

Video 4B: How water sorts things

During the flood phase we have lots of flowing water. Water flow, combined with the force of gravity, has the ability to sort objects into layers according to size, shape, and density.

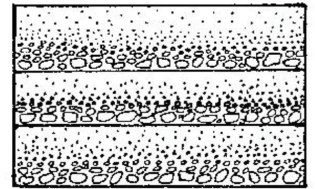
Terms to know:

- 1) Dirt, sand, and tiny bits of organic or inorganic debris found in water are called _____.
- 2) The correct term for how particles fall through water and settle to the bottom is called _____.
(The term _____ is also used.)
- 3) When particles are floating in the water we say they are _____.
- 4) When particles clump together this is called _____. (Think of a flock of sheep.)
- 5) We describe how "thick" a fluid is by using the word _____. A thick fluid is very _____.
- 6) The mathematical equation used to describe how a particle travels through a fluid is _____.

This law takes into account: _____

- 7) The bottom of a river or stream is called the _____.
- 8) Layers of sediments are often called _____.

We can see patterns like this form after a series of floods or rain storms.



VIDEO LAB #1:

While watching the video, answer this question.

In perfectly still water, which particles fall faster? (circle one)

more dense/less dense small/large (same density) smooth/rough (same density)

QUICK EXPERIMENT ABOUT PARTICLE SHAPE:

You will need 2 small pieces of paper, about the same size. Keep one flat, and crumple the other one so it is no longer flat.

These will be our particles. The fluid is air, not water. Now hold them up high and drop them at the same time.

Which falls faster? _____

Clay particles are often flat, not round. Would clay particles be expected to fall out of water quickly? _____

If the clay particles experience flocculation, might this change how fast they fall? _____

VIDEO LAB #2:

Which velocity can carry sediments for a longer period of time? fast / slow

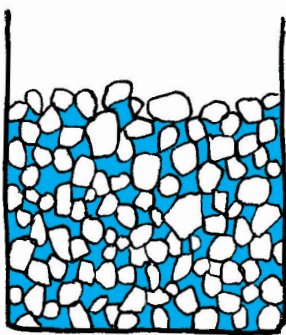
What happens if a sediment-laden water suddenly slows its velocity? _____

SORTING VIA LIQUEFACTION

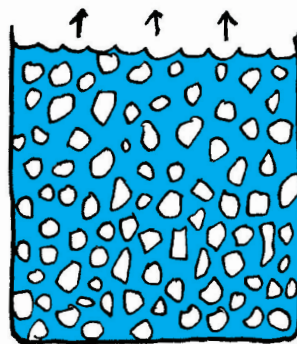
Liquefaction is usually associated with earthquakes. It was not something geologists thought about very much until people started capturing it on film during earthquakes. YouTube is filled with video clips of liquefaction events in places like Japan and New Zealand which experience frequent earthquakes. Water comes up from seemingly dry ground.

In the global Flood, liquefaction was caused by giant waves circling the earth.

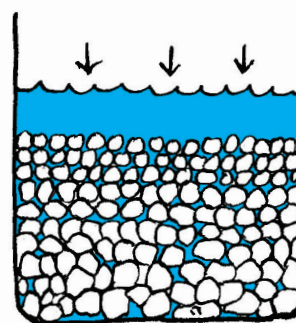
How liquefaction works:



The grains are arranged inefficiently and at random with water filling in gaps.



Water level rises, lifting all the grains and allowing them to shift their positions.



When water level drops, the grains will be packed more efficiently and will be at least somewhat sorted.

In an earthquake, the shaking causes the grains to rearrange, allowing the water in the gaps to rise to the surface.

In the Flood, giant waves caused the water levels to rise and fall, allowing the grains to rearrange and be sorted.