Minutes of the Liquefaction Working Group meeting
March 18, 2003
Utah Department of Natural Resources, Rm. 1050

Attendees

Group members:
Loren Anderson, Utah State University
Steve Bartlett, University of Utah (facilitator)
Matt Mabey, Brigham Young University
Dave Simon, Simon-Bymaster, Inc.
Barry Solomon, Utah Geological Survey
Bill Turner, Kleinfelder, Inc.
Les Youd, Brigham Young University

Invited observers:
Darlene Batatian, Salt Lake County
Dave Marble, Utah Division of Water Rights, Office of Dam Safety
Mark Peterson, U.S. Geological Survey
Joergen Pilz, Utah Seismic Safety Commission, Geoscience Committee

The meeting convened at 10:30 a.m.

Barry Solomon discussed available liquefaction-hazard maps, including geologic susceptibility maps (with a UGS example from Tooele Valley), liquefaction potential maps (with a USU example from Salt Lake Valley), and scenario hazard maps (with a UGS example for a **M** 7 earthquake along the Salt Lake City segment of the Wasatch fault zone).

Loren Anderson discussed techniques used to construct the liquefaction potential maps.

Matt Mabey and Les Youd discussed the liquefaction severity index and its use by HAZUS loss estimation software in mapping liquefaction hazards for a scenario earthquake.

Darlene Batatian discussed the Salt Lake County liquefaction database. This database is a compilation of liquefaction-related geotechnical data from studies throughout the county and is a valuable resource for use in projects that may be proposed by the liquefaction working group. Unpaid interns from local universities may be available to collect and compile additional data, but would need considerable professional supervision to ensure accuracy.

Steve Bartlett suggested that UDOT may be willing to devise a template to serve as a format for data input into the database. This template would be recommended for use by geotechnical consultants to facilitate uniform data input. The consensus of the group was that the UGS would be a logical choice for custodian of a Wasatch Front liquefaction database. Barry Solomon said that the UGS could serve in this capacity, but only as a repository of the data and could not devote significant staff or budget to the task. Les Youd recommended that once the database is

compiled, subsurface data be used to validate surficial geologic maps.

The group discussed several options for future liquefaction-mapping projects, including:

- Updating the USU liquefaction potential maps with geotechnical data collected since the maps were constructed almost 20 years ago.
- Collecting additional CPT data using Tom Holzer, USGS, as his equipment passes through Utah on the way to his project in California.
- Mapping the mean annual liquefaction hazard of a selected Wasatch Front area.
- Studying geologic evidence of liquefaction-induced ground deformation to determine factors influencing ground failure and verify hazard maps.
- Map probabilistic estimates of lateral-spread and settlement displacements.
- Study the potential for loss of bearing-capacity.

The group agreed that our short-term goal is to propose a project to map the mean annual liquefaction hazard, suggested by Steve Bartlett. This map could serve both as a guide for the need for site-specific liquefaction studies and as a tool for emergency response and loss estimation, and will be in a GIS format. Mark Peterson suggested that the study be limited to a small area to test mapping protocols, and if successful the techniques could be used in the future to map the liquefaction hazard in larger areas of the Wasatch Front.

The deadline for submitting a proposal to the USGS for NEHRP funding is in May, 2003, but Mark indicated that we may submit an unsolicited proposal to the USGS at any time. A key element for the success of any proposal, particularly for one that is unsolicited, is broad-based support.

The group felt that a proposal to test mapping protocols should be submitted for NEHRP funding in May. Because of the rapidly approaching deadline, our next meeting is scheduled for March 26, 8:00 a.m, in the Utah Department of Natural Resources Building, Room 1050, 1594 W. North Temple, Salt Lake City.