



2015 GeoFIT: *Energy and Society*

July 27-30, 2015 – NW Quadrant of ND

FINAL REPORT



The North Dakota Forest Service and North Dakota Geographic Alliance partnered to deliver their eighth **Geographically FIT** (*Forestry Institute for Teachers*): **Energy and Society** workshop in 2015. Thirty-eight participants toured the northwest quadrant of the state to understand the energy boom and the impacts on society. This professional development workshop gave the educators an opportunity to expand their content knowledge of North Dakota’s geology, geography, environments, and energy, and provided them with resources for curriculum planning and development. The four-day traveling charter bus tour began at Minot State University and traveled to Stanley, Tioga, Williston, Watford City, New Town and returned to Minot.

This workshop was made possible by in-kind support, grant funds, or donations from: **Minot State University, Montana Dakota Utilities, National Geographic Society Education Foundation, North Dakota Forest Service, North Dakota Geographic Alliance, North Dakota State University, Project Learning Tree, State of North Dakota, and US Forest Service.**



Every energy source has certain advantages and disadvantages. When we consider using any energy source, we must take into account its cost, its available supply in the short- and long-term, and the environmental and social impacts of its use. This was the basic foundation for the entire workshop, and the groundwork was first laid in the classroom before getting on the bus.

Dr. Steven Shirley, president of Minot State University, gave an official welcome to the teachers at the start of the workshop Monday morning.

Marilyn Weiser, teacher of record and director of the ND Geographic Alliance, began the workshop with an overview, completion of registration and credit requirements, and distribution of National Geographic teacher resources.



FrogWatch USA provides data to help develop practical strategies for the conservation of these important species.

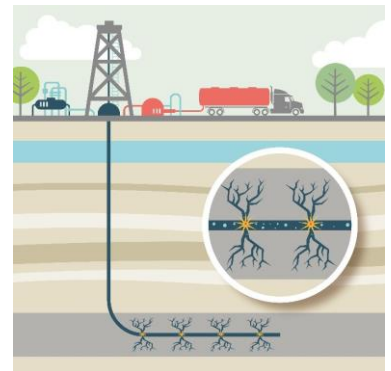
The first presenter was Mitch Thompson from the Roosevelt Zoo talking about the FrogWatch USA program, and opportunities for students and teachers. Frogs are a sensitive indicator species for environmental conditions in a region, and sometimes act as an early warning to monitoring biologists. FrogWatch USA is a citizen science program of the Association of Zoos and Aquariums that provides an opportunity for volunteers to learn about wetlands in their communities and report data on the calls of local frogs and toads. Volunteers gain increased experience and control over asking and answering scientific questions which, in turn, augments science literacy, facilitates conservation action and stewardship, and increases knowledge of amphibians.

Glenda Fauske, Information and Education Coordinator for the NDSU-North Dakota Forest Service, engaged the teachers in some energy-related activities from *Project Learning Tree* next before providing the PLT curriculum books and forestry resources. Five PLT *Energy and Society* kits were given as prizes at random to participants over the course of the workshop.

Todd Sivertson, Environmental Science educator from Minot High School, involved the teachers in a writing exercise, which was followed by a discussion, on the pros and cons of the energy development in North Dakota and their perspective of some of the economic, social and environmental impacts.



Following a noon lunch in the Student Union, everyone drove out to FMC Technologies, Inc. in Minot. FMC is a leading global provider of technology solutions for the energy industry and other industrial markets. The company designs, manufactures and services technologically sophisticated systems and products. In North Dakota, they



provide a variety of services. They have the technology and capability to run lines down two miles and out two miles and “fracture” the shale to allow the oil to flow back to the surface. After fracking, they have a fleet of trucks with high pressure fluid control equipment that will sort the water, oil, gas, and sludge and channel it to other trucks for hauling or to permanent collection tanks.

The first day concluded with a tour of the Weiser property near Surrey, ND, of just about anything that will grow in the northern tier. Considered one of the “premier horticultural attractions” in the region, the tour of the landscape was led by Chuck Weiser. This immersive landscape encourages exploration of different environments as you investigate the variety of trees, shrubs, flowers, cactus, and vegetable garden, and the complex physical, chemical and biotic factors (climate, soil and living things) that determine its form and survival.



The second day we departed on the bus for Tioga, ND. Dr. Clark Markell, retired geology instructor from Minot State University, interpreted the landscape as we traveled. He talked about how geology impacted the geography of North Dakota throughout time to create natural regions, and the geological layers that produce some of the oil and gas being extracted today.



Neset Consulting has the most accurate and cost effective “eyes at the bit” geological analysis possible.

