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

OPEN-FILE REPORT 01-432
PLATE 1

EXPLANATION

Proximal Lahar-Hazard Zone

Areas that could be affected by slope failures, avalanches, and lahars from Agua volcano [4]. During any single rainfall event or earthquake, some drainages may be affected by slope failures and lahars, while others may be completely unaffected. Avalanches and lahars originate within the proximal hazard zone, but are likely to move farther down stream beyond the flanks of the volcano and beyond the limit of this zone.

Distal Lahar-Hazard Zones

Channels that head on Agua volcano are subject to lahars generated by debris avalanches, torrential rains, and earthquakes. Distal hazard zones are subdivided into four zones on the basis of a range of hypothetical lahar volumes [5].

Area that could be inundated by a lahar having a volume of 500,000 cubic meters. Highest probability.

Area that could be inundated by a lahar having a volume of 1 million cubic meters.

Area that could be inundated by a lahar having a volume of 2 million cubic meters.

Area that could be inundated by a lahar having a volume of 4 million cubic meters. Lowest probability.

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 volume events). The hazard decreases rapidly as 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.

Numerals in brackets refer to end notes in the report.

Base maps from Guatemala 1:50,000 scale series; Chimaltenango quadrangle, (2059 IV); Ciudad de Guatemala quadrangle, (2059 I); Alotenango quadrangle, (2059 III); Amatitlah quadrangle, (2059 II); digital data courtesy of Instituto Georafico Nacional, Guatemala. Escuintla quadrangle, 1985 (2058 IV); Guanagazapa quadrangle 1982 (2058 I) from best available sources. Digital Base Maps from Titan Averstar, Inc. Universal Transverse Mercator projection, Zone 15, Horizontal Datum North American 1927, Vertical Datum Mean Sea Level, Spheroid Clarke 1866.

Scale 1:50,000

0 1 2 3 4 MILES
0 1 2 3 4 KILOMETERS

Contour Interval 20 Meters

This map is preliminary and has not been reviewed for conformity with U.S. Geological Survey editorial standards or with the North American Stratigraphic Code. Any use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Lahar Hazards at Agua Volcano, Guatemala

by
S.P. Schilling, J.W. Vallance, O. Matías, and M.M. Howell

2001