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Relative Earthquake Hazard Map of the Gladstone Quadrangle, Clackamas and Multnomah Counties, Oregon

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GMS-92

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By M.A. Mabey and others

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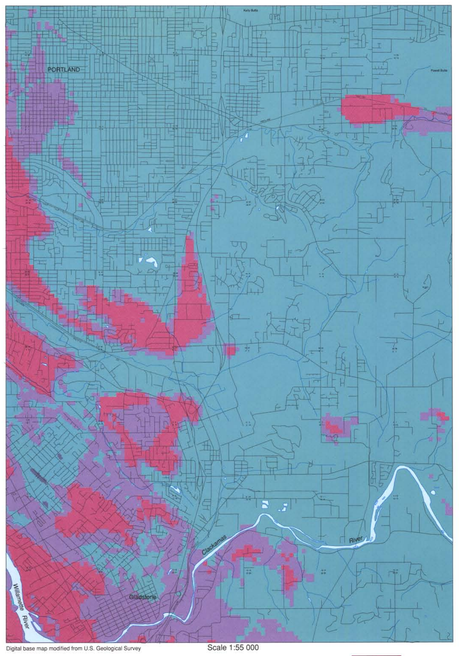
This Relative Earthquake Hazard Map of the Gladstone Quadrangle was developed to depict areas at relatively greater risk, compared to other areas, due to local geologic conditions. On a neighborhood-to-neighborhood scale, the local geologic conditions contribute as much as, or more than, any other factor to the hazard portion of a risk assessment. Showing in relative terms on a single map the hazard contribution of three different earthquake-related hazards assists a nongeologic and nonengineering audience in working more effectively toward reducing the risk to life and property through planning policy and mitigation measures. This composite hazard map was developed by combining single hazard maps for ground motion amplification, liquefaction, and slope instability. The single component maps were developed to show geographic patterns of stronger earthquake effects for a variety of likely earthquake sources. Zones that are expected to have the most pronounced damage in any damaging earthquake are shown on the map as having the greatest hazard.

Relative Amplification Hazard Map of the Gladstone Quadrangle



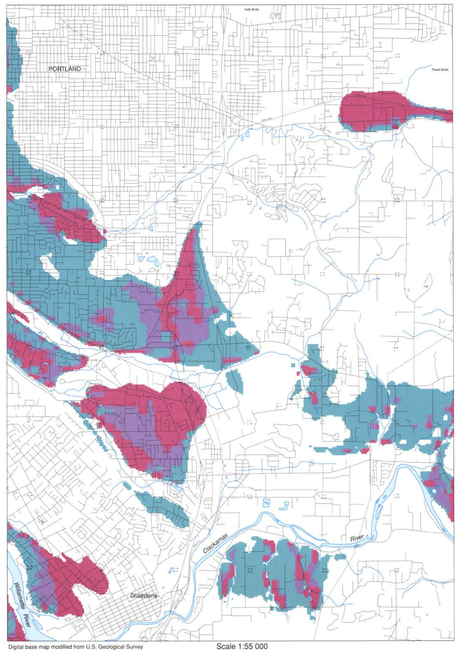
Digital base map modified from U.S. Geological Survey

Scale 1:55 000

Categories are arranged so that highest number (3) indicates greatest hazard and lowest number (1) indicates least hazard. See text for explanation of numbers.

3
2
1

Relative Liquefaction Hazard Map of the Gladstone Quadrangle



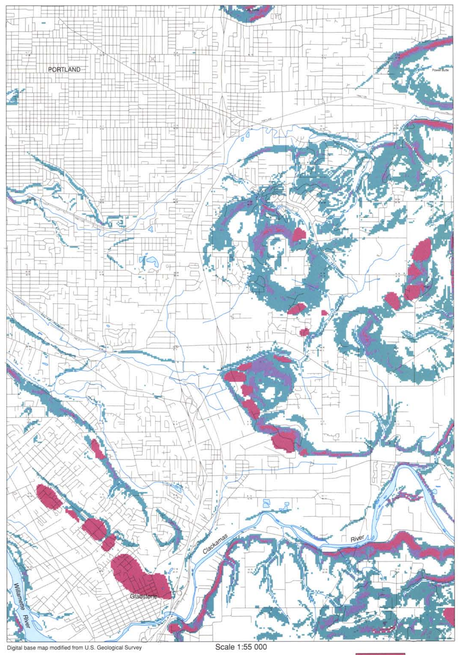
Digital base map modified from U.S. Geological Survey

Scale 1:55 000

Categories are arranged so that the highest number (3) indicates the greatest hazard and lowest number (1) indicates least hazard. White indicates areas where liquefaction is possible only where there are unusual local conditions. See text for explanation of numbers.

