OREGON SECTION OF THE ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS

October 2009

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The Official

OREGON SECTION AEG NEWSLETTER

October Meeting Details

Date: Tuesday October 20

Location: Madison Grill

1109 SE Madison St.

Portland, OR

6:00 pm Social

7:00 pm Dinner

8:00 pm Presentation

Dinner: Salad, Pasta, Chick & Veg.

$15 Dinner ($5 Students)

Reservations: mwegner@cornforthconsultants.com with "AEG Reservation" in the subject line or 971-222-2047 by 4pm Thurs. Oct. 15th.

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

Upcoming Meetings:

The October Meetings Guest Speaker is Jeff Conway—From Modeling to Monitoring: Streambed Scour at Bridges in Alaska

The U.S. Geological Survey and Alaska Department of Transportation and Public Facilities have been cooperatively studying streambed scour at bridges in Alaska for more than 10 years. Streambed scour was initially evaluated at 325 bridges using a multiphase approach. The first phase used existing data and regional variables to construct hydraulic models and assess scour based on federally recommended techniques. The results from the first phase were used to select 57 sites where field data and more intensive modeling was required. Field data that included channel cross sections, discharge measurements, and geomorphic data were collected for this second phase. More complex hydraulic models were developed at these locations to assess and evaluate scour. These results were used to establish a real-time streambed scour monitoring network at selected bridge sites.

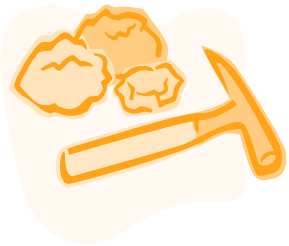
Five years of stage and bed-elevation data have been collected at 20 bridge sites throughout Alaska to assess streambed-scour in near real-time and to identify shortcomings of existing methods used to estimate scour at bridges. These sites range from small, steep creeks to large glacial rivers. Bridges have been instrumented with sonars at the pier nose for measuring distance to the streambed and transducers on the pier or bridge deck to measure stage. The data are then transmitted via satellite every 6 hours and uploaded to a website that provides graphical presentation of bed and water-surface elevations at the pier (http://ak.water.usgs.gov/usgs_scour). Data collected at these sites illustrates short-term scour and fill as well as longer duration channel degradation and aggradation cycles. Several sites showed little change in bed elevation, despite being subjected to 100-year recurrence interval flooding. Lack of streambed scour at these sites is valuable information because they were classified as scour-critical bridges using data generated by hydraulic models and predictive scour equations.

Observed changes in bed elevation are attributed to (1) short-term scour and fill during high flows, (2) seasonal aggradation and degradation, or (3) channel migration. Data from the glacier-fed Knik River near Palmer, Alaska, for example, show an annual cycle of channel aggradation and degradation punctuated by shorter periods of scour and fill. The annual vertical bed-elevation change exceeds 6 meters and is an interplay of sediment supply, discharge, and instream hydraulic structures. Pier footings and subfootings were exposed three separate times from 2002-2006 and infilling occurred afterwards. These cycles would have been missed by traditional bridge surveys. Our multi-phased assessment of bridge scour identified locations where scour is a concern and the scour-monitoring data provide state engineers with valuable data that is used to ensure the safety of the structure during high flows. The data sets from these dynamic rivers indicate that scour can result from a reaction to changes in hydraulic variables, timing and duration of streamflow, and the source of the high flow. These factors are not typically included in the engineering assessment of streambed scour and result in disparities between estimated and observed scour.

Bio: Jeff Conway is U.S Geological Survey Hydrologist, Alaska Science Center, has ten years of experience evaluating and monitoring streambed scour at bridges. He has completed over 50 scour investigations using 1, 2, and 3 dimensional hydraulic models and operates the largest scour monitoring program in the U.S. He also specializes in collecting hydroacoustic data for visualization of complex 3-dimensional velocity flow fields at hydraulic structures and for verification of hydraulic models. He is a graduate of the University of Alaska Fairbanks and Portland State University.

AEG Oregon Section Attends an Epoch Event !

PSU students Serin Duplantis and Kate Mickelson win AEGs national Stout Scholarships pictured here with AEG President Mark Molinari.



Professor Scott Burns, Rachel Pirot, Serin Duplantis, Tom Kuper, and Kate Mickelson enjoy an evening of wine tasting at this years special event held at the Edgewood Tahoe Resort.

Message From The Chair

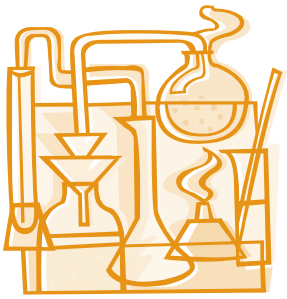
Another month and another note from the chair. If you have been as busy as I have been year, this has been a year without a summer - only traveling and reviewing locks and dam throughout the Mississippi valley. AEG's Annual Meeting was held at Lake Tahoe this year. I was off and traveling and was unable to attend. However, thanks to Matt Brunengo, who stepped in, Oregon Section was represented at the business meeting. Now it is October so it is the time to think about GSA 2009 Annual Meeting being held in Portland. I hope to be able to attend a few of the sessions and may see some of you there. Next Section meeting is Tuesday during the week GSA is meeting in Portland. I plan to attend.

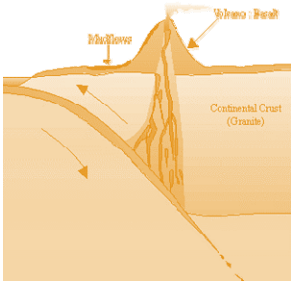
Oregon Section AEG Chair

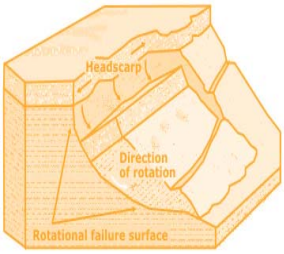
Dave Schofield

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

Karl Terzaghi







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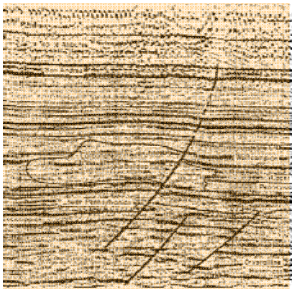

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The Oregon Section is also on the web at http://www.aegoregon.org
National AEG webpage: http://aegweb.org

The Oregon Section Newsletter

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