

SEISMIC HAZARD ANALYSIS—STATE OF THE PRACTICE IN THE LAS VEGAS AREA

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ABSTRACT

This paper presents a preliminary earthquake source model for the Las Vegas region from published information and including 31 faults located in Nevada, California and Arizona. The source model is the basis for a seismic hazard analysis of the Las Vegas Valley. The analysis was performed with a modified version of the FRISK computer program (McGuire, 1978; Blake, 1995). Peak horizontal ground acceleration (PGA) was calculated using the attenuation relationship of Campbell (1993) for two levels of ground motion - 10% probability of exceedance in 50 years, and 10% probability of exceedance in 100 years. Bedrock areas surrounding the valley were not considered in the analysis.

Results show relatively low hazard throughout the Las Vegas area. The highest hazard is concentrated along the east-central margin of the valley west of Frenchman Mountain where ground motion exceeds 0.28 g (10%-50yr) and 0.40 g (10%-100yr) respectively. Ground motion decreases in the southwest margin of the valley to a low of 0.11 g (10%-50yr) and 0.16 g (10%-100yr) respectively. The Frenchman Mountain and Las Vegas Valley faults make the largest contribution to the total hazard, with lesser contributions from the West Sheep Range, West Arrow Canyon Range, West Dry Lake Range, West Muddy Mountain, and the Black Hills faults.