Our first stop was Neset Consulting Services in Tioga, ND. Neset provides experienced, top quality wellsite geology/geo-steering services. Oil companies recruit them to help steer their drill bits down to the shale layer desired and/or where and how much to turn the drill to hit the horizontal layer they desire. The company started providing these services in 1978. They can provide one or two man wellsite geology/geo-steering teams with total gas or full gas chromatography. Wellsite geology and gas detection services are backed by in-house, 24-hour technical service and support, along with a full office management and administrative staff.

The next stop was a 1,200 person “man camp” run by Target Logistics. Target Logistics provides temporary workforce (or emergency) housing. They do long- or short-term housing, facilities management, remote catering, transportation logistics or security. They can give you whatever you need, because they can do whatever it takes! There are five camps in North Dakota and we visited the largest one. We got a tour of the rooms, exercise room, recreational room, and laundry room and got to eat in the cafeteria run by a real chef. It was very clean and nice and the food selections were great! I think we were all pleasantly surprised.



This man camp located near Tioga can hold 1,200 people.

Unfortunately, the weather turned bad with 60+ mph winds and driving rain as we departed and headed for Williston State College (WSC). While at Williston, we visited the WSC Train ND new facility. Oil companies have them train new employees from two weeks to three months prior to working in the field, depending upon



what job they are taking. Several companies donated cranes and one gave an oil rig so the training is as real as possible. The initial plan was to allow the teachers to get on the deck of a real oil rig and try some “hands-on” drilling, but the bad weather made it impossible. So, we settled for a tour of the \$76 million dollar facility, which is the largest park district-owned indoor recreation center in the country. We stayed at the El Rancho in Williston and everyone had the evening and dinner on their own.

The weather on the third day was just as windy, but it stopped raining. We headed to the US Forest Service in Watford City. Dave Valenzuela, minerals and land manager, oversees one of the most active oil and gas exploration and development programs in the National Forest System. He supervises preparation of new mineral leases for eventual development in the Bakken/Three Forks play in the Williston Basin of western North Dakota. He facilitates the permitting of new overhead power lines, power



sub-stations, major oil and gas pipelines, fiber-optic lines, rural water systems, and highway reconstruction. Conservation of natural and human resources, such as soil, water, air, wildlife, botany, archeology, and recreation, influence the design of all these activities in the interest of managing public lands for future generations. The teachers were divided into two groups. One group stayed for presentations on the oil development in the conference room, and the other group visited a site in the field not far from the office. After an hour, the groups switched.



We headed to New Town and made a quick stop after lunch at the Three Affiliated Tribes Museum. It is located on the eastern edge of McKenzie County in the Four Bears Casino complex. The museum serves as a heritage center to display and preserve the history and culture of the Mandan, Hidatsa and Arikara people.



The next stop was the New Town High School for a session by Joan Petrick with some tips and tricks for incorporating geography in the classroom with some hands-on activities. She had a variety of ideas from home-made dough topography maps to writing journals. She emphasized all kinds of games, activities, and simulations to explore the complex connections between people and their environments are useful.

The next session, Connecting with Colleagues, was led by Marilyn Weiser and she broke the participants up by subject and grade level to work on designing a lesson plan that could be used in their classroom. This is a new requirement for graduate credit this year. The lesson plans should reflect something learned on this trip about the acquisition, extraction, and transportation of our energy resources and the impacts on our environment and society.



The last presentation was made by two representatives from the People of Water and Earth Resources (POWER) organization on the Fort Berthold Indian Reservation. While the oil industry has been mostly welcomed in North Dakota during the state's latest oil boom, a handful of residents in communities on the Fort Berthold Indian Reservation are voicing concerns, especially with respect to the water and environmental impact on their lands and throughout the region. They are asking everyone to slow down and consider long-term consequences.



The last day, we departed from the Casino Hotel in New Town and headed back to Minot State University. It was a slow ride on the bus for a while as the brake was accidentally stuck on for a while causing the bus to spew black smoke!

We returned to Minot and the teachers wrapped up their lesson plans and turned them in.

Our last presenter was Dr. Rick Watson, professor of Humanities at Minot State University, as well as a poet and musician. Raised in Mott, he has been a singer/songwriter and poet in North Dakota since 1967. Rick spends most of his performance time in classrooms, church basements, coffee houses and anywhere else people will listen. He has been called a strange



fish in a small pond. In April of 2004, he was appointed as “life time” North Dakota Associate Poet Laureate. He shared several poems and songs relating to the geography of North Dakota and was greatly enjoyed by many at the workshop.

The workshop concluded with a debriefing and the completion of a participation survey. It was a great week learning about energy in North Dakota, and that some energy is renewable and some is not.

We also learned how conservation and management technologies, when appropriately applied to the use of natural resources can enhance and extend the usefulness as well as the quality of the environment, which benefits all of society.

A **2016 GeoFIT tour** is being planned for the northeast quadrant of North Dakota next year in the Pembina Gorge and in the surrounding small towns.

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