

# Association of Environmental and Engineering Geologists

## The Rocky Mountain Section Newsletter

SEPTEMBER 2006

### MEETING DATE

THURSDAY  
SEPTEMBER 14TH,  
2006

### TIME

5:45 p.m. Social Hour  
6:30 p.m. Dinner  
7:30 p.m. Presentation

### LOCATION

Berthoud Hall,  
Colorado School of  
Mines  
1516 Illinois St.  
Golden, Co 80401  
See Map Below

### COST

\$20 Members  
\$22 Non-members  
Students, Free first  
time, then \$10

### RESERVATIONS

Kristi Ainslie  
(303) 264-1030  
or  
[meetings@aegrms.org](mailto:meetings@aegrms.org)  
or  
[WWW.AEGRMS.ORG](http://WWW.AEGRMS.ORG)

BY NOON,  
TUESDAY  
SEPTEMBER 12<sup>TH</sup>

## ROCK-FALL ANALYSIS AND MITIGATION

**Jerry D. Higgins,  
Ph.D., P.G.**

*2006 Richard Jahns  
Distinguished Lecturer in  
Engineering Geology*

**Department of Geology &  
Geological Engineering  
Colorado School of Mines**

Rock fall refers to the detachment of rock from a steep slope along a surface on which little or no shear displacement occurs. The material rapidly descends a slope by falling, bouncing, or rolling. Except when the displaced rock has been undercut, falling will be preceded by small sliding or toppling movements that separate the displacing material from the undisturbed mass. Rock fall may involve more than one rock, but does not include large volumes such as rock slides.

The traffic on highways crossing steep topography has steadily increased resulting in an increase in the number of rock-fall related accidents and deaths. In the past 20 years or so, transportation departments have become increasingly concerned with identifying rock-fall hazard and attempting to reduce the risk of accidents along heavily traveled

routes. The resulting research has led to the development of new management, analyses and mitigation techniques that make it possible to stabilize or control many of the smaller, but high risk, potential rock falls. Today, these developments are commonly applied throughout civil, environmental, and mining practice.

Engineering geologists have had the tools for many years to recognize structural or environmental conditions that may increase the potential for rock-fall events. Research in the early 1960s developed an empirical method to design effective rock-fall catchment ditches along roadways. Beginning in the 1980s several computer programs were written and tested that were effective in helping engineering geologists predict how rocks behave as they bounce down slopes, which aided in catchment ditch design or the placement and design of rock-fall barriers on the slope. Several versions of rock-fall inventory systems were developed to aid engineering geologists in selecting priorities for remediation. Many full-scale rock-rolling experiments have been conducted for calibration of computer programs or as a basis for design of barrier or ditch systems. Various types of rock-fall

barriers were designed and underwent full-scale testing. Today rock-fall analysis and mitigation has become relatively sophisticated and geologists and engineers have the tools to analyze slopes for rock-fall hazard and to construct rather sophisticated stabilization or catchment systems.

This presentation will review the development of important rock fall assessment and analysis tools, the various mitigation techniques, and full-scale-testing of rock-fall barriers.

## Words From the Chair

What happened to summer? It seems Memorial Day was only yesterday.

The end of summer also means that my time as Section Chair is coming to a close. As per the National Bylaws, the section officer's terms coincide with the Annual Board Meeting. Liv Bowden will take over as Section Chair in November.

So, where have we been? Our mainstay, the monthly programs, have all been excellent and well attended. All of the talks have been interesting, timely, and topical. Thanks to all of our speakers. Thanks goes out to Liv for making all of the arrangements for these events. We ran two field trips this year and both were excellent. I hope we do more in the future.

What didn't get done? There are a few things. First, we need to re-write our bylaws since they seem to have been lost. Second,

my desire to devise some way of reaching out to all members in the Section has not worked out.