3
2
1

Relative Slope Instability Hazard Map of the Gladstone Quadrangle

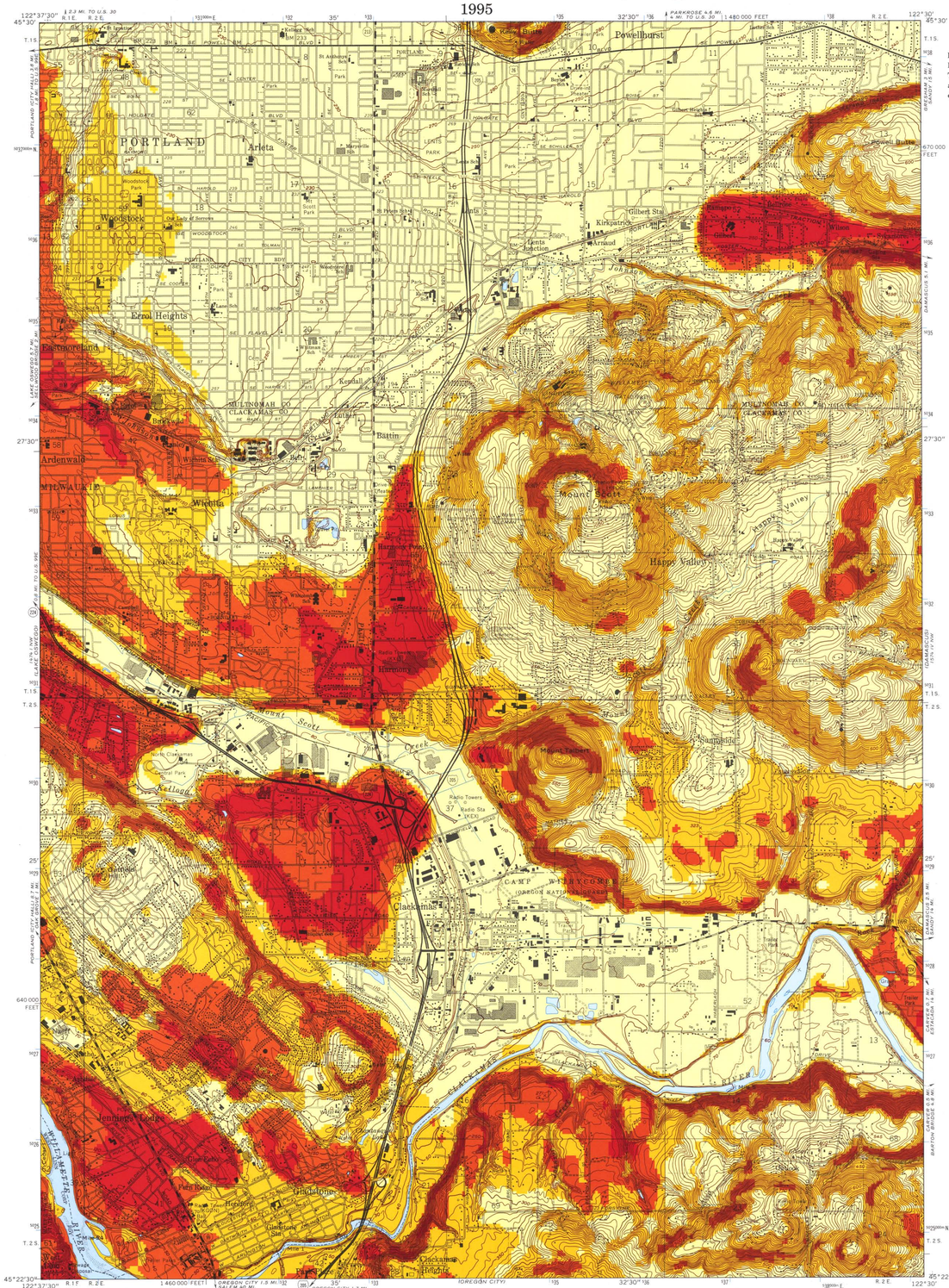


Digital base map modified from U.S. Geological Survey

Scale 1:55 000

Categories are arranged so that the highest number (3) indicates greatest hazard and lowest number (1) indicates least hazard. White indicates areas where slope instability is possible only where there are unusual localized conditions. See text for explanation of numbers.

3
2
1



Base map by U.S. Geological Survey, 1961, photorevised 1984
Control by USGS, NOS/NOAA, USCE, and State of Oregon
Polyconic projection. 1927 North American Datum
National geodetic vertical datum of 1929
10,000-foot grids based on Oregon coordinate system, north zone
1000-meter Universal Transverse Mercator grid ticks, zone 10, shown in blue

QUADRANGLE LOCATION

SCALE 1:24 000

CONTOUR INTERVAL 10 FEET

Earthquake hazard analysis by Matthew A. Mabey and Ian P. Madin, Oregon Department of Geology and Mineral Industries; and Dan B. Meier, Woodward-Clyde Consultants

Cartography by Paul E. Staub

This map is available in digital formats

EXPLANATION

(see accompanying text for complete explanation)

The relative earthquake hazard zones shown below range from zone A, which shows areas of greatest hazard, to zone D, which shows areas of least hazard. The degree of relative hazard was based on the factors of ground motion amplification, liquefaction, and slope instability, shown on smaller scale maps on left side of sheet.

Zone A

Zone B

Zone C

Zone D

Disclaimer

The information provided on these maps cannot be substituted for a site-specific geotechnical investigation. The site-specific potential for and consequent damage from soil liquefaction, amplified ground shaking, landsliding, or any other earthquake hazard should be assessed by qualified practitioners working on a site-specific basis.