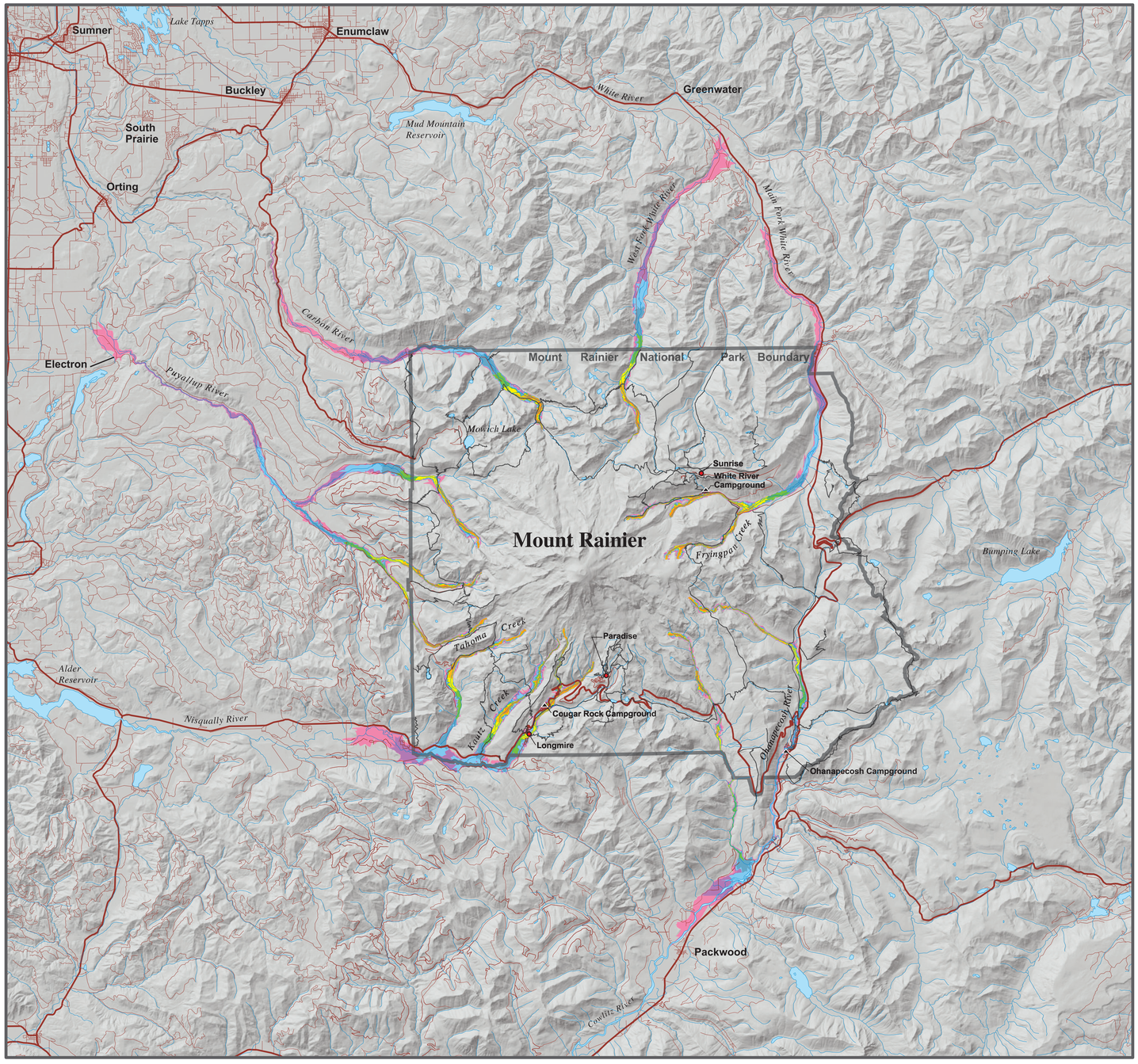
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