I attended the mid-year Board meeting in New Orleans. The health of the organization is strong. Membership is increasing and we are financially strong. The mid-year meeting was in New Orleans in order to give the Board a chance to take a look at the meeting venue for 2008. The hotel (the J. W. Marriott) is in fine shape. I can't say the same for the rest of the city. My impression of the downtown/French Quarter is that there is still much damage to be repaired. The Board took a field trip on Saturday afternoon to look at damage in New Orleans and southern Mississippi (see photos in this issue). The devastation in parts of the city, and in particular, the lower 9th ward, is overwhelming. When we got to Mississippi, our first impression was that it wasn't so bad. This was largely due to the fact that the debris has been mostly removed. Upon closer examination, we realized that these areas used to be communities like any where else. The only thing left to indicate this were the miles and miles of concrete slabs of former homes and businesses.

What's upcoming? This month's talk is one we've been waiting a long time for. Jerry Higgins will give his Jahns Lecture to the Section. We are in the process of lining up speakers for the upcoming programs. If you have an interesting talk to give, let us

know. The RMS-AEG is also co-sponsoring an Open Ridge Day at Dinosaur Ridge for local Girl Scouts (see announcement in this issue.) This event gives them opportunities to earn badges in a number of areas, particularly in the geosciences. More importantly however, will be an opportunity for these young ladies to meet and talk to women geoscientists and potentially consider careers in these areas. Please consider helping out at this important event.

The new website is up and running. The Boston meeting is coming up soon (have you made reservations yet?) and the 50th annual meeting is next year. Don't forget to send in your dues and while you're at it, include a little for the Foundation.

## ROCKS AND ROLES: WOMEN ON THE RIDGE

The third annual ***Rocks and Roles: Women on the Ridge*** will be on October 7, 2006. This all-day event (9:00 - 3:30) is sponsored by The Friends of Dinosaur Ridge and Girl Scouts Mile Hi Council. Two professional organizations are supplying volunteers to help: Association for Women Geoscientists and the Association of Environmental and Engineering Geologists.

We need women (and a few men) to help Girl Scouts earn badges and learn about geology. On October 7, two shifts of helpers (or an all day shift) will talk to girls either at scout stations or on Dinosaur Ridge stops. The shifts are from 8:45 - 12:15 and 12:00 - 3:30. You can choose a particular badge station or get trained to explain one of the stops on the Ridge.

**Scout Badge Stations:** Girl Scouts have specific things they need to learn to earn one or more badges that day. Scientists need to be at particular sites either at the visitor center or on the ridge to help the girls with their badge requirements. You can bring anything you would like to share, or Dinosaur Ridge can help set up tables to help the girls learn about: (*con't on page 5*)

**"We need women (and a few men) to help Girl Scouts earn badges and learn about geology."**



Hot Springs of Central Colorado field trip



**"Northeast  
Engineering  
Geology:  
From Till to  
Fill"**

## Upcoming Events

Information, dates, and website links for the following conferences/symposiums can be found on our website at [www.aegrms.org](http://www.aegrms.org). Also look to the calendar of events on the website for an organized listing and dates of the many upcoming events.

- **First North American Landslide Conference**

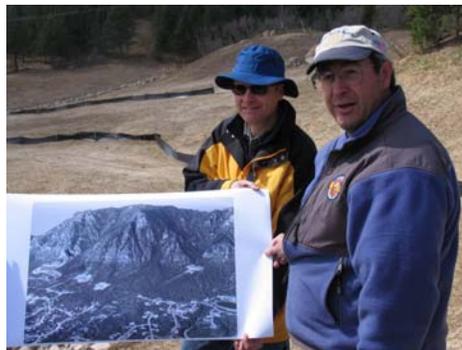
- **40<sup>th</sup> Annual Symposium on Engineering Geology & Geotechnical Engineering**
- **57<sup>th</sup> Highway Geology Symposium Breckenridge, CO**
- **GEO-volution: The Evolution of Colorado's Geological and Geotechnical Engineering Practice**

### **AEG 2006 Annual Meeting**

AEG-2006 "Northeast Engineering Geology: From Till to Fill" in Boston, Massachusetts; October 30 through November 4 at the Boston Park Plaza Hotel.

## Summer Field Trips

There were two field trips over the summer: *Debris flows, landslides, and potentially unstable slopes in Colorado Springs* and *Hot springs in central Colorado*. Thanks to all who helped to organize and lead the field trips and to the participants who also make these events a success!



