

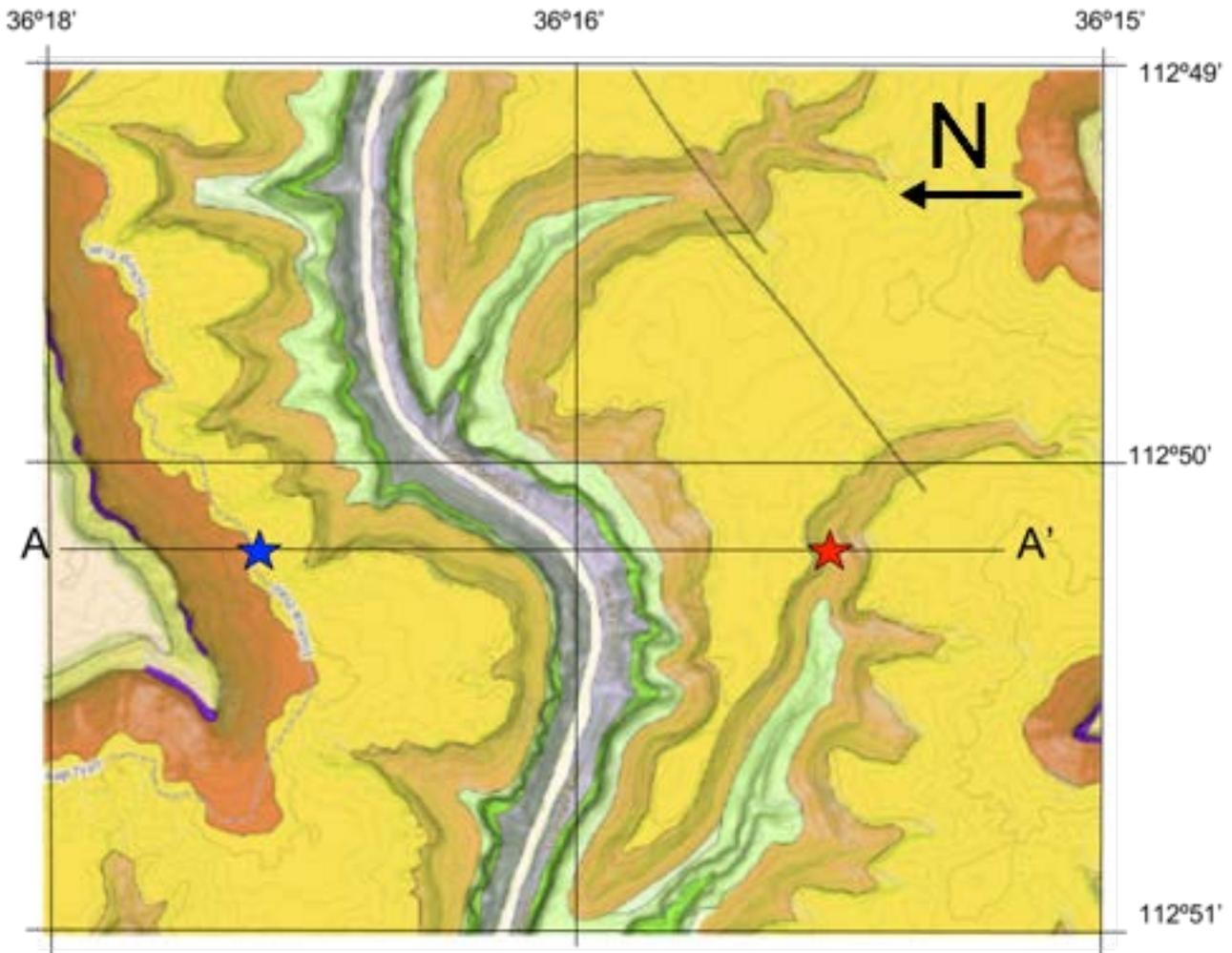
**Part 1**

Geologists are interested in what the rock layers look like underground. To do this they will make a cross section, which is a vertical slice through the earth that shows what is happening to the rock layers as you go deeper.

