



# GEO NEWS

Newsletter of the Association of Environmental & Engineering Geologists and  
American Institute of Professional Geologists, Carolinas Sections



**WINTER 2008**



**SAVE THE DATE!**  
**JANUARY 15, 2008,**  
**CHARLOTTE, NC**

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**GEONEWS Winter 2008**

Issue Date: December 21, 2008

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**Cover Photo:** *Courtesy Trigon | Kleinfelder. This photo was taken by Anthony Stoltz, a staff professional at Trigon | Kleinfelder, on August 16, 2005 during construction of the bridge for Taxiway E at the Piedmont Triad International Airport, over the new Bryan Boulevard. The photo depicts HP12X53 piles being driven with an ICE 42S open-end diesel hammer. The editor wishes to thank Trigon | Kleinfelder's Paul Weaver, Xavier Barrett, and Anthony Stoltz for the use of this photo.*

**GeoNews** is a publication of the Carolinas Section of AEG. There are four issues per year, with deadlines and issue publication dates listed below. We publish news of the profession, technical articles, and job openings.

Deadlines for submittal to GeoNews (*can be flexible depending on events*)

Spring – deadline March 1, issue date March 21  
 Summer – deadline June 1, issue date June 21  
 Fall – deadline September 1, issue date September 21  
 Winter – deadline December 1, issue date December 21

Deadlines for submittals for the National AEG News:

March issue – January 21  
 June issue – April 30  
 September issue – July 31  
 December issue – October 31

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**MESSAGE FROM THE CHAIR***By Rick Kolb, AEG Carolinas Section Chair*

AEG's annual meeting in New Orleans in September was a huge success, attended by over 400. Attendees from our section included **Jennifer Bauer** (now AEG Secretary), **Briget Doyle**, **Rick Kolb** and student members **Chesney Gilliland** from Appalachian State University and **Kyla Erich** from the College of Charleston. See the article on page 5 this newsletter that summarizes the high points of the annual meeting.

The 2009 annual meeting will be in South Lake Tahoe. Remember that our section will host the 2010 annual meeting, which will take place in Charleston and is chaired by **Briget Doyle** and **Norm Levine** of the College of Charleston. Our meeting committee met for the first time in Charleston in November. We will need lots of help from our section members and I encourage you to volunteer some time, even if you don't plan to attend the meeting. This meeting will be a direct reflection on our section. We will start a regular newsletter column to keep you up to date on our planning activities (See page 19)

We had planned to have past AEG President **Dorian Kuper** as speaker at our October meeting in Greensboro. However, a family crisis intervened and Dorian couldn't make it. We were fortunate to find, with little prior notice, a replacement speaker, **Steve Stadelman** of Novozymes North America. Steve presented a talk on Novozymes' hydrogeologic investigation of rocks in the Raleigh Belt that could provide a water supply for their manufacturing plant. It was one of the best and most useful talks I have seen at a professional meeting. We have included Steve's abstract and bio in this newsletter on page 17 so you can see what you missed.

Our efforts to involve students in our section have met with success. We have added approximately 25 new students since we implemented our policy of paying for the first year of student memberships. Our section is in the process of setting up student chapters at the College of Charleston, North Carolina State University and Appalachian State University. The College of Charleston will be our first student chapter, thanks to the efforts of Briget Doyle and student member Kyla Erich. We will ask the chair of each chapter to write a column for our newsletter so that our members can see the activities of the chapters. Our student outreach included a talk on geology careers by several AEG members to NC

State's Geology Club on November 17 (see the article on page 15), and continues with talks at UNC-Wilmington on January 21 and at UNC-Chapel Hill in January or February. If you are interested in participating in these student presentations, please contact anyone on the section's management committee. We encourage you to spend an evening at a local university near you and talk to geology students about career opportunities.

At our fall meeting, I announced the results of the elections. We have three new board members: **Kristen Lloyd** of MACTEC (Greensboro) is Secretary, **Dave Duncklee** of Duncklee & Dunham (Cary) is Treasurer, and **Paul Weaver** of Trigon/Kleinfelder (Greensboro) is Vice Chair. I will be chair for one more year. We thank past Secretary **Rich Lovett**, past Treasurer **Raymond Knox**, and past Vice Chair **Carin Kromm** for their service. Carin can now devote her free time to serving as Co-chair of the Membership Committee with **Evan Riddle**, and Raymond has volunteered to serve on the newly formed Licensure Committee, which met recently for the first time.

