**GC A4 How Did the Layers Form?**

Script

Instructions: Advance the PowerPoint slides at every new paragraph and anywhere you see “/”

[1] The Geologic Column—How Did the Layers Form? We’ve learned a lot about the geologic column so far…

[2] The names of some of its layers

[3] The kinds of fossils buried in the rocks

[4] The relative age of the layers

[5] But how did the rock strata get there? How were they formed?

[6] Rock layers start out as some combination of stones, sand, and clay being carried along by water. As the water slows down, the biggest pieces—like gravel--settle to the bottom first. Then the smaller pieces—like sand--begin to settle. Finally the smallest pieces—like clay—settle to the bottom.

[7] Sometimes these loosely deposited sediments become cemented together and harden into rock layers. / These rock layers are usually laid down horizontally. In other words, they are laid down flat.

[8] One or more rock layers that cover the same large area and have some similar characteristics are called formations.

[9] Sometimes the same formation can go on for miles and miles. The Shinarump Formation covers most of the whole state of Utah, plus parts of states around it.

[10] The Chinle Group is even bigger.

[11] The Dakota Formation is bigger still.

[12] And the Morrison Formation, which is famous for having lots of dinosaurs in it, is EVEN bigger! It covers almost all of Montana, all of Wyoming, all of Colorado, and parts of 10 other states and Canada! The state of Tennessee could fit inside it more than 15 times!

[13] Large rock layers like these, that cover thousands of square miles, are found on every continent of the world.

[14] These rock layers can be seen, touched, and measured, and they provide us with all kinds of data.

[15] When scientists try to understand how the rock layers got here,

[16] They are interpreting the data.

[17] Think about the fact that the rock layers were laid down by water. Imagine how much water there would have to have been to create a rock layer THAT big!

[18] Can you think of a time when there might have been that much water around?

[19] Let’s look at some more data. If layers are laid down flat, what happened here? After the rock layers were formed, something must have happened to make the layers tilted instead of flat.

[20] Our earth may seem like it has a smooth, connected surface,

[21] But actually the earth’s crust is broken up into many different plates that basically float on top of earth’s mantle.

[22] Because of the heat in the center of the earth, / these plates are constantly moving—just a little bit.

[23] Earthquakes, / volcanic activity, /and mountain building happen where these plates come together.

[24] When two plates crash into each other, rock layers that *were* horizontal / can be thrust up like this.

[25] Or layers can be squeezed in between two plates and fold like this.

[26] These layers of play-doh may help you understand how that could happen. Layers that are flat to begin with

[27] can be bent if they are pushed in from one or both sides before they harden.

[28] If the layers harden after they bend, they can look like this. This folding is believed to happen after hardening also, if it happens slowly.

[29] These rock layers—the horizontal ones, / the ones that have been thrust up, / and the ones that are bent all provide us with data. These data are consistent with the story of an event recorded in the Bible.

[30] Genesis 7-9 tells the story of a worldwide flood.

[31] The story says that “All the fountains of the great deep burst open, and the floodgates of the sky were opened.

[32] Then the rain fell upon the earth for forty days and forty nights.”

[33] Notice there are two important things mentioned in these verses: / (1) The fountains of the great deep burst open / and (2) rain fell for 40 days and 40 nights. The one we already know a lot about is the second one—the rain.

[34] For 40 days the floodwaters grew deeper, covering the ground and lifting the boat high above the earth. As the waters rose higher and higher above the ground, the boat floated safely on the surface

[35] Finally, the water covered even the highest mountains on the earth, rising more than 22 feet above the highest peaks!

[36] The water covered the earth for 150 days. That is 5 whole months!

[37] Then God sent a wind to blow across the earth, and the floodwaters began to recede. Have you ever seen wind blow water around during a bad storm? Sometimes when it rains really hard, water begins to collect along the edges of the road. If it’s really windy at the same time, the wind can blow the water along the road.

[38] The water receded gradually until the Ark finally came to rest on the mountains of Ararat.

[39] It is possible that water flowing during the flood created the conditions necessary to lay down the kind of rock layers we find all around the world.

[40] Including those huge rock layers that cover thousands of square miles each and are found on every continent.

[41] Now let’s go back and look at the first part of that verse: “All the fountains of the great deep burst open. Although we don’t know exactly what that means, it sounds like some pretty violent stuff happened to the earth itself!

[42] Apparently something down in the earth broke which allowed stuff—like water and probably lava—to come shooting up!

[43] It sounds like there could have been earthquakes and volcanoes.

[44] And since the fountains of the great deep and the floodgates of the sky were closed only *after* the 150 days who knows how many separate ones might have happened during that time!

[45] Scientists who believe in the story of the Flood think that all those geologic processes probably didn’t stop all at one time. Earthquakes and volcanoes probably became less frequent over time, slowing to the rate at which they happen now.

[46] Remember that scientists collect data and interpret data.

[47] The rock layers around the world and the fossils we find buried in them provide us with lots of data.

[48] They are evidence that something happened in the past to create these rock formations.

[49] As we try to make sense of—or interpret—this data, our knowledge of the worldwide flood in Genesis can help us understand what happened.

[50] The evidence we see in the rocks…

[51] makes sense in light of the story of the worldwide flood described in the Bible.