

Hidden Falls ParkTIMELINE:

• The waterfall began receding 11,700 years ago in what is now downtown St. Paul.

• The waterfall that was here 10,300 years ago was a mile wide and 200 ft. tall.

• The waterfall started downtown St. Paul and worked its way upstream to Minneapolis where it was stopped in its movement.

• The recession of the water was halted by a cement backing. It is now called St. Anthony Falls.

• They created a cement backing for the waterfall because they needed the hydro electricity it would produce to power mill city.

SEDIMENTARY ROCKS IN MN:

• sedimentary rocks are made by a deposition of materials in a body of water culminating over time.

• The three types of sedimentary stone found in the Mississippi are: sandstone, shale, and limestone.

06/17/15

The three types of sedimentary rocks found in the Mississippi are classified by the quantity of organic matter in them. (Rocks with higher amounts of organic materials are less prone to crumbling)

Organic materials are fossilized plants and animals.

In what order would the three types of rocks be in based on least to most hard?

1. Sandstone 2. shale 3. Limestone.

(This is also the order they were in on the waterfall with sandstone on the bottom.

MISC:

The mn River (by Fort Snelling) was a major tributary to the waterfall, when the waterfall receded behind the tributary, water flow over the waterfall greatly decreased.

Erosion - Exogenic processes (wind, water movement) removing soil/rock from a location on Earth's crust and transporting it to another location where it is deposited.

Rocks and the Rock Cycle

Meredith
College

* - most important

06/18/15

* All rocks start igneous.

* Magma - under Earth's crust. Lava - Above Earth's crust.

Igneous Rocks

* Identified by composition and grain size.

- Cooling Rate: Rapid - fine grained, Slow - large grained

- Composition: Felsic - granite Mafic - basalt.

Phaneritic: Crystals are visible.

Aphanitic: Crystals are not visible.

Sedimentary Rocks (Clastic and Chemical)

* Sediments produced by:

- Weathering, erosion of other rocks.

- Crystals precipitated from sea water.

- Skeletal debris from organic material.

• Conglomerate - rounded, Breccia - angular

• Quartz is the most abundant mineral in sandstone because it's chemically resistant, hard, abundant, and does not have the property of cleavage.

• Clastic - made up of bits and pieces of pre-existing rock.

• Carbonate Rocks - often skeletal particles. Can see trilobites, snails, bryozoans, corals, sponges.

06/18/15

brachiopods, clams.

Evaporites - Form from evaporation of seawater. Generally in closed basins. Readily formed, readily dissolved.

Metamorphic Rocks

* Forms by alteration of other rocks at temps. and pressures greater than that of Earth's surface.

* Foliation

- Alignment of plate minerals caused by applied pressures.

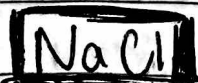
- Heat and pressure from plate tectonics.

* Development of foliation dependant on metamorphic grade - amount of heat/pressure applied.

* There are foliated and non-foliated rocks.

Rock vs Mineral

* Rock is made of many minerals, but a mineral cannot be broken down. ex - the periodic table of elements and chemicals.



Sodium Chloride (Table Salt)

Sodium

Chloride

neither can be broken down

06/18/15

Physical Props. of Minerals

Color

Luster - Metallic/non metallic

Streak - color of mineral when crushed to powder.

Hardness - Ability of one mineral to scratch another visibly.

Cleavage - Tendency of mineral to break parallel to atomic planes.

Fracture - Breaking in no particular relation to crystallographic directions.

Acid-carbonates

Magnetism

Radioactivity

replaceable

Cold Spring Granite

06/19/15

Cold Spring Granite showroom

- Granite is igneous.
- Mesabi black granite is from MN.
- American Mahogany granite is a common type of granite for commercial buildings.
- Granite is ~~the hardest~~ ^{one of the} hardest material.
- Marble is softer than granite because it's porous.