that is a least 15 cm deep
- 0.5 kg of modelling clay
- 1 kg of white play sand
- 1 kg of aquarium gravel
- 1 wide drinking straw or clear plastic tube
- 1 plastic spray bottle (the stem that extends into the bottle must be clear and fit easily inside the straw)
- 1 small piece (3 cm x 5 cm) of green felt
- red food colouring
- 1 bucket of clean water and small cup to dip water from bucket
- clear tape
- 1 small piece (3 cm x 3 cm) of cheese cloth to cover one end of the straw/clear plastic tube
- small elastic band

### Method

1. Fasten the piece of cheese cloth over the end of the straw using the elastic band.
2. Allowing approximately 0.5 cm clearance from the bottom of the container, fasten the straw directly against the long side of the container with a piece of tape. The end of the straw with the cheese cloth should be facing down. This will represent two separate groundwater well functions.
3. Pour a layer of white sand completely covering the bottom of the clear plastic container, making it approximately 2.5 cm deep. Carefully pour just enough water into the sand, wetting it completely. The water level should be higher than the bottom of the straw, but there should be no standing water on top of sand. The water is now stored in the pore spaces around the sand particles to creating an aquifer.



4. Flatten the modelling clay (like a pancake) and partially cover the sand with the clay. Try to press the clay into the three sides of the container in the area covered. The clay represents an aquitard that keeps water from passing through it. Pour a small amount of water onto the clay. Observe how the water remains on top of the clay, only flowing into the sand below in areas not covered by the clay.
5. Use the aquarium gravel to form the next layer. Rinse the gravel to remove dust, so that it does not cloud the water. Place the rocks over the sand and clay, covering the entire container. To one side of your container, slope the rocks, forming a high hill and a valley. Now pour water into your aquifer until the water in the valley is even with your hill. Observe the water around the rocks that is stored within the aquifer as well as the surface supply of water, or small lake, that has formed.
6. Place the small piece of green felt on top of the hill. Use a little clay to securely fasten it to one of the sides of the container.
7. Sprinkle some of the cocoa on top of the hill. The cocoa represents improper use of lawn chemicals or fertilizers.
8. Put a few drops of food colouring into the straw, to represent farm chemicals, liquid wastes and used motor oils that are often disposed of in old wells. Observe the colour of the sand in the bottom of the container.
9. Fill the spray bottle with water. Now make it rain on top of the hill and over the cocoa. Observe what happens to the cocoa (fertilizer/pesticide).
10. Take another look at the well you contaminated. The pollution has probably spread further. Now remove the top of the spray bottle and insert the stem into the straw, depress the trigger to pump up the water from the well.



## Questions

1. What does the food colouring represent? Why should we be concerned that the food colouring has spread?
2. What problems can be associated with groundwater contamination?
3. What does the green felt represent? What happens to the cocoa powder after spraying the water.
4. How could what happened to the cocoa affect nearby watersheds?
5. What happened to the food colouring when you pumped the sprayer? Was the water clean or contaminated? Why is this important?
6. How might urbanization of the Oak Ridges Moraine impact ground and surface waters? List ideas for reducing these impacts.

# EdGEO Workshops in 2004

2004	Grant Recipients	Focus/Highlights	Number of Participants	Grant (refund) Net Grant
Victoria BC February	Pacific Section of the Geological Association of Canada (PAC-GAC)	<ul style="list-style-type: none"> <li>Grade 10 Earth Science</li> <li>Geological time and fossils</li> <li>Plate tectonics, earthquakes, volcanoes</li> </ul>	10	\$1856.28 (206.33) <b>\$1649.95</b>
Prince George BC March	The Exploration Place	<ul style="list-style-type: none"> <li>Energy resources of northern BC</li> <li>Science boxes and Exploration Place</li> </ul>	17	\$2080.00 (\$480.00) <b>\$1600.00</b>
Calgary AB March	Calgary Science Network	<ul style="list-style-type: none"> <li>Grade 7 Curriculum</li> <li>Planet Earth</li> </ul>	30	<b>\$2300.00</b>
Calgary AB March	Calgary Science Network	<ul style="list-style-type: none"> <li>Grade 3 Curriculum</li> <li>Rocks and Minerals</li> </ul>	29	<b>\$2000.00</b>
St. Catherines ONT May	GAC/MAC 2004	<ul style="list-style-type: none"> <li>Rocks and Minerals</li> <li>Plate tectonics</li> <li>Fossils and Geologic Time</li> <li>Fieldtrip</li> </ul>	18	\$3000.00 (674.71) <b>\$2325.29</b>
Drumheller AB July	Royal Tyrrell Museum	<ul style="list-style-type: none"> <li>Field studies palaeontology /geology</li> <li>five day workshop including three days of fieldtrips</li> </ul>	14	<b>\$3000.00</b>
Dartmouth NS August	Nova Scotia EdGEO Workshop Committee	<ul style="list-style-type: none"> <li>“Geology Rocks” a three day workshop centred on rocks, minerals, fossils and time</li> <li>two half day fieldtrips</li> <li>third day of concurrent sessions on advanced topical subjects</li> </ul>	31	\$2900.00 (\$2258.94) <b>\$641.06</b>
Field BC August	The Yoho Burgess Shale Foundation	<ul style="list-style-type: none"> <li>Three day workshop</li> <li>Transect of the Rockies fieldtrip</li> <li>History of life, Rocks and mountain building, Climate change, geohazards and UNESCO sites</li> </ul>	23	<b>\$3000.00</b>
Fort Vermilion AB September		<ul style="list-style-type: none"> <li>Planet Earth</li> <li>Grade 7 curriculum</li> </ul>	9	<b>\$0.00</b>
Victoria BC October	PAC-GAC	<ul style="list-style-type: none"> <li>Grade 10 Earth Science</li> <li>Geological time and fossils</li> <li>Plate tectonics, earthquakes, volcanoes</li> </ul>	14	\$372.32 (\$6.60) <b>\$365.72</b>
Kelowna BC October	PAC-GAC	<ul style="list-style-type: none"> <li>Grade 10 Earth Science</li> <li>Geological time and fossils</li> <li>Plate tectonics, earthquakes, volcanoes</li> <li>Half day fieldtrip</li> </ul>	18	\$2975.31 (1094.09) <b>\$1881.22</b>



