



## Some Significant lahars and debris flows at Mount Rainier

### The Osceola Mudflow

A volcanic eruption about 5,600 years ago triggered a flank collapse that removed three cubic kilometers (0.7 cubic miles) from the summit and eastern flank of Mount Rainier. Because the landslide contained a lot of water and also picked up snow melt and river water, it transformed into a lahar that rushed down the White and Nisqually River valleys as far as northern Puget Sound. In the White River valley, the lahar deposited a layer of debris that ranged from approximately one meter (3 feet) to 60 meters (200 feet) thick, and covered the region now occupied by the communities of Enumclaw, Buckley, Auburn, Kent, Sumner, and Puyallup. The lahar left behind giant mounds of orange-colored debris that are visible east of the communities of Enumclaw and Ashford. The Osceola Mudflow is the largest lahar known to have occurred on Mount Rainier.

### The Electron Mudflow

A landslide initiated this mudflow (lahar) around 500 years ago. Weakened rock on the west flank of Mount Rainier collapsed and slid into the Puyallup River valley, where it transformed into a lahar that flowed approximately 100 kilometers (60 miles), all the way to the outskirts of Puyallup and perhaps to Puget Sound. This lahar deposited sediment as thick as 30 meters (100 feet), and buried the base of trees in an old growth forest. Construction workers excavating ground for utilities continue to find large logs and stumps buried by the lahar. There is no conclusive evidence that an eruption triggered the Electron Mudflow although it may have happened at the onset of or during minor eruptive activity. The Electron Mudflow reminds us of the possibility that lahars may have non-eruption origins.

### The National Lahar

The National Lahar is one of the larger lahars formed from the melting of snow and ice during eruptive activity. This lahar swept down the Nisqually River Valley to the Puget Sound 100 kilometers, (60 miles) away, between 2,200 and 500 years ago. Between Ashford and the western entrance of Mount Rainier National Park, it deposited a 3-meter (10-foot) thick layer on the valley floor. Loose rock layers deposited by the National Lahar look like large boulders set into a matrix of fine-grained material.

### Debris flows

Debris flow activity at Mount Rainier has been significant in the valleys of Tahoma Creek, Kautz Creek, Van Trump Creek, Nisqually River, and the West Fork of the White River, where loose debris has been deposited during eruptions or left behind from glacier recession. Periods of intense debris flow activity tend to occur during glacier recession, or when excessive water from rainfall or snowmelt flows across loose rock deposited by the retreating glacier.

### Years of some prominent debris flow events

**Tahoma Creek** 1967, 1968, 1970, 1971, 1979, 1981, 1986-2006

**Kautz Creek** 1947, 1961, 1985, 1986, 2005, 2006

**Pyramid Creek** 2005, 2006

**Van Trump Creek** 2001, 2003, 2005 2006

**Nisqually River** 1926, 1932, 1934, 1955, 1968, 1970, 1972, 1986

**West Fork White River** 1987, 2006