



University of Regina SEG Student Chapter 2022 Field Trip Report

Introduction

The University of Regina SEG Chapter visited the Big Muddy Badlands of Saskatchewan from September 2-4, 2022. These badlands host spectacular outcrops which were uncovered by erosion during the retreat of the most recent ice age. This area of southern Saskatchewan has historic importance for Indigenous groups, the Northwest Mounted Police, and early settlers. Exposed geologic formations in the Big Muddy Badlands have significance to economic geology because they host important coal, clay, petroleum, and water resources. During this fieldtrip, the group camped and explored the geology throughout the badlands including a visit to Castle Butte. This was the first fieldtrip for the recently formed student chapter and was attended by students and members of the provincial geological survey. The trip was made possible through the generous contribution from the SEG Stewart R Wallace fund.

Participants

This fieldtrip was attended by 11 participants: four graduate students, four undergraduate students, one visiting student, and two scientists from the Saskatchewan Geological Survey. This trip raised awareness of the SEG student chapter in the university and it was an excellent opportunity for mentoring of undergraduate students who increased their knowledge of sedimentary geology and mapping techniques.

Fieldtrip Details

This fieldtrip involved driving to the Big Muddy Badlands near Coronach, SK in the province's south and camping from September 2-4, 2022. Hikes through the area occurred each day in addition to a visit to Castle Butte on September 3.

Funding: The University of Regina SEG Student Chapter was allocated \$795 CAD from the Stewart R Wallace fund.

Transportation: Personal vehicles were used to transport the field trip group to site. Vehicles left from the University of Regina and travelled 183 km to a property near Coronach, SK.

Accommodation: Camping took place on private land which was generously offered to the chapter free-of-charge by a local landowner who owns property throughout the Big Muddy Badlands.

Food: Food was provided through funding from the grant for the duration of the trip.

Itinerary

Friday, September 2nd

4:00pm – Depart Regina

6:00pm – Arrive in Big Muddy Badlands, set up camp, explore the area.



Saturday, September 3rd

10:00am – 10 km hike through the badlands, stopping at interesting and important geological features including coal seams, red shales, and groundwater seeps.

2:00 pm – Return to camp and have lunch, talk about the geology of the area.

4:00pm - Drive to Castle Butte to further explore the area and talk about its formation through glacial erosion.

7:00 pm – Return to camp and have supper.

Sunday, September 4th

9:00 am – Short hike through the area.

12:00pm- Return to camp, pack up, leave for Regina.

2:00pm- Arrive in Regina

Geology

The group travelled to the Big Muddy Badlands in southwestern Saskatchewan which is host to unique landforms and coal deposits. Glacial activity carved the valley exposing the late Cretaceous aged strata, including the Ravenscrag, Whitemud, and Frenchman formations. As well, the group visited Castle Butte, a large free-standing relic of previous glaciation composed of lignite beds and sandstone.



Figure 1: Visible stratigraphy in the Big Muddy Valley. Clay, sandstone, coal, and other sedimentary beds are visible due to the last glaciation event 23,000 years ago.



Figure 2: Red silty shale beds of the Ravenscrag formation.



Figure 3: Left) A large meter sized lignite bed. According to local geologists amber can be found in these beds. Right) Groundwater seep running out of lignite beds.

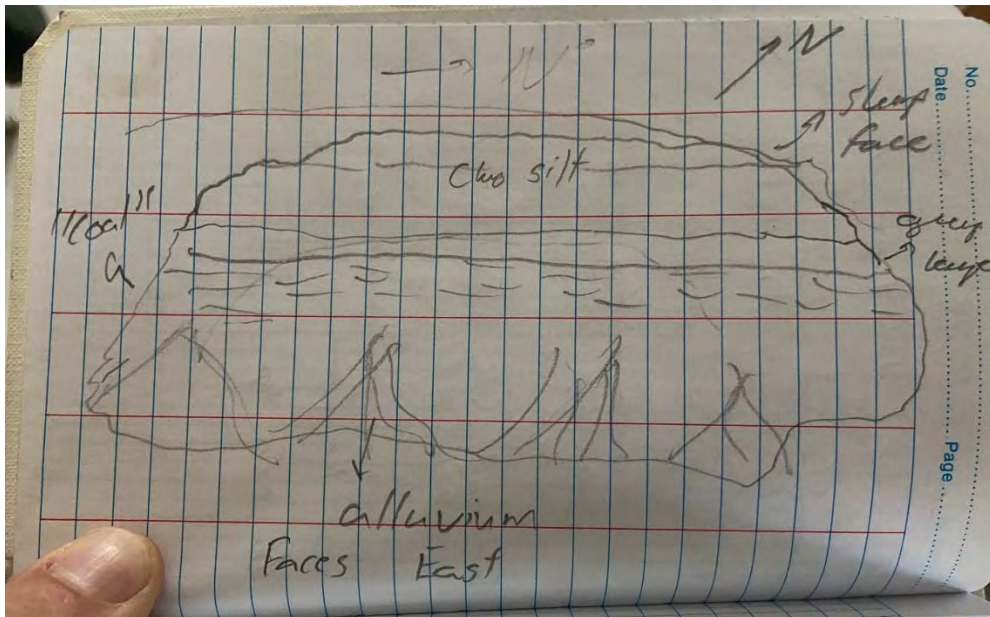


Figure 4: Field sketch by Daniel Ferguson. The description of the outcrop reads: Organic Rich, 0.5 to several metres thick, friable, plant matter, top 0.3m grey clay. Tan buff white clay (2.5m), laminated, spots of FeO/OH. Till to top



Figure 5: Happy geologists exploring sedimentary stratigraphy in the Big Muddy Valley

Budget

The budget for the field trip (Table 1) includes travel for attendees, food, and cooking fuel. A total of \$76 was provided to each driver for a total of \$380. Food was purchased for the fieldtrip in advance in Regina at total cost of \$375. Since there was some leftover food, a windup BBQ took place on the preceding Tuesday. Finally, \$40 was required to cover the cost of cooking fuel.

Item	Cost
Travel	\$76 x 5 = \$380
Food	\$375
Fuel for cooking	\$40
Total	\$795

Table 1 Field trip budget

Acknowledgements

The University of Regina SEG Student Chapter would like to acknowledge the financial support of the SEG Stewart R. Wallace fund. We would also like to thank the Foley family for generously allowing us to camp on their land.

We acknowledge that the University of Regina and the lands we visited as part of this fieldtrip are located on Treaty 4 Territory, the traditional lands of the Nêhiyawak, Anihšīnāpēk, Dakota, Lakota, and Nakoda, and the homeland of the Métis/Michif Nation.