Once again our section supported earth science education by donating \$2,000 and collecting over \$2700 from the Ground Water Professionals of North Carolina, American Institute of Professional Geologists, sponsors, and individuals to purchase and distribute over 650 AGI science teacher packets at the southeastern area meeting of the National Science Teacher's Association (see the article on page 11). We are able to make such donations thanks to the generosity of our sponsors. Please support them whenever you can, and let them know we appreciate their financial support. They are listed in the back pages of this newsletter, pages 31 and 32.

Our January meeting will feature a talk on deep foundations by Xavier Barrett of Trigon | Kleinfelder in Greensboro. I'd seen an idea for such a talk in a meeting announcement for another section and thought our members would like to see a similar talk, especially for our members in the environmental side of our practice. We will meet again at the Rock Bottom Brewery in downtown Charlotte. See the announcement on page 4. We expect another contingent of students from UNC-Charlotte to attend, and hope to see you there.

*Rick Kolb*

AEG Carolinas Section Chair



## DEEP FOUNDATIONS TALK SCHEDULED FOR JANUARY 15 IN CHARLOTTE

Xavier C. Barrett, P.E., will speak on the topic of deep foundations in engineering geology at the AEG Carolinas January dinner meeting at Rock Bottom Brewery in Charlotte, NC. The talk is entitled “Basics of Deep Foundations: What Every Geologist Should Know.” Barrett is the Engineering Group Manager of Trigon | Kleinfelder, Inc., in Greensboro. The talk and Dinner will be on Thursday, January 15, 2009. Reservations are advised; abstract, bio, directions and reservation contact information are below.

The picture on the front page is courtesy Paul Weaver, Trigon | Kleinfelder, AEG Carolinas Vice-Chair.

### Abstract:

#### Basics of Deep Foundations: What Every Geologist Should Know

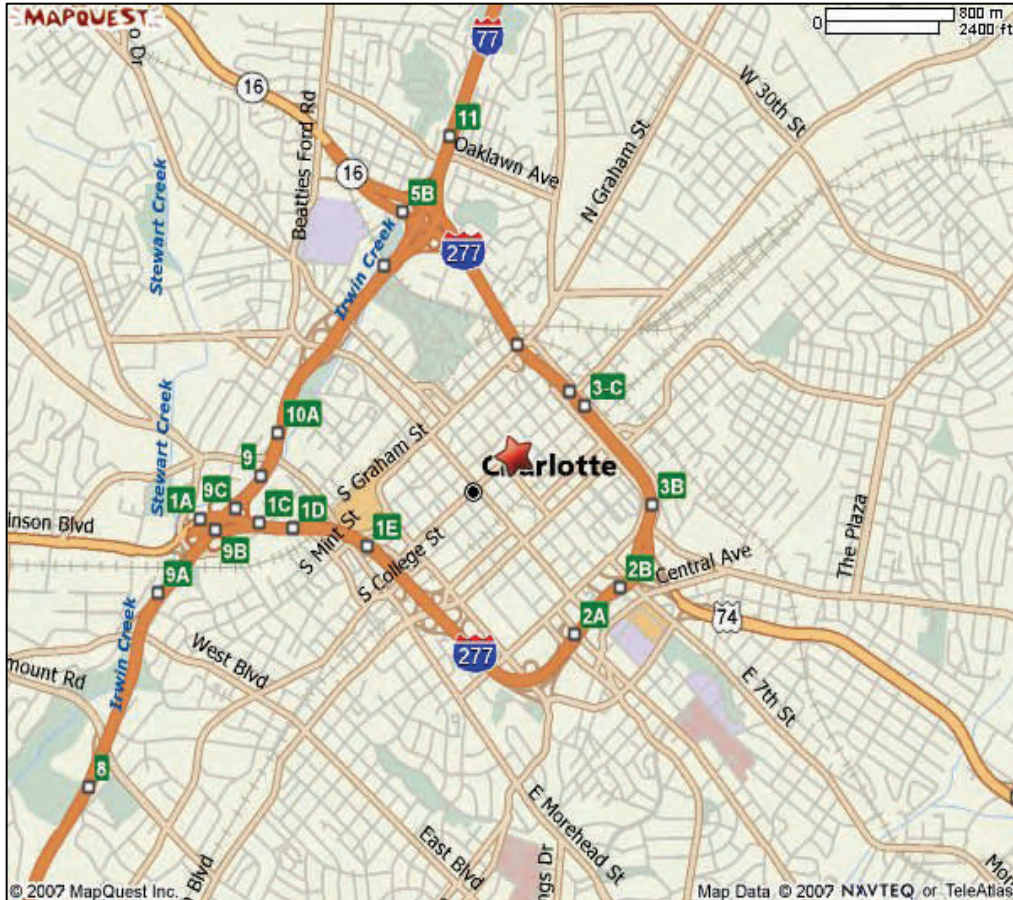
Geologists are often called upon by engineers to perform geotechnical subsurface investigations to assist in the design of deep foundations for structures, especially pile foundation systems. It is often up to the geologist to “call the hole” meaning to make the decision as to when the borehole has been drilled deep enough for the foundation designer to have all of the information needed to per-