# Over 10 Years of EdGEO in Nova Scotia

Since 1994, school teachers and geoscientists from around Nova Scotia have come together for EdGEO Workshops. Each workshop involves geologist-teacher teams that present earth science concepts to Nova Scotian teachers (primary to secondary school level) in interactive sessions. They have provided, and continue to provide, teachers with resources and activities that can be used in their classes in a way that is both fun and educational.

The Nova Scotia workshops are organized and presented by the Nova Scotia EdGEO Workshop Committee of the Atlantic Geoscience Society. There are 18 volunteers on the committee - teachers, and geoscientists from the federal and provincial governments, and local universities. A grant from the National EdGEO Committee partially funds the workshops.

By popular demand, the 2004 Nova Scotia workshop was expanded to three days. It was held on August 23-25 at the Bedford Institute of Oceanography in Dartmouth, which houses Natural Resources Canada's Geological Survey of Canada's Atlantic office. This workshop was designed to tell the story of the geological history of Nova Scotia, highlighting specific topics included in the Nova Scotia curriculum. Field trips were conducted locally in Halifax as well as across the province in Minas Basin. They gave participants the opportunity to apply what they learned in the "classroom" sessions.

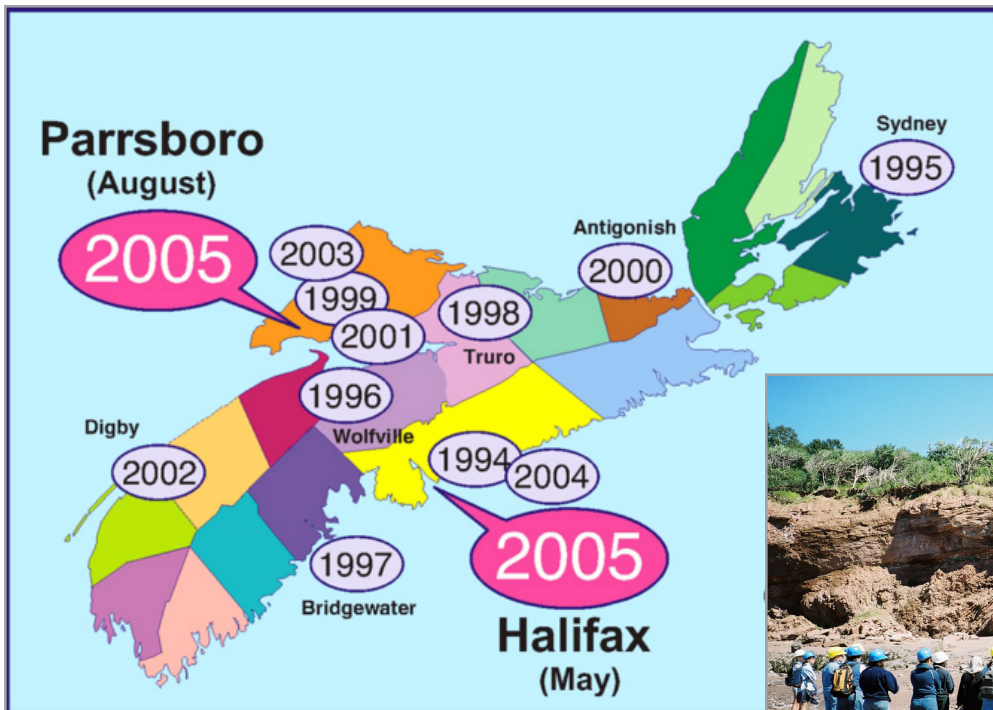
Those interested in learning more about the Nova Scotia program please visit [www.gsca.nrcan.gc.ca/education/edgeo](http://www.gsca.nrcan.gc.ca/education/edgeo). If you are thinking about

starting an EdGEO program in your own province, visit the national EdGEO Web site at [www.edgeo.org](http://www.edgeo.org) <<http://www.edgeo.org/>>.

*Note; This is a modified version of Gayle Keeley's article in the the November 2004 edition of The Source, an internal newsletter of Natural Resources Canada.*



Classroom activities



The August 2005 workshop will be the 12th EdGEO workshop in Nova Scotia (12 in 12 years!).



Field trips