OPEN-FILE REPORT 03-368
PLATE 1



Scale 1:120,000

0 5 10 15 MILES
0 5 10 15 KILOMETERS

Map Showing Areas of Potential Inundation from Debris Flows for Selected Streams at Mount Rainier, Washington

by

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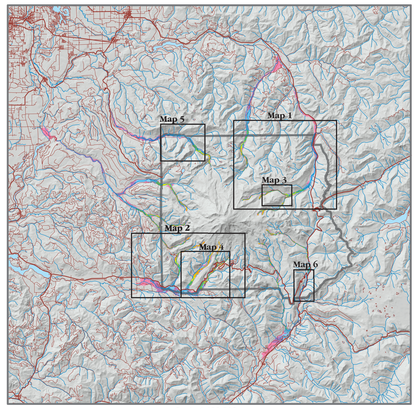
Location of maps on plate 2



Scale 1:400,000

0 5 10 15 20 MILES
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EXPLANATION

Debris - Flow Hazard Zones

Channels headed by glaciers at Mount Rainier are subject to debris flows generated by glacial outburst floods, torrential rains, and drainage diversions. Hazard zones begin at glacier termini and are subdivided into eight categories on the basis of a range of hypothetical debris flow volumes.

- Area that could be inundated by a debris flow having a volume of 125,000 cubic meters. *Highest probability.*
- Area that could be inundated by a debris flow having a volume of 250,000 cubic meters. On the basis of historical data since 1924, debris flows of this size and smaller will occur an average of once every two years.
- Area that could be inundated by a debris flow having a volume of 500,000 cubic meters.
- Area that could be inundated by a debris flow having a volume of 1 million cubic meters.
- Area that could be inundated by a debris flow having a volume of 2 million cubic meters.
- Area that could be inundated by a debris flow having a volume of 4 million cubic meters. This area is approximately equivalent to that inundated by the largest historical debris flow at Mount Rainier. The probability of occurrence is about once every 100 to 200 years.
- Area that could be inundated by a debris flow having a volume of 8 million cubic meters. Debris flows inundating areas this large and larger have not occurred in historical time.
- Area that could be inundated by a debris flow having a volume of 16 million cubic meters. *Lowest probability.*
- Highways
- Other roads
- National Park trails

Location Map

NOTE: Although the map shows sharp boundaries for hazard zones, the degree of hazard does not change abruptly at these boundaries. Rather, the hazard decreases gradually as distance from the volcano increases (small volume events are more common than large events). In addition, for debris flows, the hazard decreases rapidly as the elevation above the valley floor increases. Areas immediately beyond outer hazard zones should not be regarded as hazard free, because the boundaries of hazard zones can be located only approximately, especially in areas of low relief. Many uncertainties about the source, size, and mobility of future events preclude locating the boundaries of zero hazard zones precisely.

Base maps from U.S. Geological Survey 1:24,000 scale Washington quadrangle series; Lake Kapowsin (1990), Le Door Creek (1990), Elbe (1990), Ashford (1990), Mineral (1990), Anderson Lake (1990), Glenoma (1990), Kosmo Peak (1990), Enumclaw (1993), Cyclone Creek (1986), Greenwater (1986), Nagrom (1986), Lester (1989), Blowout Mtn (1989), Old Baldy Mtn (1986), Bearhead Mtn (1986), Clear West Peak (1986), Sun Top (1986), Noble Knob (1989), Raven Roost (1989), Golden Lakes (1971), Mowich Lake (1971), Sunrise (1971), White River Park (1973), Norse Peak (1988), Goose Prairie (1988), Mount Wow (1971), Mt. Rainier West (1971), Mt. Rainier East (1971), Chinook Pass (1987), Bumping Lake (1988), Tatoosh Lakes (1989), Obstanpecosh Hot Springs (1989), White Pass (1988), Spiral Butte (1988), Packwood (1994), Packwood Lake (1989), Old Snowy Mtn (1987), Pinegrass Ridge (1988), Sumner (1993), Buckley (1993), Orting (1992), Wilkeson (1992).