OREGON SECTION OF THE
ASSOCIATION OF ENVIRONMENTAL &
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The Official

OREGON SECTION AEG NEWSLETTER

January Meeting Details

Date: Tuesday, January 27

Location: McMenamins

Kennedy School, 5736 NE 33rd

Portland, OR

6:00 pm Social

7:00 pm Dinner

8:00 pm Presentation

Dinner: Veg and Meat Pasta

$35 Dinner ($5 Students)

Reservations: mwegner@cornforthconsultants.com with "AEG Reservation" in the subject line or 971-222-2047 by 4pm Thursday January 22nd .

There is a $2 surcharge for those who do not reserve by the deadline.

Upcoming Meetings:

- **February 17: Jenne Castro, Stream Restoration**
- **March 17: TBA**
- **April 21: Student Night**
- **May 19: Ed Medley**

The January Meeting Guest Speaker is Yumei Wang from the Oregon Department of Geology (DOGAMI) Presentation: Aging Infrastructure: Your Money Or Your Life (lines)?

Oregon is vulnerable to natural hazards, including severe winter storms and Cascadia Subduction Zone earthquakes and tsunamis. Much of Oregon's infrastructure (or lifelines) have not been designed to tolerate extreme conditions, some will be damaged in future events, and the region could suffer severe consequences. What is the expected performance of the region's infrastructure? What can be done to improve the reliability of the region's infrastructure?

Damage and losses from December 2007 winter storm will be described, which caused $300 million in losses and five fatalities. In this small scale disaster in Oregon, critical infrastructure was damaged, including: 230 kV electrical transmission, telecommunications including 911 emergency communication, 85% of international fiber optical connectivity, the transportation systems with 366 highway closures, and more. Most of the damage to vulnerable infrastructure and buildings was caused by sustained high winds, flooding and landslides. The response and recovery efforts were slowed in large part due to interdependent infrastructure, such as lack of communication due to power outages.

A comparison between the 2007 storm to projected losses in Oregon from a Cascadia earthquake and tsunami will also be discussed. A repeat of the 1700 prehistoric Cascadia earthquake would be a catastrophic disaster with widespread impact. Expected losses in Oregon from a magnitude 9 Cascadia earthquake are over $30 billion and over 5,000 fatalities.

Recommendations include conducting vulnerability studies for critical infrastructure in the Portland region for a multi-hazard environment. Mitigation actions should be prioritized based on risk analyses and benefit cost analyses. Infrastructure that impacts the security of the region, such as the Bonneville Power Administration electrical system, should have long term, funded mitigation programs to help protect the region.

Additional recommendations for low lying tsunami-prone coastal areas will be provided. State-of-the-art risk reduction measures for especially vulnerable communities include the construction of tsunami evacuation buildings (TEB) in high hazard tsunami zones, combined with aggressive public education and reliable near-field tsunami warning systems to ensure adequate safety.

(continued on page 2)

Storm damage to a co-located bridge, railroad, and fiber optic main

(continued) Two-story reinforced concrete TEB with rooftop parking with a deep, scour resistant foundation could be constructed in areas that are not conducive for evacuation (refer to schematic drawing). The ground floor could include a tsunami education center and other community functions, which would be sacrificed in a tsunami. The second floor, which would be higher than the tsunami inundation elevation, could include office space. The top floor could be for parking, emergency supply storage, and should include a readily identifiable TEB beacon and siren for evacuees. Two carefully located vehicular ramps and staircases would allow for mass emergency ingress including by wheelchair.

Schematic Design of Tsunami Evacuation Building (TEB)

Bio: Yumei Wang, PE

Yumei Wang is a geotechnical engineer at the Oregon Department of Geology and Mineral Industries, where she is responsible for geologic hazards and risk assessments, and for developing risk mitigation strategies for the State of Oregon. In 14 years with State government, her work has focused on improving assessment of and lowering risk from earthquakes, tsunamis and landslides. In 2000, she served a 1-year term as a congressional fellow in the U.S. Senate in Washington, DC. She has been the lead advocate on ten successful earthquake safety bills, and has helped shape State and Federal policies in her areas of expertise and on issues relating to the environment, energy, and transportation. Ms. Wang previously worked as a private consultant. She is a licensed engineer and holds degrees from the University of California at Santa Barbara and Berkeley.

Message From The Chair

Happy New Year! And what better way to start the new year than by carrying on the old Pacific Northwest tradition of having a big storm on a holiday? Well some of us can probably think of better ways, especially if your basement started flooding like mine did. This month's speaker and topic is very fitting with all the recent rain, snow, wind, flooding, and landslides that have affected homes, businesses, and highways throughout the region. Yumei Wang from DOGAMI will be speaking about how a multitude of natural hazards affect the infrastructure in our region. She will also talk about how and why we should be improving the reliability of our infrastructure to hold up during major natural hazard events. Those of us working in government have been hearing more and more lately about "multi-hazards" or "all-hazards" and the need to take a more holistic approach to hazard identification, land use planning, emergency response, and designing our infrastructure to be resilient. This months meeting is also our annual joint meeting with the local ASCE Geotech Section. So grab the engineers in your office and come out and have a good time with us at the Kennedy School on January 27th. Note that this is the FOURTH Tuesday of this month. Hope to see you there,

AEG Oregon Section Chair

Jason Hinkle

"Keen observation is at least as necessary as penetrating analysis"

Karl Terzaghi

Thanks For Supporting AEG !

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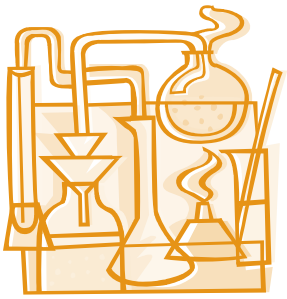
The Association of Engineering Geologists (AEG) contributes to its members' professional success and the public welfare by providing leadership, advocacy, and applied research in environmental and engineering geology. AEG's values are based on the belief that its members have a responsibility to assume stewardship over their fields of expertise. AEG is the acknowledged international leader in environmental and engineering geology, and is greatly respected for its stewardship of the profession.



The Oregon Section is also on the web at http://www.aegoregon.org
National AEG webpage: http://aegweb.org

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The Oregon Section Newsletter

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Earthquake Engineering in a Multi-Hazard Environment Conference

Earthquake Engineering in a Multi-Hazard Environment conference is being hosted by ASCE Technical Council on Lifeline Earthquake Engineering (TCLEE). Plenary speakers and sessions will cover lifelines (ports, transportation, water and waste water, gas and liquid fuels, electric power, communications) involving hazards and risk, performance requirements, design, retrofit, evaluation, interdependencies, planning, and more. This conference will focus not only on lifeline earthquake engineering but also on engineering of lifelines to resist other natural and man-made hazards. Objectives of the conference are to stimulate dialogue and communication among engineers involved with these various hazards, as well as improve the reliability of infrastructure. It will be held in Oakland, CA from June 28 to July 1, 2009.

For more information on the conference, see http://content.asce.org/conferences/tclee2009/ If you have questions about the conference, please contact Yumei Wang, TCLEE executive committee chair (Yumei.wang@dogami.state.or.us; 971-673-1551) or Stu Werner, the TCLEE 2009 conference chair (sdwerner@ix.netcom.com; 510-531-7489).