

# **AUG Field Trip**

## **Promoting Student Interest in Geology and Geological Engineering**

Contract No. G-049-093

Final Report

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### **Project Summary**

The objective of this project is to increase interest and enrollment in Geology and Geological Engineering (GGE) at the University of North Dakota (UND) among incoming freshmen and sophomores through a 3-day student-organized field trip to western North Dakota. This project involves two field trips over the course of two academic years during the fall semester to help provide more geologists to support North Dakota businesses and industry, as well as expose students to the geology of North Dakota and the importance of oil and gas production to our state.

In concluding this project, we have successfully completed two field trips to Western North Dakota during the fall semester of 2019 and 2021. The following includes a description of the field trip project outreach, activities, and results.

### **Promotion and Outreach**

Our goal was to take about 20 students to the field trip. The trip is primarily intended for (1) students enrolled in *GEOL 101 (Introduction to Geology)*, (2) first- or second-year undergraduate students, who have not declared a major yet, and (3) any student who finds Earth Science interesting, but are unaware of the possibilities and jobs that a geology degree offers.

During the first two weeks of the fall semester of 2019, we promoted the field trip in all lower-level geology classes. By doing this we reached an estimated 150 undergraduate students. After visiting each class once with an additional follow-up to remind students of the opportunity, we had a total of 4 students signed up. As this is much lower than expected, we used social media as well as UND's digital signage (TV displays) throughout campus. With these various promotion and outreach methods we estimate to have reached > 500 undergraduate students across campus and various disciplines. In total 7 students attended the trip in 2019 representing the following fields of study: Law, education, dietetic science, electrical engineering, and geology. This number of attending students was significantly lower than initially expected.

To increase the number of participating students for the following field trip in 2021, we expanded our promotion effort beyond low-level Geology courses and visited all introductory/low-level science courses, e.g. Biology 101, Chemistry 101, Physics 101, including both in-person and online courses reaching >500 undergraduate students. In addition, we continued promoting on various social media platforms and UND's digital signage (TV displays) throughout campus. By expanding our promotion effort, we received great interest. A total of 35 students initially signed up and attended the informational meeting, with a total of 21 students attending the field trip as initially planned.

While promoting the field trip in various science introductory-level courses resulted in increased student participation, we also saw a greater variety of educational levels and fields of study. The majority of the participating students for the 2021 fall field trip were Juniors and Seniors, who are unlikely to change their major to Geology and Geological Engineering this late in their degree.

## **The Field Trips**

### *Fall 2019*

The field trip took place Friday, Sept. 13 through Sunday, Sept. 15, 2019. After departing from Grand Forks, ND on Friday, we arrived at Neset Consulting Services, Inc. in Tioga, ND. There Kathy Neset provided us with a presentation of the oil and gas production in North Dakota, as well as a tour of the facility. Friday night we spent cooking and setting up our camp in Theodore Roosevelt National Park North Unit at Juniper Campground.

The following day, Continental Resources, Inc. arranged for us to visit and tour four of their sites: fracking site, drilling site, coil tubing site, and production site. The evening consisted of a hike through the North Unit of Theodore Roosevelt National Park, where we found fossilized leaves and discussed the sedimentary layers as well as the geological history of Missouri River.

On our last day, Sunday, was rather adventurous, we climbed the cannonball formations as well as the wind canyons, discussing how these features and formations came to exist.

Unfortunately, visiting the Medora Fossil Quarry was not possible on this trip. However, we did succeed in finding fossilized leaves, which spiked strong interest among the students.

Overall, the field trip itself was a success, and the students left with a positive experience. All students were amazed with the tour of the various oil sites that we visited, and the process it requires to access the oil for production. As of now, one of the electrical engineering students already expressed interest in working in the oil and gas field after graduating.

### *Fall 2021*

The field trip took place Friday, Sept. 17 through Sunday, Sept. 19, 2021. Due to COVID restrictions, Continental Resources, Inc. was not able to arrange visits to their oil sites. Therefore, instead, we had the opportunity to visit for a full guided tour of the Falkirk Mine Co. in Underwood, ND Friday afternoon on our way to Theodore Roosevelt National Park. At the Falkirk Mine Co. we first got an overview of their history and operation, then explored their large mining vehicles followed by a visit to a mine pit. The students got to see their large crane in operation as well as the opportunity to be inside the crane while stationary on the ground. The large size of the equipment left quite an impression on the students.

Saturday was spent exploring the geology in the North unit of Theodore Roosevelt National Park. We started out with an introduction to the geological time scale and formation of the various geological layers that are present in the park. Early on in the day, a student found a rock pile containing fossilized leaves. This sparked great excitement and a few hours were spent in the area exploring, resulting in students finding petrified wood and fossilized shells. The afternoon was spent hiking through the various geological layers where our geology students were able to point out unique characteristics each layer exhibited.

On the last day, we explored the South unit before heading back to Grand Forks, ND. Here we explored Wind Canyon and learned about chimneys and the burning coal vein.

Overall, we had another successful field trip. By Saturday evening, three students expressed interest in becoming a geologist. Few of our geology student leaders were able to have conversations about their experience as a geology major and the considerations they have regarding future jobs and opportunities. During this conversation, it was clear that having a geology student-led field trip is valuable for promoting Geology and Geological Engineering as a major.

## **Results and Outcome**

With the main objective of this project being to promote and increase student enrollment, the Harold Hamm School of Geology and Geological Engineering has enrolled one student who changed their major from anthropology to geology, as a result of these two field trips. A handful of other participants did show interest in transferring their major to geology but did not further pursue it. Even though these students did not choose to pursue a path as a geologist, there is still great importance in teaching and exposing our North Dakota students (and residents) to the geology of North Dakota and the importance of oil and gas production and mining to our state's economy. The students attending these field trips will most likely carry their experience with them in their future careers as lawyers, computer scientists, engineers, etc.

Through the promotion process and communication with faculty within the department and across campus the University of North Dakota news source “UND Today” was interested in writing a story about the trip, including an interview with an attending student, Sarah Budziszewski, and the trip leader, Marie Bergelin. The story ‘Geologist for Three Days’ was published on UND Today’s website<sup>1</sup> shortly after the trip.

Further, University of North Dakota Marketing expressed interest in creating a video of the field trip from video clips from the trip including a post-trip video interview. This video<sup>2</sup> has been published on the Geology and Geological Engineering Department’s website and will be used for promoting our program, as well as used for UND general recruitment.

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<sup>1</sup> <http://blogs.und.edu/und-today/2019/09/geologists-for-three-days/>

<sup>2</sup> <https://www.youtube.com/watch?v=S5FWtW0FCoQ>