

Piedmont Virtual Tour

Open KMZ file in Google Earth Pro. This application is a free download available at <https://www.google.com/earth/versions/>. Once the virtual tour is open in Google Earth Pro, see sites listed in the virtual tour for more information on each site. Click on the name of a site for a photo and a description. Double-click on a site to be flown to that site. Below are questions and answers based on the virtual tour.

Questions

- 1) What are varves?
- 2) How long did Glacial Lake Passaic last?
- 3) What is the origin of the boulder field on Sourland Mountain?
- 4) What rock units underlay the First and Second Watchung Mountains?
- 5) What igneous rocks in New Jersey mark the initial breakup of the supercontinent Pangea?
- 6) Where was the Stockton Formation deposited?
- 7) How old are the gneisses in the Delaware River near Trenton?
- 8) What is the largest waterfall in New Jersey by volume?
- 9) What is a sedimentary debris flow?
- 10) What is ductility?

Answers

- 1) Varves are thin alternating layers of silt and clay deposited seasonally in lakes. Silt is deposited in the summer when the glacier is melting and more sediment is washing into the lake and clay is deposited in the winter when the glacier is not melting and the lake is frozen over and quiet.
- 2) By counting the clay layers in the varves, it is possible to tell Glacial Lake Passaic lasted about 2000 years.
- 3) The boulders weathered out from the underlying igneous bedrock and were transported down the hillside by gravity and possibly sliding on ground ice during periods of glacial climate. Silt, clay, and sand, which also form from weathering of the igneous bedrock, were washed away by rainfall and snowmelt, leaving only the boulders behind.
- 4) The First Watchung Mountain is underlain by the Orange Mountain Basalt and the Second Watchung Mountain is underlain by the Preakness Basalt.
- 5) The Palisades Sill is one of the early igneous events that leads to the breakup of the supercontinent Pangea.
- 6) The Stockton Formation was deposited in the Newark Basin, a now inactive rift basin which extends from lower New York State across northern New Jersey and into Pennsylvania. The formation of this rift basin is an early tectonic event that led to the breakup of Pangea.
- 7) The gneisses in the Delaware River near Trenton are Mesoproterozoic Age (between 1.6 and 1 billion years old).
- 8) Great Falls in Paterson, New Jersey is the largest waterfall in the state by volume.
- 9) A sedimentary debris flow is a rapid downslope movement of soil, rock, and water.
- 10) Ductility is the ability of a rock to deform in long strains or smear rather than breaking or fracturing.