

Shelly Avery, Santee Community School, Niobrara, NE © 2008

Lesson for Earth Science 8

Nebraska State Standard 8.5.2

Class work before field trip. Page 1 and 2 would be posted to the “public” folder on our network or as a handout. Page 3-End would be a handout on field trip day.

There are three types of rocks, igneous, sedimentary, and metamorphic. Need to review the rock cycle? Visit <http://education.smarttech.com/ste/en-US/Ed+Resource/Lesson+activities/Notebook+activities/Browse+Notebook/United+States/Secondary/7-9/Chemistry/The+Rock+Cycle.htm>

Nebraska is not near plate boundaries or volcanoes and so you would not expect to find igneous rock forming here. We do find metamorphic rock carried from the mountains by water, wind, and/or glaciers. Therefore, of the three types of rock, the rock that we can see and has developed in Nebraska is sedimentary. Today more land is exposed on planet Earth than any other time and history. Previously Nebraska had a lower elevation, located closer to the equator and covered by an ocean. Giant ocean dwelling dinosaurs have been found near Center and Niobrara .

How we made sedimentary rocks in class:

<http://www.coaleducation.org/lessons/sme/elem/7.htm>

This site is a great place to see types of sedimentary rocks. The pictures are large and clear. <http://geology.com/rocks/sedimentary-rocks.shtml>



Isanti Rocks!

Before traveling to look at geographic formations in and around our community and Niobrara State Park, let's make sure you have an understanding of the geology.

_____ 1. Igneous rocks in Nebraska are formed too deep to be seen, instead we see a different type of rock called _____.

_____ 2. Nebraska was not always a prairie, and at times was covered by ocean. Two rocks of Nebraska formed by marine deposits are _____ and _____.

_____ 3. What settles out of water faster? Big rocks or small rocks?

_____ 4. True or false. If a sediment contains sharp and pointed crystals, we know that the crystals have traveled a long way and have been moving for a long time.

_____ 5. If you see layers of rock, where is the oldest layer (top or bottom)?

Read the handout on Mason Impact.

Did you know??? The stone used in ceremonial pipes from Pipestone, Minnesota is called catlinite. Catlinite (also called pipestone or pipeclay) is a type of metamorphosed mudstone, usually brownish-red in color, which occurs in a matrix of Sioux quartzite. It is fine-grained and easily-worked.



Road Tripping Geology

Field Trip Checklist

- _____ Permission Slip in on time (5 pts.)
- _____ Prepared for field trip (5 pts.)
- _____ Pass pre-trip questions (10 pts.)
- _____ Participation (10 pts.)
- _____ Picture Sketch of formation (30 pts.)
- _____ Answer the question (40 pts.)