13TH ANNUAL

**I  
P  
E  
C** International Petroleum Environmental Conference

13 Years of Addressing Issues and Solutions in Exploration, Production and Refining

October 17-20, 2006 • San Antonio, Texas  
Crowne Plaza Riverwalk Hotel

For more information, go to:  
[www.cese.utulsa.edu](http://www.cese.utulsa.edu)  
Click on Conferences/IPEC

Conference Organized by The University of Tulsa, CESE: the Integrated Consortium for Energy and the Environment, ICEE • 918-831-3088 • [cese@utulsa.edu](mailto:cese@utulsa.edu)

# Katrina Damage



Along the Gulf Coast in Mississippi, the storm surge acted like a lawn mower, pretty much taking everything out. Entire communities were wiped off the face of the Earth leaving behind not much more than building slabs. Multi-story buildings along the coast (like casinos) had their 1<sup>st</sup> and 2<sup>nd</sup> floors completely stripped leaving behind only structural columns. The surge reached the 3<sup>rd</sup> floor in many places.



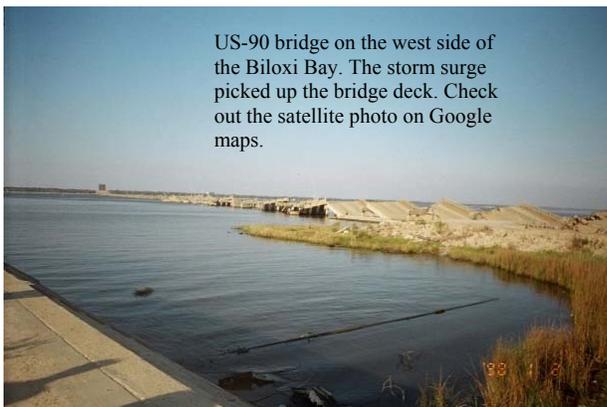
The 9<sup>th</sup> Ward in New Orleans. Destruction here was mainly due to failure of sheet-pile walls along the Industrial and other canals. This resulted in widespread flooding which affected large parts of the city. Due to its proximity to the breach in the Industrial canal, the destruction in the 9<sup>th</sup> Ward was compounded by rapidly moving water. In other places, the destruction was confined to water damage.



Even more destruction in the 9<sup>th</sup> Ward in New Orleans



More destruction in the 9<sup>th</sup> Ward in New Orleans. Each structure was marked by search and rescue. Note the date—this building was not examined until September 13, some 15 days after the storm.



US-90 bridge on the west side of the Biloxi Bay. The storm surge picked up the bridge deck. Check out the satellite photo on Google maps.



Highway sign on US-90 at Bay St. Louis bent over by the surge. Many of the trees have died as a result of saltwater.



Highway US-90 at Bay St. Louis undermined by a washed-out culvert. Note the FEMA trailers in the background.

# Rocks and Roles, con't

*Careers, History of Women in Science, Fossils, Ecology, Rock ID, Earthquakes and Volcanoes, Topography and Landforms, Geology*

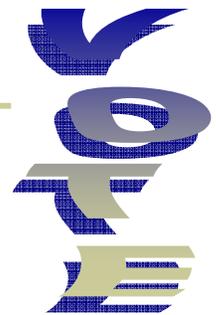
**Dinosaur Ridge Stations:** The Ridge has 12 stations all set up to see real rocks with real fossils, which include footprints, bones, plant fossils and tons of interesting geological features. The Ridge will set up a training day (about 4 to 6 hours on a weekend) to help you learn about the geology and to decide which station you would prefer to do. Then, you spend your

shift talking to the girls and their families about the rocks at your station. Some of the stations will have badge requirements, so we will need 2 geologists for each of those stations.

If you are interested in helping, please contact:

Clare P. Marshall  
Discovery Day Liaison  
Friends of Dinosaur Ridge

[dinodiscovery@dinoridge.org](mailto:dinodiscovery@dinoridge.org)  
[www.dinoridge.org](http://www.dinoridge.org)



## 2006-2007 AEG-RMS Officers Ballot

It's time to vote for the new 2006-2007 AEG-RMS officers. The ballot is attached to the end of this newsletter. Liv Bowden was elected Chairperson last year and will be taking over. Steve Compton has volunteered to be the new Chair-elect. We are now looking for a new Treasurer, so please write-in or volunteer directly.

