



## **AEG SACRAMENTO SECTION**

### **March Meeting Announcement**

**Date: Tuesday, March 18, 2008**

**Location: California Fat's Steakhouse & Asian Grill, 1015 Front Street, Sacramento**

**RSVPs are encouraged, recommended, and greatly appreciated! (Lbreckenridge@wallace-kuhl.com)**

### **SITE CHARACTERIZATION AND FAILURE MODES IN THE LANDMARK PATERNO VS CALIFORNIA FLOOD CASE**

**J. David Rogers, Ph.D., P.E., P.G., C.E.G., C.H.G.**

*Karl F. Hasselmann Chair in Geological Engineering  
Missouri University of Science & Technology*

J. David Rogers of U.C. Berkeley and Richard L. Meehan of Stanford University served as the principal plaintiff's experts representing the victims of a major levee break along the left bank of the Yuba River, near its mouth with the Feather River, in February 1986. The breach inundated the towns of Linda and Olivehurst, California, causing over \$400 million in damages. Eyewitness accounts of the levee failure described a dramatic boiling of the land side toe just before the embankment fell into a hole and disappeared. The break occurred after the flood had crested, when the water surface was 9 feet below levee crest, after 9 days at flood stage.

Messrs. Rogers and Meehan worked with a team of experts in allied fields to unravel the most likely causes of the failure. This work included developing an extensive historical database that traced the developmental history of the Yuba Basin, including past flooding problems, four generations of levees, circumstances surrounding past levee failures, geomorphic processes shaping the channel, excavation permits and maintenance activities by the local reclamation district.

The authors supervised the drilling of conventional flight auger and cone penetrometer soundings (CPT) of subsurface soils in vicinity of the levee breach. During this phase a highly conductive gravel cobble channel was discovered passing beneath the failure area which had gone undetected because it was slightly deeper (-24 ft) than the height of the levee above ground (+22 ft), and Corps of Engineers procedures specified that foundation characterization need not exceed a depth equal to the height of any embankment.

Subsurface samples were recovered for classification and testing, and detailed stratigraphic correlations performed across the area. When these data were combined with the developmental and flow history of the same zone, a working model emerged which predicted levee failure at the precise location and within the timing parameters that were observed.

The case was in litigation for over 19 years and led to a landmark decision by the California District Court of Appeal in 2003. The California Supreme Court refused to review the decision. The decision resulted in the State being held liable for failure of a flood control project to function as intended by applying a constitutional balancing test that weighed the benefits provided by the project against the gravity of the harm caused. This resulted in a finding of unreasonable conduct that if left uncompensated, would require plaintiffs to bear more than their fair share of the costs of the public project. The case was resolved with payment to plaintiffs in excess of \$450 million - - the largest award in a flood litigation case in the United

States. The *Paterno* decision has created a new era in government-approved infrastructure, which affects every taxpayer in the State of California, and will, inevitably, have enormous impact on how natural hazards, such as floods, are treated in the rest of the United States.

### **J. David Rogers Biographical Sketch:**

J. David Rogers received his B.S. degree in geology from the California State Polytechnic University in 1976, M.S. in civil engineering from U.C. Berkeley in 1979 and Ph.D. in geological and geotechnical engineering from Berkeley in 1982.

Between 1979-2001 he worked in the private sector on a wide array of projects, many involving forensic geology and engineering, which he terms "geoforensics". In 1984 he founded the firm of Rogers/Pacific, which established offices in the San Francisco and Los Angeles metropolitan areas.

He began teaching at the University of California, Berkeley in August 1994, in the Departments of Civil & Environmental Engineering and Landscape Architecture and Environmental Planning. In July 2001 Dr. Rogers accepted the Karl F. Hasselmann Chair in Geological Engineering at the Missouri University of Science & Technology (formerly, the University of Missouri-Rolla), where he teaches courses on Engineering Geology and Geotechnics and Geotechnical Construction Practice. He has also developed courses in Military Geology and Flood Control Practice in the United States for the Army Corps of Engineers Advanced Course at nearby Fort Leonard Wood. He has consulted on a wide range of projects for the Department of Defense on physical facilities worldwide and has developed a respected program of research funded by the National Science Foundation, U.S. Air Force, U.S. Geological Survey, National Geospatial Intelligence Agency, and the Federal Highway Administration. He is a frequent contributor to network news services, PBS, History Channel, and Discovery Channel.

His 1992 article titled Reassessment of the St. Francis Dam Failure was recognized by the E.B. Burwell Award of the Geological Society of America and the Rock Mechanics Award of the National Research Council. In 1994 his novel design of "blind reinforcement" for a troubled cliff face in San Francisco was recognized by the Distinguished Project Award of the American Public Works Association. In 1995 his contributions to the emerging field of geoforensics were recognized by the 1996 R.H. Jahns Distinguished Lecturer in Engineering Geology Award of GSA and AEG.

Dr. Rogers is a registered civil engineer, geologist, engineering geologist and hydrogeologist in California. He was appointed to the Missouri Seismic Safety Commission by Governor Matt Blunt in 2005. Later that year he was also appointed to the National Science Foundation's Independent Levee Investigation Team in the wake of Hurricanes Katrina and Rita. In 2007 he was named to the Coastal Louisiana Recovery Panel of Environmental Defense, which is assessing future flood control challenges in the Mississippi Delta region. Rogers was also selected by the State of Louisiana as the only out-of-state instructor for their inaugural Flood Protection and Ecosystem Restoration Professional Development Program in 2007.

### **Meeting Details:**

Place: California Fat's Steakhouse & Asian Grille

(Located in historic Old Sacramento near the corner of Front Street & J Street)

Time: 5:30-6:30 Sign-in & Social Hour

6:30-7:30 Dinner & Announcements

7:30-8:30 Speaker Talk & Slide Show

8:30-8:45 Questions & Answers

On The Menu:

Chicken Pot Stickers & Crispy Vegetable Spring Rolls

Orange Chicken      Honey Walnut Prawns

Vegetarian Stir Fry      Chicken Chow Mein

Garlic Green Beans      Steamed White Rice

Dinner is served family style and includes dessert and coffee.

Cost: \$30 AEG member (w/RSVP); \$32 nonmember and walk-ins

First 5 Students (w/RSVP) Eat For Free!

Additional Student RSVPs: \$10.00      Student Walk-ins: \$15.00

Alcoholic beverages are available to those 21 and over on a cash basis.

**RSVP to:      Lisa Breckenridge, Wallace-Kuhl & Associates**

**Email: [lbreckenridge@wallace-kuhl.com](mailto:lbreckenridge@wallace-kuhl.com)**

**Phone: (916) 372-1434**

**Fax: (916) 290-5429**