


Earthquake Loss Estimation Study For New Jersey: Geologic Component

Damaging earthquakes in New Jersey are rare, but they have occurred and undoubtedly will again. Although predicting the time, place, and magnitude of earthquakes is not possible, their potential to do damage can be. Structural damage caused by an earthquake depends on how much the ground shakes. The amount of ground-shaking, in turn, depends on how soft and how deep the soil is, and on the type of bedrock lying beneath it. Also important is whether the soil type will lose strength, liquefy or slide downhill when shaken.

Computer software (HAZUS, for Hazards U.S.) developed under the direction of the Federal Emergency Management Agency (FEMA) was developed to simulate ground-shaking, building damage, and estimate economic loss, for potential earthquakes (www.fema.gov/hazus/hz_eq.shtm). The simulations take into account the magnitude and location of the earthquake, the physical properties of the soil and bedrock, and the type of building construction in the study area. Results of these simulations are used to guide the strengthening of structures built on vulnerable soils and to plan emergency response

The Survey, with partial funding from the N. J. State Police Office of Emergency Management, maps seismic soil properties, including shaking behavior, liquefaction susceptibility, and tendency to landslide. This is completed by county at 1:24,000 scale.

Shaking behavior is mapped according to the methods developed by the [National Earthquake Hazards Reduction Program](#). Liquefaction and landslide susceptibility are mapped according to the classifications used in the [HAZUS model](#). For each county, HAZUS simulations use geologic data to provide damage and loss estimates for selected earthquake scenarios. The reports below provide details on these soil properties and economic loss estimates. The data on building stock used in these simulations are supplied with the HAZUS software and are from both federal and commercial sources. The building data have not been checked or verified by the N. J. Geological Survey.

The GIS ESRI™ shapefiles of Soil, Liquefaction and Landslide Susceptibility in New Jersey are available at [DGS15-2](#). 

COUNTY

Click on County name (left) to download Adobe™ PDF file

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