



# The Rock Record – July, 2010

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### Please contribute to the SGS Newsletter

The SGS Newsletter is produced by the SGS executive. Letters, announcements, notices, comments, photos, news and information about SGS members, etc. are always welcome. Call an executive member or write to us at:

**Saskatchewan Geological Society**  
P.O. Box 234  
Regina, SK S4P 2Z6

**SGS e-mail address:**  
[info@sgshome.ca](mailto:info@sgshome.ca)

**SGS Website:**  
[www.sgshome.ca](http://www.sgshome.ca)

All advertising inquiries should be directed to **Tyler Music**

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**Monday, July 26<sup>th</sup>, 2010**

### **Estimating Groundwater Recharge and the Effects of Landscape Disturbance on the Boreal Plains**

**Dr. Brian Smerdon, CSIRO, Australia**  
(abstract attached)

Lancaster Room, Royal Canadian Legion

Lunch: 11:45 a.m.

Meeting: 12:00 – 1:00 p.m.

Members: \$10.00 and Non-members: \$15.00 for lunch

For those not having lunch the talk is free

Please contact: Murray Rogers ([murray.rogers@gov.sk.ca](mailto:murray.rogers@gov.sk.ca) or 787-1932)  
by noon Friday, July 23<sup>rd</sup> if you are planning to have lunch

### **SGS Annual Field Trip to the Bighorn Basin, Wyoming** **August 20-24, 2010**

**July 31<sup>st</sup> is the deadline to register and pay the non-refundable deposit**  
(see the notice attached)

**SGS Annual Golf Tournament/BBQ**  
**September 10, 2010**  
(see the notice attached)

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## **SGS ANNUAL FIELD TRIP TO THE BIGHORN BASIN, WYOMING**

The SGS Field Trip this year is going to the Big Horn Basin of Northern Wyoming from Friday, August 20<sup>th</sup> to Tuesday, August 24<sup>th</sup>. Highlights will include outcrops of the Cretaceous Frontier Formation clastics, Mississippian Madison Formation carbonates, including karsting, Laramide basement structures, and hydrothermal systems. A non-refundable deposit of \$250.00, payable to the Sask. Geological Society by **July 31<sup>st</sup>**, is required to reserve your space. Please mail your cheques to the SGS address (first page) c/o Jeff Coolican. The estimated total cost will be on the order of \$500.00 and will include accommodations, lunches, transportation and a field trip guide. Student members will have a subsidized cost of \$300.00, with a non-refundable deposit of \$150.00. Call John Lake, field trip coordinator, at (306)-787-2621 to register. A reminder, only paid-up members will be allowed on the trip. Also as we are travelling to the U.S.A. a current passport is required.

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**If anyone has any ideas for luncheon speakers please contact Gavin Jensen (Tel.: 787-2577).**

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### **SGS Merchandise**

The SGS has a variety of reasonably-priced merchandise, mainly clothing, that is posted on the website: [www.sgshome.ca](http://www.sgshome.ca) for viewing. This includes seasonal items such as very nice golf shirts, t-shirts, and hats. Please contact Tyler Music at (787-6984) or [Tyler.Music@gov.sk.ca](mailto:Tyler.Music@gov.sk.ca) if you are interested in purchasing.

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**A reminder, if you haven't renewed your 2010 membership yet please fill out the attached form and submit it with the payment at a meeting, or mail it to the SGS postal address on the first page. Jason Berenyi at (787-2579) or [Jason.Berenyi@gov.sk.ca](mailto:Jason.Berenyi@gov.sk.ca) is the contact for memberships.**

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## **Estimating groundwater recharge and the effects of landscape disturbance on the Boreal Plains**