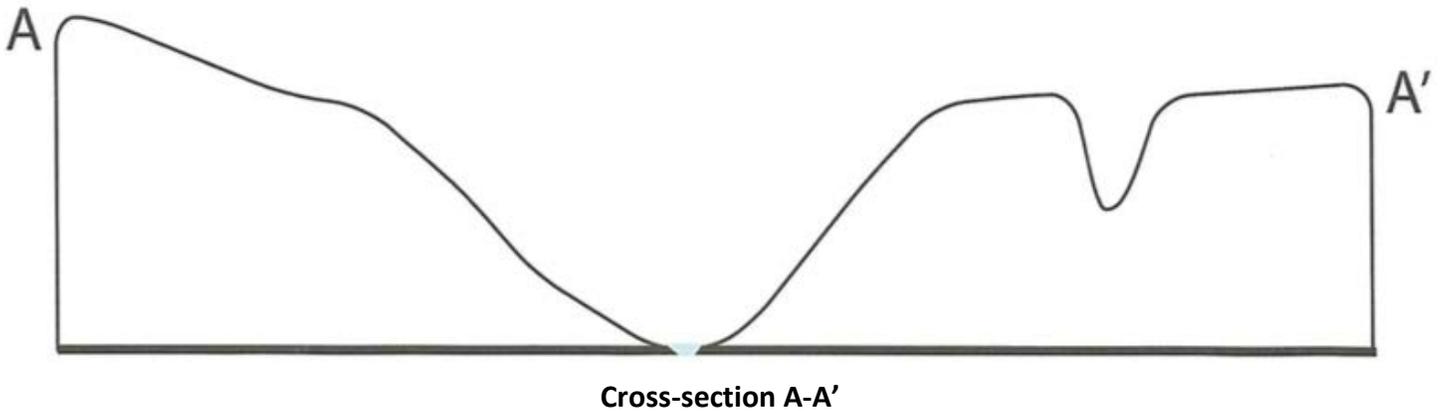
Examine this geologic map that shows an area along the Colorado River and the line A-A'. What do the colors represent?

There is a key at the top of the next page.

Below this image, a cross section A-A' has been drawn, showing a slice through the Earth. Using colored pencils, draw in what you think this cross section looks like underneath the surface on the two sides of the Colorado River. Try to match the colors as closely as possible or provide a key for your colors.



Key	
Color	Rock Type
	Esplanade Sandstone
	Supai Group
	Redwall Limestone
	Temple Butte Formation
	Mauv Limestone



What does the gray/purple color represent? The yellow?

Mark the highest and lowest elevation on your cross-section sketch.

