EARTHQUAKE HAZARDS of the South Carolina Coastal Plain 1996

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An example of a sand blow, generally referred to as liquifaction, associated with the Charleston 1886 Earthquake.

INDEX MAP SHOWING COASTAL PLAIN REGION

MAP GUIDE

- Low or no potential for earthquake hazards
- Potential for Liquefaction
- Potential for Landslide
- Potential for Collaspe
- Fall Line

- Liquefaction features caused by Charleston 1886 Earthquake
- Prehistoric Liquefaction features (Talwani & Cox, 1985; Amick, 1990; Schaeffer, 1995)
- Prehistoric Liquefaction features (Obemeier and others, 1987; 1990)

- Lakes and Rivers
- Municipalities
- County Boundary
- Interstate
- US Highway
- Railroad
- Powerline
- Gas Pipeline
- Airport - Runway 3000-5000 ft
- Airport - Runway >5000 ft
- Bridge - Interstate
- Bridge - Major Road
- Hospital
- Nuclear Reactor
- High Hazard Dam
- Signifigant Hazard Dam

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National Earthquake Hazard Reduction Program, and the
South Carolina Emergency Preparedness Division.

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DISCLAIMER

This map was necessarily based on limited data, resources and available time spent on the project, and information presented on the map includes subjective assumptions. The map information should NOT be used in place of site-specific studies. The relative hazard zones are not intended to replace site-specific evaluations, such as for engineering analysis and design. Site-specific earthquake hazards should be assessed through geotechnical investigation by qualified practitioners. This map has been designed as a tool for use of planners for the response and recovery from a major earthquake disaster. It may be useful to particular planners and regulators as a generalized guide to regional earthquake hazard potential. However, this map should NOT be used for land use zoning, building code requirements, or defining insurance rate zones.

MAP COMPILATION

This map has been designed as a tool for use by emergency managers in planning for the response to and recovery from a major earthquake disaster. It also may be useful to land use planners and regulators as a generalized guide to regional earthquake hazard mitigation actions. This is a deterministic map that assumes the occurrence of a destructive earthquake in the Coastal Plain region of South Carolina.

The primary data sources used to compile this map are the four hundred forty-three 7.5-minute topographic maps of the Coastal Plain, existing geologic maps at various scales, maps showing locations of paleoliquefaction features, and a map of the liquefaction features created by the 1886 Charleston earthquake. The quality of the data varies according to the type of data and the location.

Soil liquefaction potential is based on the interpretation of thick, cohensionless material (mostly sands) combined with a high water table. The area with liquefaction potential includes the coastal zone and, extending inland, the floodplains of rivers and streams. The delineation of the coastal zone follows that of Obermeier and others (1987, 1990), who reconnoitered the area of predominantly marine sediments younger than about 240,000 years for pre-1886 sand blows. Areas with liquefaction potential along rivers and streams were mapped from the configuration of floodplains on 7.5-minute topographic maps.

Paleoliquefaction features shown on the map were transferred from maps prepared by Dr. Pradeep Talwani and his students at the University of South Carolina (Talwani and Cox, 1985; Amick, 1990; and Schaeffer, 1995), and from Obermeier and others (1987; 1990) of the U.S. Geological Survey. The liquefaction features formed by the 1886 Charleston earthquake were transferred from Earle Sloan's map presented in Dutton (1889, plate 28). Areas with collapse potential were mapped on the presence of karst features (sinkholes, caves, losing streams of springs). However, as a result of map scale and limited mapping, collapse potential is very generalized. Areas with landslide potential are based on the presence of steep slopes (greater than 20% grade) and thick, cohensionless materials. The cohensionless materials include thick and thin units that mainly consist of sand with some clay beds. Areas with landslide potential were recognized from examination of 1:24,000 scale 7.5-minute topographic maps. However, earthquake shaking could exploit these conditions and create problems in specific areas.

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Special thanks to Sid Miller of the South Carolina Geodetic Survey, who allowed unfettered access to all 7.5-minute topographic maps for the South Carolina Coastal Plain.

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