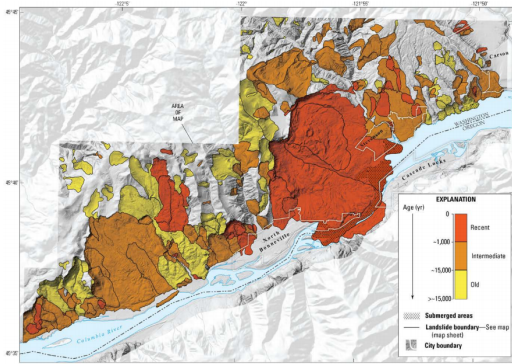


Bonneville Landslide(s)

Lloyd DeKay, after Tom Pierson (USGS)

Have you ever noticed that the Oregon side of the Columbia Gorge has much steeper slopes than the Washington side? Yet the Washington side has more and bigger landslides! The key to this difference is the bedrock—25 million year old volcanic deposits that have weathered to layers of weak clay that dip slightly toward the Columbia River on the Washington side. These clay layers underlie layers of massive Columbia River Basalt, large blocks of which can break off and readily slide on the underlying slippery clay surface.



In Skamania County, about 50 mi² of the area around Stevenson, WA, is mantled by 215 discrete landslides of various ages, ranging from more than 15,000 years old to currently active. Slides in this complex range in size up to about 6 mi² in area.

One of them, the Bonneville landslide, slid across and dammed the Columbia River for many months nearly 600 years ago, giving rise to the

Native American “Bridge of the Gods” legend. Some of the oldest slides in the complex could have been triggered by toe erosion during the repeated massive Ice Age Floods that swept down the Columbia River 18,000-12,000 years ago.



Old landslides can move again and creeping landslides can speed up, either during particularly wet winters or during earthquakes. The estimated magnitude 9 Cascadia Subduction Zone earthquake on Jan. 26, 1700, could well have triggered new and/or renewed slides in this complex.

The largest currently active slide, the Crescent Lake, is about 1.5 mi² in area and creeps downhill during the winter months at an average rate of about 1 ft/yr. Part of the Greenleaf Basin, a 0.3 mi² block of terrain upslope of the 500-ft-high Red Bluffs landslide headscarp has also been creeping slowly toward the bluff and may pose a significant future hazard to downslope areas.

More information: https://pubs.usgs.gov/sim/3358/sim3358_pamphlet.pdf