

# OUTSTANDING GEOLOGIC FEATURE OF PENNSYLVANIA

## PINE CREEK GORGE (PA GRAND CANYON), TIOGA AND LYCOMING COUNTIES



Stuart O. Reese and Gary M. Fleegeer, 2016

### Location

Pine Creek; Tiadaghton, Cedar Run, Slate Run, Cammal, Jersey Mills, and Waterville 7.5-minute quadrangles



present-day upper Pine Creek, Marsh Creek, and Crooked Creek. As ice moved into the area from the northeast, it dammed the ancient creek and caused lakes to form in the valley. The lakes overflowed and eventually eroded through the lowest point of the drainage divide (see sketch) to allow Pine Creek to flow south. The glaciers also deposited large amounts of sand, gravel, and clay in the valley between Stokesdale and Niles Valley, preventing the creek from resuming its northeastward course after the ice retreated. In the following years, strong meltwater flows continued to cause deep erosion along the new course of Pine Creek.

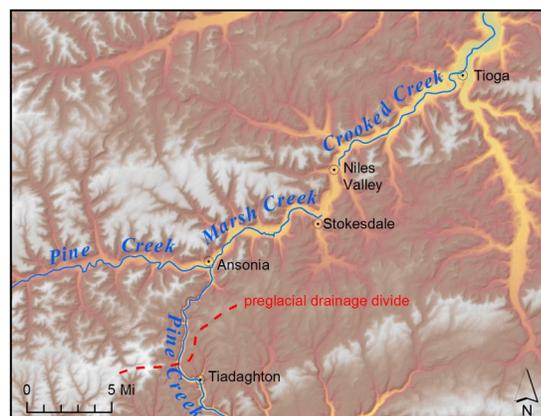
### Geology

Pine Creek Gorge—also known as the Pennsylvania Grand Canyon—winds with Pine Creek for more than 45 miles from Ansonia to the north past Waterville to the south. The gorge area is in the Deep Valleys section of the Appalachian Plateaus physiographic province. Views of the gorge are spectacular, showing wooded slopes on deep angular valleys.

Colton Point and Leonard Harrison State Parks are located at the northern end of the gorge and include numerous scenic overlooks, such as [Harrison Lookout](#) and [Colton Point](#). Here, the depth is more than 800 feet, and the distance from rim to rim is approximately 4,000 feet. The gorge deepens and widens to the south, where it can be viewed from [Lebo Vista](#) and [Barbour Rock](#) in Tiadaghton State Forest near Cammal. At its deepest, the gorge exceeds 1,500 feet; its depth at Waterville is 1,450 feet.

The multicolored bedrock units in this region are 300 to 400 million years old and alternate between sandstone, siltstone, mudstone, and shale. Most of the steep cliffs are made of weather-resistant sandstone. Despite the age of the rocks, the primary geologic processes that formed the gorge occurred much more recently—during the past 2 million years, Pleistocene continental glaciers entered and departed northern Pennsylvania and left their mark on the landscape.

Prior to the advance of the ice sheets, Pine Creek flowed to the northeast, following the valleys of present-day upper Pine Creek, Marsh Creek, and Crooked Creek. As ice moved into the area from the northeast, it dammed the ancient creek and caused lakes to form in the valley. The lakes overflowed and eventually eroded through the lowest point of the drainage divide (see sketch) to allow Pine Creek to flow south. The glaciers also deposited large amounts of sand, gravel, and clay in the valley between Stokesdale and Niles Valley, preventing the creek from resuming its northeastward course after the ice retreated. In the following years, strong meltwater flows continued to cause deep erosion along the new course of Pine Creek.



Preglacial and present-day courses of Pine Creek.

### Recommended Reading

McGlade, W. G., 1971, Leonard Harrison and Colton Point State Parks—The Grand Canyon of Pennsylvania: Pennsylvania Geological Survey, 4th ser., [Trail of Geology 16-005.0](#), 4 p.

Braun, Duane, ed., 2011, Glacial deposits, landforms, and drainage diversions in the “Grand Canyon” region of north-central Pennsylvania: Annual Reunion of the Northeastern Friends of the Pleistocene and Harrisburg Area Geologic Society/ Association of Environmental & Engineering Geologists (NEFOP/HAGS/AEG), 74th, [Field Trip Guidebook](#), 68 p.

[Colton Point State Park](#), [Leonard Harrison State Park](#), [Tiadaghton State Forest](#), and [Tioga State Forest](#) web pages of DCNR.