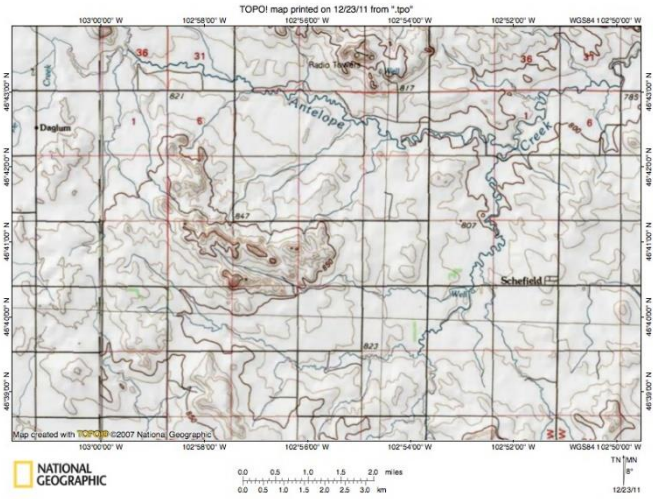
Weathering and Erosion on the Antelope Creek near Carson, ND



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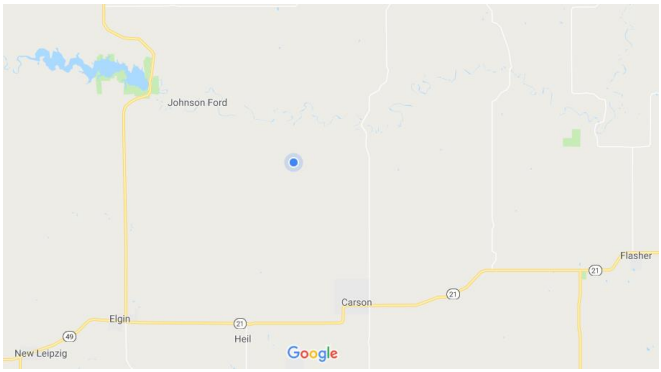
Site location

The site I chose to observe is the Antelope Creek near my home. This creek runs in-between Interstate 94 and North Dakota highway 21 and feeds into the Heart River. It is located about 10 to 15 miles north of Carson, ND. This creek is currently under a watershed recovering program to help reduce the effects of erosion. These pictures are taken near my ranch. The blue dot in picture two is where these pictures were taken and shows the tail end of the creek.

Picture #1



Picture # 2

Picture #3

Natural “Un-weathered” and “Un-eroded” state

The natural state of this creek once had smooth gradual banks with grass growing up to the creek. These pictures show areas of the creek that have not experienced much erosion or weathering.

Original Location

The Antelope creek is in its original location. Although, water erosion carrys sand, silt, and soil downstream and deposits it in slow current areas. These shallow waters have been silted in with many years of erosion.

Type of Weathering and Erosion

The type of weathering that is taking place on the Antelope Creek is mass wasting. This is the process of relocating rock material downslope due to gravity. In picture #3 you can observe large pieces of land sliding down the steep slope of the banks. The causes of mass wasting include how saturated the surrounding soil is, how steep the slope, and available vegetation. Mechanical weathering is also taking place as pieces of sod and clumps of dirt are being broken down into smaller pieces.

In addition to weathering, erosion has another huge impact on the antelope creek. As the water levels increases in the spring, large amounts of water carve into the banks of the creek carrying away soil and leaving underlying layers exposed to future erosion.

How advanced is the weathering process?

The Antelope Creek Watershed project is very concerned with the effects of erosion and weathering. Due to high spring water levels over the past few years the advancement of erosion and weathering has caused a lot of damage to banks, bridges, roads, pastures, fields, and fences. Programs have been established to raise awareness and have local land owners help to reduce the effects.

Main Erosion Agents

The main erosion agent in this place is the water that ran through the creek. As the creek banks were being stripped of their soil, it left the underlying soil also exposed to erosion. Wind could also increase the erosion rate as it blows unvegetated soil down the creek. We also run cattle in these pastures that

the creek runs through. As the cattle walk around the creek they may loosen dirt or push it into the creek.

Consequences and likely outcomes of further weathering and Erosion.

The consequences of further weathering and erosion will result in large steep cut banks that will be dangerous to live by. Currently a road runs on the top of picture #1 that will be washed away if these processes continue. The fertile agricultural land that surrounds the creek will be lost. Reservoirs and lakes can fill up with sediment from upstream, and contamination from pesticides can erode the soil. The erosion process with move towards the end of the creek where it will cause the most damage. Pasture land will also be lost.

What is Erosion?

Erosion is the process of transporting materials such as rocks and dirt by mobile agents like water, wind and ice. A good example of erosion is the Grand Canyon, it was carved out by many years of river water eroding the side banks.

What is Weathering?

Weathering is the disintegration and decomposition of materials on or near the surface. It is the process of breaking up rocks into smaller pieces. There are two types of weathering, mechanical and chemical.

The difference between erosion and weathering is that erosion transports particles to a new location while weathering breaks rocks in a single location near the surface.