Word Bank

Pierre Shale

Bazile Creek

Dam Building

Niobrara River

Course sand

Missouri River

Road Building

Mudrock

Fine sand

Wind deposition

Limestone

Siltstone

Volcanic ash

Water deposition

Shale

Claystone

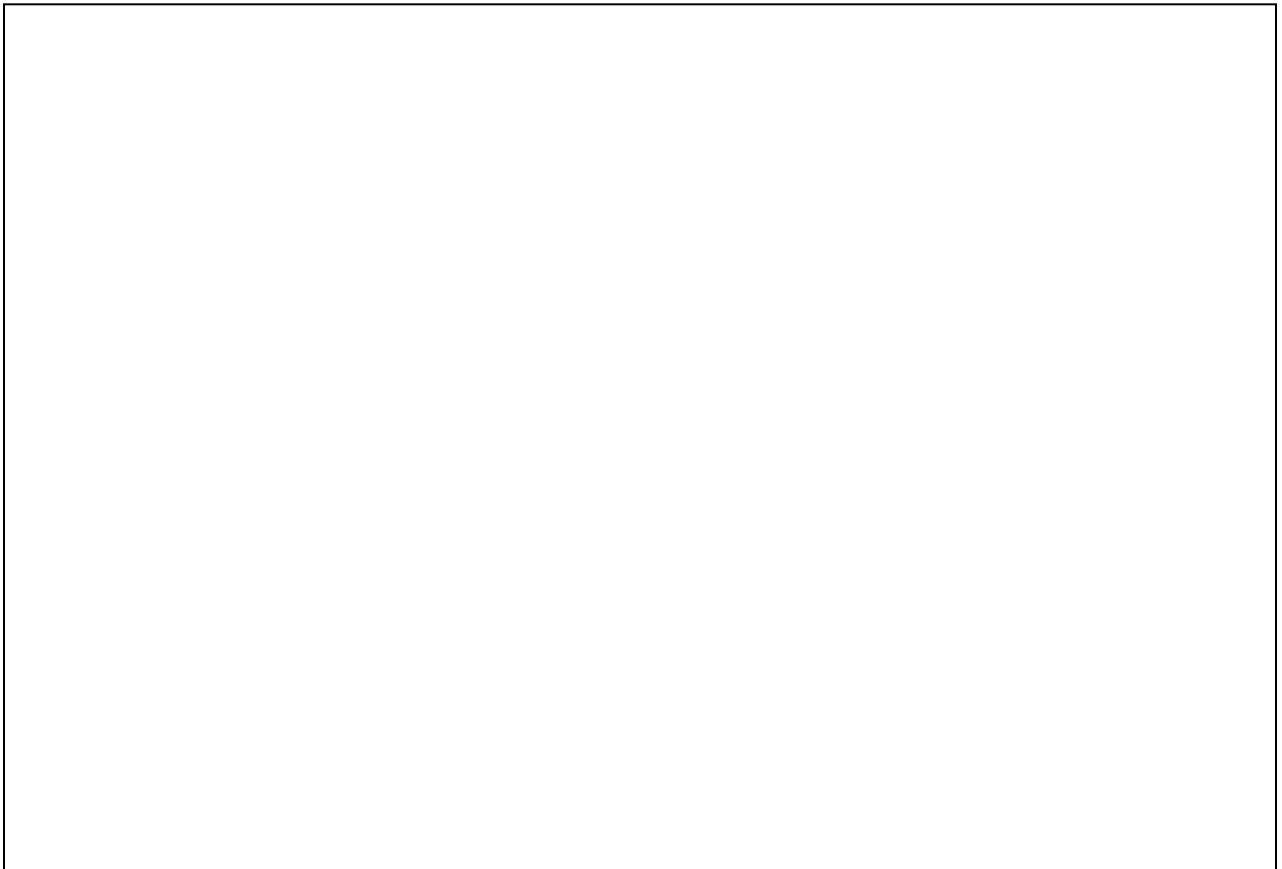
Shocked quartz

Permeability

Chalk

Stop One: Top of the hill heading south out of Santee (White Gate).

Describe the geology you see here. How do you think it came to be?



Stop Two: Lost Creek intersection. Describe the geology you see here. What factors make the road uneven here?



Stop Three: Maiden's Leap. What type of geology do you see here? What surface geological feature has shaped it?





Stop Four: Under Chief Standing Bear Bridge or at the Railroad Bridge. Looking across the river, what geology do you see? What natural and man made activities have affected it?

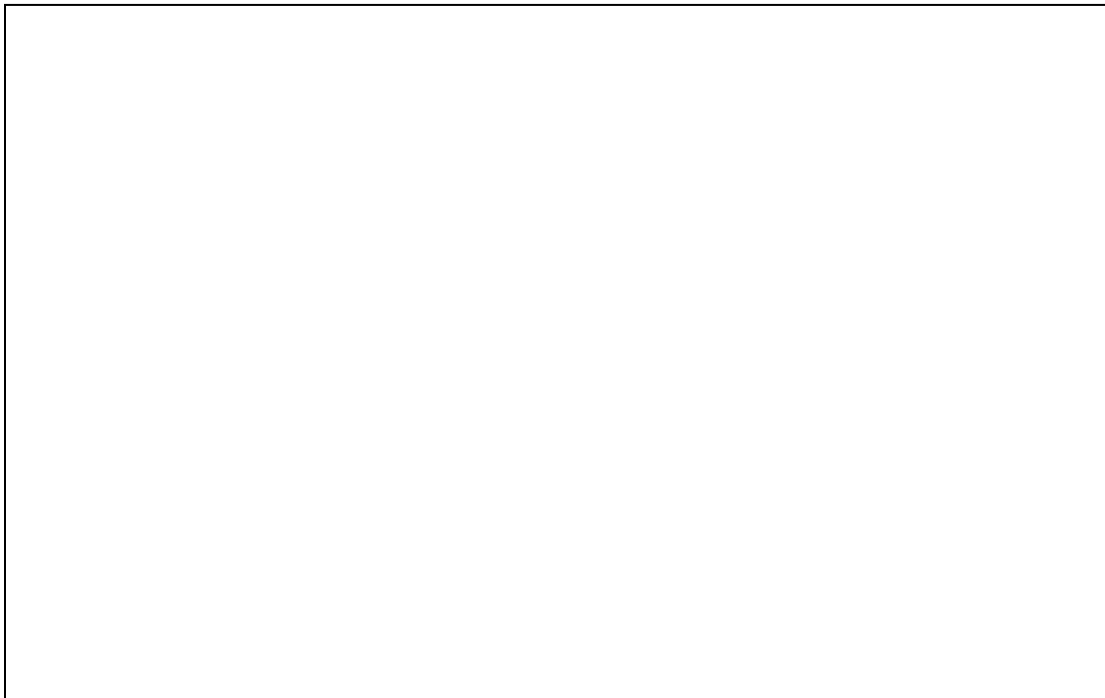


Stop Five: Outside Niobrara State Park. What type of geology do you see here?

A large empty rectangular box provided for the user to write their answer to the question above.



Stop Six: Tsunami Event at Niobrara State Park. Sketch and describe what you see.



Stop Seven: Dinosaur Dig Site at Center. Look for fossils.

*All photographs taken by Shelly Avery in July 2008 during UNL Geology Field Trip.