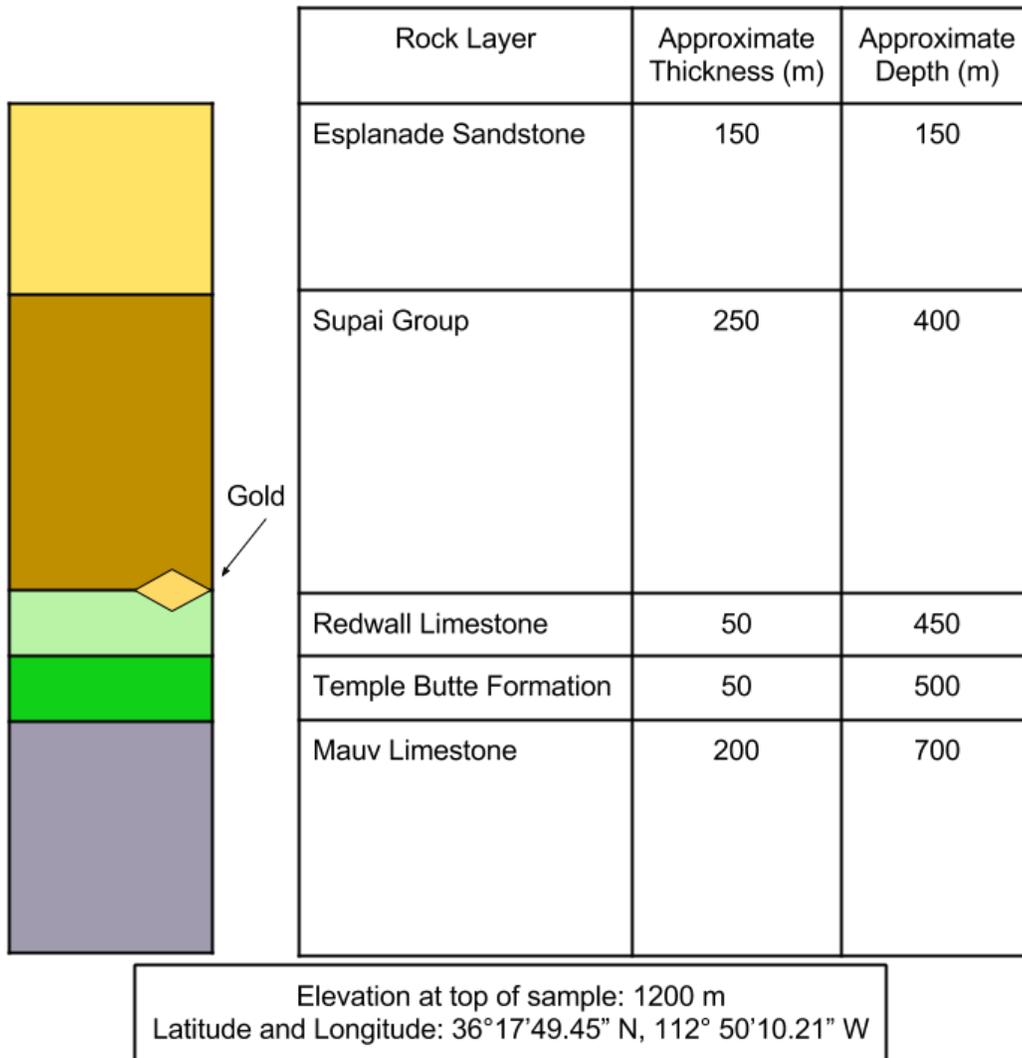
## Part 2

To find out what is happening with the rock layers below the surface, geologists will drill vertical holes, bringing up a section, or core, of rock to examine.

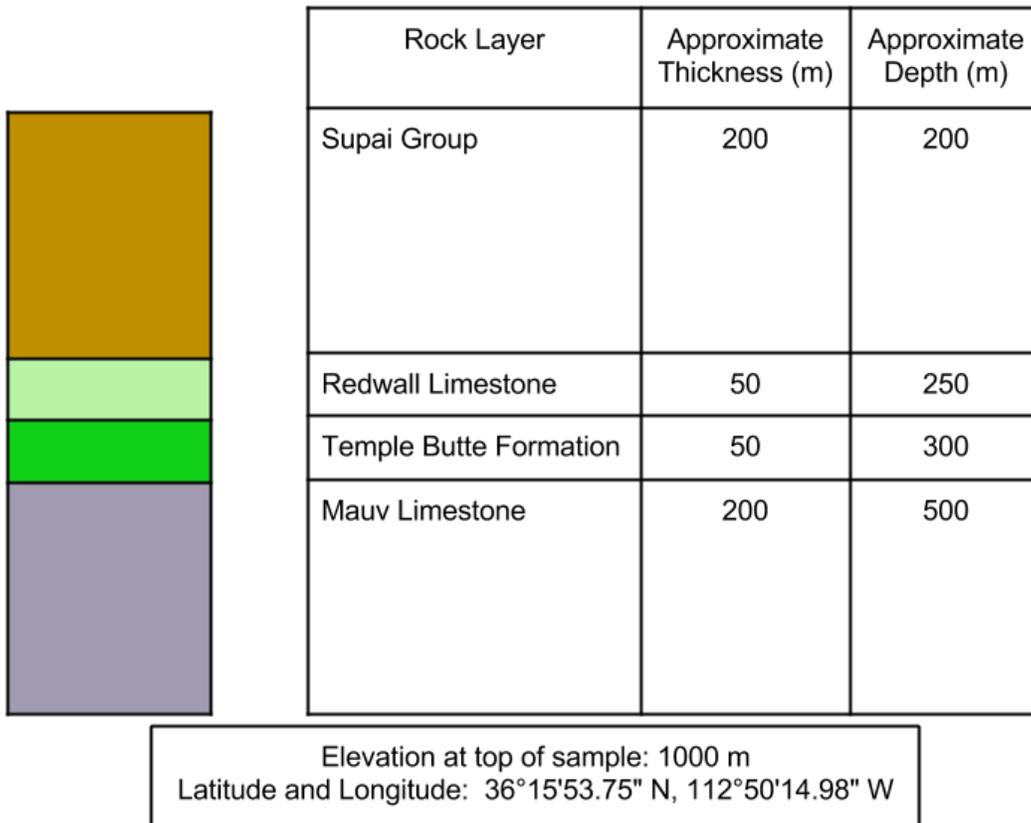
Below, the locations and elevations of two core samples are presented. The location along the cross section of Core Sample 1 (left) is represented by a blue star in the map above, the location along the cross section of Core 2 (right) is represented by a red star in the map above.

The core samples show the layers under the surface at this point and the depth and layer thickness data is listed in the table below. Examine this information and answer the questions that follow.

