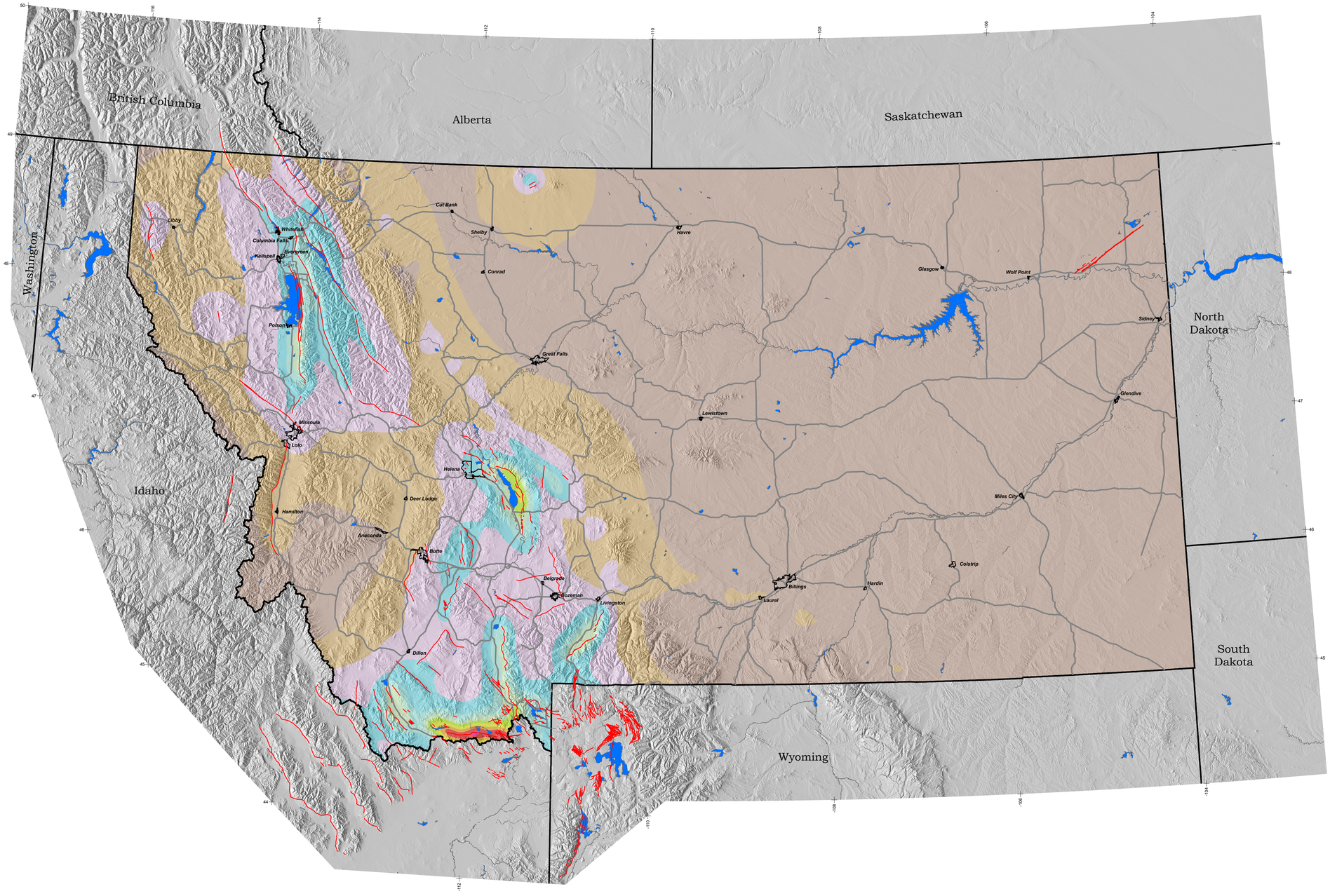
Plate 11
1% Probability of Exceedance in 50 Years
Peak Horizontal Acceleration (g) on Rock



MBMG Publication XXX

Probabilistic Earthquake Ground Shaking Maps for the State of Montana

by
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2005

Peak Horizontal Acceleration (g)
Modified Mercalli Intensity from Wald and others, 1999

Peak Horizontal Acceleration (g)	Mercalli Intensity	Description
< 0.1	I - V	**Weak to moderate shaking.** Very light damage at MM V.
0.1 – 0.2	VI	**Strong shaking.** Felt by all, many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster and damaged chimneys. Damage light.
0.2 – 0.3	VII	**Very strong shaking.** Negligible damage in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable in poorly built or designed structures.
0.3 – 0.4		
0.4 – 0.5	VIII	**Severe shaking.** Slight damage in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures.
0.5 – 0.6		
0.6 – 0.7		
0.7 – 0.8	IX	**Violent shaking.** Considerable damage in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse.
0.8 – 0.9		
0.9 – 1.0		
>= 1.0		

Quaternary Faults

Fault Database modified from Stickney and others, 2000
(See Appendix for other fault map sources)

Explanation
This map illustrates the estimated potential ground shaking that may occur or be exceeded at a specified probability of 1% in 50 years or one chance in 5000 on an annual basis. All known significant seismic sources which could generate strong ground shaking in the area have been included in the probabilistic seismic hazard analysis.

Limitations
There are large uncertainties associated with earthquake ground motion prediction in Montana due to limited region-specific information and data on the characteristics of seismic sources and ground motion attenuation. Additional uncertainty stems from the characterization of the subsurface geology beneath the map area and the estimation of the associated site response effects on ground motions.

The maps should not be used directly for site-specific design or in place of site-specific hazard evaluations.

N
W E
S

20 10 0 20 40 60 80 100 Kilometers
20 10 0 20 40 60 80 100 Miles

Project suported by the Montana Department of Natural Resources and Conservation and the Federal Emergency Management Agency. Basemap data from Montana State Library, Natural Resource Information System, GIS and layout by URS Corporation. Published by Montana Bureau of Mines and Geology.

Copies may be obtained from
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1300 West Park Street, Butte, Montana 59701-8997
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