**Brian D. Smerdon** - CSIRO Land and Water, Waite Campus, South Australia, Australia

**Jaime J. Carrera-Hernández** - Institute for Scientific and Technological Research, San Luis Potosi, Mexico

**Carl A. Mendoza** - University of Alberta, Department of Earth and Atmospheric Sciences, Alberta, Canada

The influence of landscape disturbance, including forest harvesting, road building, well pad construction, and open pit mining, on groundwater recharge is discussed in the context of the Boreal Plains. We investigate the groundwater recharge process through use of numerical models that quantify unsaturated flow to different water table depths, for a range of soil textures. The simulations indicate strong interaction between shallow water tables and atmospheric variability, which diminishes as the depth to the water table increases. Simulation results indicate that in summer months, or during dry climatic cycles, transpiration and canopy interception reduce groundwater recharge to negligible rates. Following forest harvest, recharge rates can increase by 200 mm/year, with time lags of 1 to 5 years depending on the depth to water table and soil texture. Landscape disturbance from forest harvest is shown to influence soil moisture conditions and water table depth, which may be more pronounced in wet climatic cycles, until forest regeneration occurs. This concept is illustrated by a field example in Northern Alberta, where recharge was increased due to the combination of forest clearing and excavation of a small gravel pit, which was suspected to alter the water source of a nearby groundwater dependent ecosystem. Stable isotopic analyses of the surface water and groundwater indicated a shift in water source that occurred within 5 years of landscape disturbance. A simplified model of groundwater flow and interaction with surface water was developed to explore changes in water budget components for a timeframe that spanned pre and post disturbance. This research contributes to a growing body of knowledge related to boreal forest ecosystems and groundwater, which will help inform forest management practices and reclamation in the mining industry.

### **Biography**

Dr. Smerdon recently joined the Commonwealth Scientific and Industrial Research Organization (CSIRO) in Australia as a research scientist in the Groundwater Hydrology Program. Prior to joining CSIRO, he held Postdoctoral Research Fellowships with the Department of Earth and Atmospheric Sciences at the University of Alberta, and with the Department of Earth Sciences at Simon Fraser University, where he focused on quantifying exchange fluxes between surface water and groundwater, the role of groundwater in forested catchments, and groundwater recharge.

# SASKATCHEWAN GEOLOGICAL SOCIETY

## 24ND ANNUAL GOLF TOURNAMENT AND BARBEQUE

**FRIDAY, SEPTEMBER 10, 2010**

Tee-off times for the Texas Scramble begin at around 11:30 am at the Murray Golf Course.

The BBQ will commence around 6:30 pm. ( @ Alice and Dave MacDougall's 3730 McTavish St. - 0.5 Blk. north of 25th Ave., between Queen and Montague.) As usual, there will be refreshments and socializing throughout the evening. Any awards and prizes for your efforts on the links will be presented at the BBQ.

We have tee-off bookings for 72 participants; non-members are welcome but priority will be given to members. Members must have paid their membership dues for the current year.

Costs are as follows:	Golf only:	\$50.00
	Golf & BBQ:	\$50.00
	BBQ only:	\$15.00
	BBQ only: (after Sept. 3)	\$25.00

Payment will be required by **AUGUST 27, 2010**. Participants can mail in the attached registration form with a cheque made payable to the S.G.S. or contact me at of the following:

<b>Bob Troyer</b> - phone	787-2562
- email	bob.troyer@gov.sk.ca
<b>Erik Nickel</b> - phone	787-0169
- email	erik.nickel@gov.sk.ca
<b>Mail</b>	Box 234, Regina S4P 2Z6

### 2010 GOLF TOURNAMENT \ BBQ REGISTRATION FORM

NAME: \_\_\_\_\_ USUAL 18 HOLE SCORE: \_\_\_\_\_

PLEASE CHECK ONE: GOLF \_\_\_\_\_ GOLF & BBQ \_\_\_\_\_ BBQ ONLY \_\_\_\_\_

GUEST FOR BBQ: \_\_\_\_\_

**\*\* REGISTRATION\PAYMENT MUST BE RECEIVED BY AUGUST 27, 2010 \*\***