### Core Sample 1

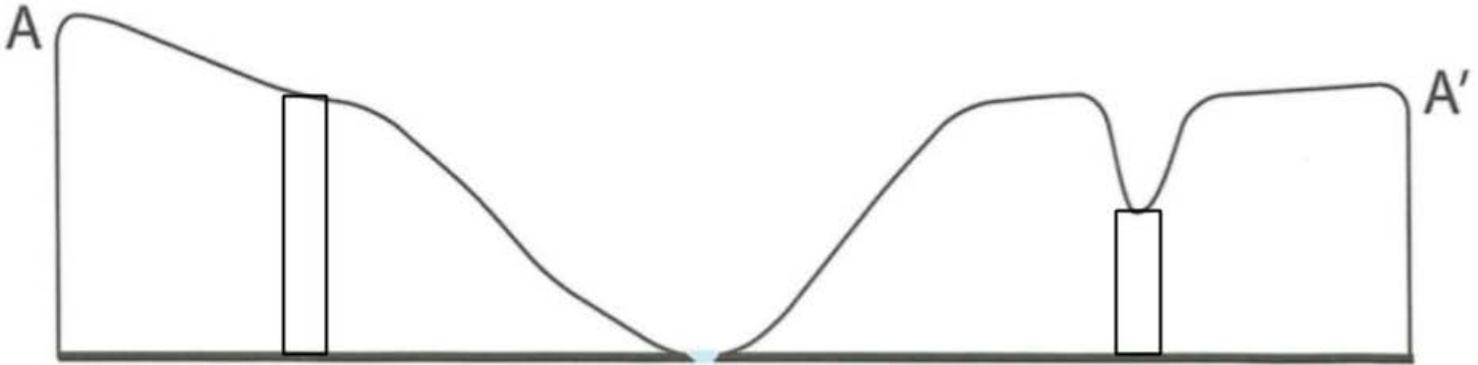


## Core Sample 2



Do these new data match your cross section above? Explain.

Below, fill in the cores from the previous page. Revise your cross section based on the new data:



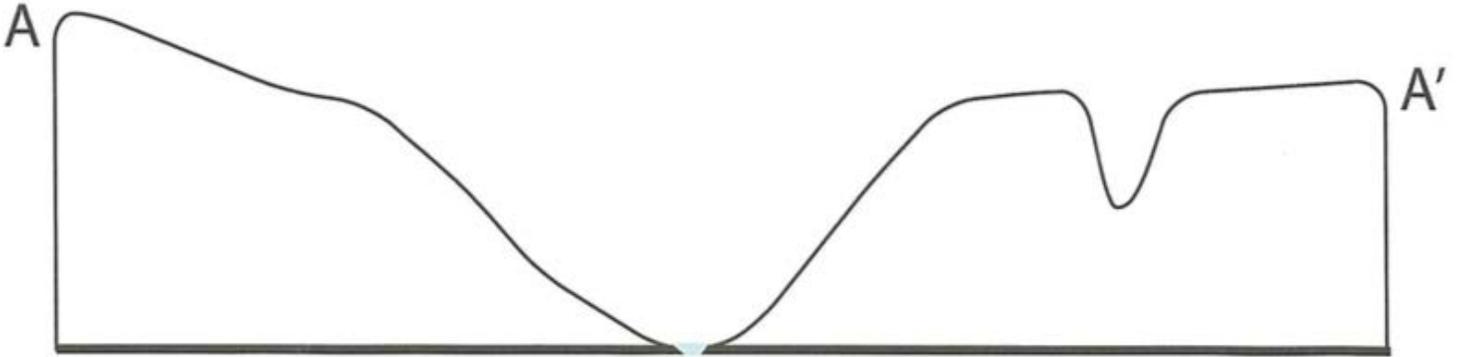
Why/how did these new data cause you to make revisions?

What does the gray/purple color represent? The yellow?

Mark the highest and lowest elevation on your cross-section sketch.

**Part 3**

In the cross section below, mark where the layer(s) with gold would be exposed at the surface.



Explain your reasoning for where you think gold would be found at the surface. Why did you select the part that you did?

What does the gray/purple color represent? The yellow?

Mark the highest and lowest elevation on your cross-section sketch.

**Part 4**

**A**

Look at the image of both sides of the Grand Canyon below.



What do you notice about the image? How do they compare to your sketch? What is similar? What is different?

**B**

The Law of Original Horizontality states that the rock layers we see today were originally deposited horizontally and any deformation must have occurred at a later point in the rock forming process.

How does the Law of Original Horizontality apply to the cross sections you have drawn?

How can this be used to explain the pattern you're seeing in the Grand Canyon?