



2018 UTAH EARTHQUAKE WORKING GROUP MEETINGS UTAH LIQUEFACTION ADVISORY GROUP SUMMARY

Monday, February 12, 2018

Utah Department of Natural Resources Building, Auditorium (1st floor)
1594 West North Temple, Salt Lake City, Utah

WELCOME AND INTRODUCTION

The meeting commenced at 8:20 a.m. with thirteen attendees. After brief introductory remarks, Dr. Bartlett gave an introduction to the types of liquefaction displacement and a brief history of the Utah Liquefaction Advisory Group (ULAG) activities.

TECHNICAL PRESENTATIONS

Probabilistic Liquefaction Triggering and Lateral Spread Hazard Maps for Davis, Weber, and Salt Lake Counties

Dr. Steven Bartlett, University of Utah

- Review of ULAG activities since the group's inception in 2002.
 - Reports from Dr. Bartlett: <http://www.civil.utah.edu/~bartlett/ULAG/>

Pacific Earthquake Engineering Research (PEER) Next Generation Liquefaction Database

Steven Bartlett, University of Utah

- The PEER database of Standard Penetration Test (SPT) and Cone Penetrometer Test (CPT) data available to researchers at <https://ngawest2.berkeley.edu>
- Due to time constraints, this presentation was not given in full.

Gravel Liquefaction Assessment using the Dynamic Cone Penetration Test

Dr. Kyle Rollins, Brigham Young University

- Gave worldwide examples of sand and gravel lateral spreading.
- Dynamic Cone Penetrometer test (DPT)- developed after the 2008 Sichuan earthquake when gravel soils liquefied.
- Gave examples where DPT testing by Rollins and other researchers has been performed worldwide.

Update on Liquefaction Susceptibility Mapping by the Utah Geological Survey

Ben Erikson, Utah Geological Survey

- In tandem with the UGS geologic hazard mapping efforts, a geotechnical database capturing geotechnical data is being created.
- The Data Interchange for Geotechnical and Geoenvironmental Specialists (DIGGS) format is being considered (<http://diggsml.org>).

TECHNICAL DISCUSSION ITEMS

- CPT Investigation in Downtown Salt Lake City
Dr. Bartlett led a discussion about performing additional work in downtown Salt Lake City to better understand and define subsurface physical properties of soils and rock units. Given the

recent work by Dr. Lee Liberty using seismic surveys to show fault-offset layers beneath downtown Salt Lake City, Dr. Bartlett proposed the usefulness of tying physical data to the geophysical data.

- **Paleoliquefaction Trenching**
Emily Kleber led a discussion about the need for identifying paleoliquefaction sites in the subsurface for liquefaction susceptibility mapping being completed by the UGS. The UGS is actively mapping geologic hazards in urban areas, and knowing more about the liquefiable geologic units and their distribution along the Wasatch Front is critical.
- **Subsurface Mapping from Borehole, Test Pit, and Drilling Data**
There was general discussion about the importance of collecting sub-surface data for liquefaction investigations.
- **Disseminating Liquefaction Mapping and Progress**
There was general discussion about making liquefaction mapping easily available to public officials and the general public. It was suggested that UGS be an avenue for pointing towards the work done by the ULAG since 2002.

NONTECHNICAL DISCUSSION ITEMS

Dr. Bartlett will be stepping down as the ULAG chair. Nominations for chair were taken. Since many working group members were not present, it was agreed that an online vote would take place in 2018, before the U.S. Geological Survey (USGS) NEHRP Earthquake Hazards Program (EHP) external grants are due.

ULAG 2019 INVESTIGATION PRIORITIES

Dr. Bartlett and Dr. Kyle Rollins plan to submit a proposal to the USGS EHP in 2018 to perform additional CPT/DPT investigations from borehole data in downtown Salt Lake City. Locations would be tied to Dr. Liberty's work in order to constrain physical properties of fault-offset layers from seismic profiles and identify previously liquefied and potentially liquefiable layers. The proposal will likely include a profile along North Temple.

Emily Kleber plans to identify key potential paleoliquefaction trenching sites along the urban Wasatch front. These sites will be presented at the next ULAG meeting for discussion.

MEETING ATTENDANCE **Working Group Members**

Steve Bartlett	University of Utah (ULAG Chair)
Emily Kleber	Utah Geological Survey (UGS ULAG Liaison)
Kyle Rollins	Brigham Young University, Civil and Environmental Engineering
David Simon	Simon Associates, LLC
Grant Gummow	Utah Department of Transportation
Travis Gerber	AECOM

Guests

Cianna Wyshnytzky	Natural Resources Conservation Service (NRCS)
Chris Garris	Consolidated Engineering Laboratories
Patrick Emery	Gordon Geotechnical Engineering, Inc.
Jordan Culp	Gordon Geotechnical Engineering, Inc.
Bob Carey	Utah Division of Emergency Management
Ben Erickson	Utah Geological Survey
Greg McDonald	Utah Geological Survey