Get your ballot in!

## Board of Directors

### Chairperson

Dwayne Edington  
303.470.1263  
[chair@aegrms.org](mailto:chair@aegrms.org)

### Chair-elect

Liv Bowden  
Golder and Associates  
[chair-elect@aegrms.org](mailto:chair-elect@aegrms.org)

### Secretary

Margit Kurka  
Michael W. West & Assoc, Inc.  
720.529.5300  
[aeg\\_rms\\_secretary@yahoo.com](mailto:aeg_rms_secretary@yahoo.com)

### Treasurer

Steve Compton  
Lafarge West, Inc.  
720.201.4914  
[treasurer@aegrms.org](mailto:treasurer@aegrms.org)

### Membership

Sean Harvey  
Lyman Henn  
[membership@aegrms.org](mailto:membership@aegrms.org)

### Newsletter

Kristi Ainslie  
GEI Consultants, Inc.  
Ed Friend  
RJH Consultants, Inc.  
[newsletter@aegrms.org](mailto:newsletter@aegrms.org)

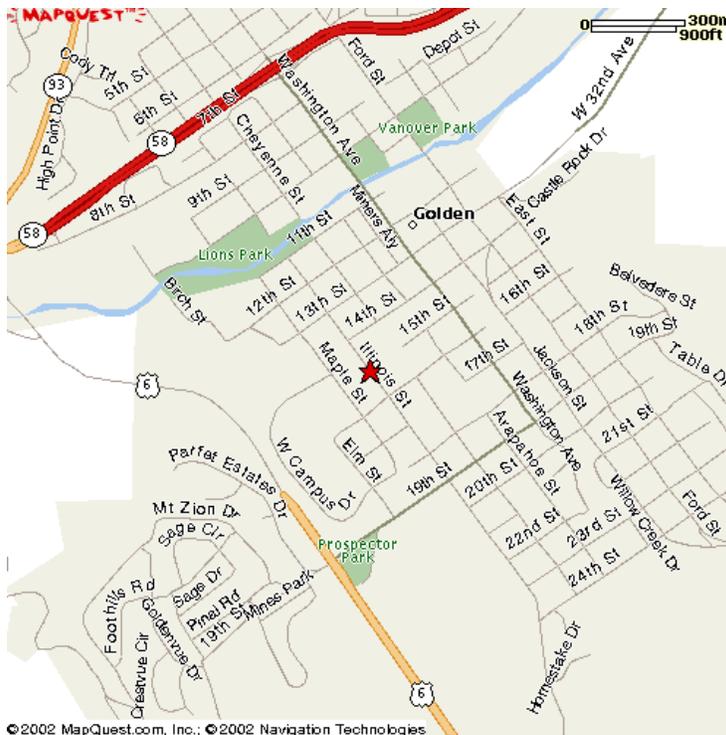
### Website

Jill Carlson  
Colorado Geological Survey  
[webmaster@aegrms.org](mailto:webmaster@aegrms.org)

### Student Chair

Diana Sitze  
[student-chair@aegrms.org](mailto:student-chair@aegrms.org)

GEI Consultants, Inc.  
6950 S. Potomac St. Suite 300  
Centennial, CO 80112



**Colorado School of Mines - Berthoud Hall**  
**1516 Illinois Street**  
**Golden, CO 80401**

**AEG ROCKY MOUNTAIN SECTION**  
**BALLOT FOR FALL 2006/SPRING 2007**  
**OFFICERS**

E-mail to Dwaine Edington, [chair@agrms.org](mailto:chair@agrms.org), by October 12, 2005, or bring to one of the AEG-RMS meetings on either September 14, or October 12, 2006.

CHAIR-ELECT:

\_\_\_\_\_ Steve Compton

\_\_\_\_\_ (write in)

TREASURER:

\_\_\_\_\_ (write in)

SECRETARY:

\_\_\_\_\_ Margit Kurka

\_\_\_\_\_ (write in)

**Liv Bowden was elected Chair-elect last year and will be taking over as Chair for Fall 2006/Spring 2007.**