form the foundation design. It is also important for the geologist to know the kind of information that is important to the designer during the drilling of the borehole so that this information is not neglected.

The purpose of this presentation is to enlighten the geologist as to the basics of deep foundation investigations and design with special emphasis on driven piles. It will inform the uninitiated as to what piles are, the different pile types and how they are used, and it may provide those already familiar with deep foundations some tidbits of information of which they were not previously aware.

### About the Speaker:

Mr. Barrett is a registered professional engineer in North Carolina, South Carolina, Florida, and Wisconsin. He graduated from North Carolina State University in 1981 with a B.S. in Civil Engineering. Mr. Barrett has over 27 years experience in the consulting engineering profession, including geotechnical, construction materials testing, and special inspections. Mr. Barrett’s deep foundation experience includes driven piles, augered piles, and drilled shafts for transportation infrastructure, high rise commercial, medical, governmental, educational, military, and industrial facilities.



### Directions:

Rock Bottom Brewery, 401 North Tryon Street, Charlotte, North Carolina, (704) 334-2739

### From the North:

Take I-85 S to I-77 S. Take Church Street exit towards Tryon Street. Stay straight and go onto West 11th Street. Turn right onto N. Tryon Street. (These directions are from Mapquest).

### From the South:

I-77 N to I-277 S, Exit 11 to Downtown. Take Church Street exit towards Tryon Street. Stay straight and go onto West 11th Street. Turn right onto N. Tryon Street.

## ANNUAL AEG BOARD OF DIRECTORS MEETING SUMMARY *From AEG*

The Association of Environmental & Engineering Geologists (AEG) officers convene meetings biannually to review the status and conduct the business of our organization. On September 20-21, 2008, the Board of Directors (BOD) Annual Board Meeting was in session in New Orleans, Louisiana, location of the 2008 Annual Meeting. Detailed meeting minutes were prepared and will be available for approval at the next Mid-Year Board Meeting, which will take place in Seattle, Washington in April 2009. The following summary was prepared to assist our Directors in highlighting major issues and topic areas for communication to the general membership. Rick Kolb, AEG Carolinas Section Chair, attended as our section's representative.

AEG has twenty-five (25) sections. Twenty (20) Section Chairpersons or their proxies were present along with the Executive Council (EC): President Molinari, Vice President/President-Elect Kreuger, Treasurer Hilton, Secretary Bauer, and Past-President Kuper. Chief Operating Officer Roland was also present, as were Governance Committee Co-Chairs Prince and Andrews, Finance Com-

mittee member Beiber and other invited guests. Sections absent were Kansas City-Omaha, Montreal-Canada, New York-Philadelphia, Ohio River Valley, and Southeastern.

Mark Molinari gave the Presidents Report and indicated the talks he will be presenting to the sections are *Practical Applications of Airborne LiDAR Data for Environmental and Engineering Geology Projects* and *The 2003 Washington SR-20 Rock Avalanche – A Case Study from Emergency Response through Characterization, Design, and Construction*.

Treasurer Hilton informed the board that AEG has contracted a new CPA, Anton Collins-Mitchell (ACM), who will be auditing the 2007-2008 financials during October. The audit report will be presented to the Board at the 2009 Mid-year Board Meeting.

Vice President Kreuger updated the Board on AEG's investments, indicating that we have \$272,349 toward the Board directed goal of \$350,000 to be set aside as a reserve. The Board is in support of the EC staying the course regarding investments.

Headquarters is actively working to correct the \$10,000 that our books logged as income from the 2006 Boston Annual Meeting, but did not show up in our account. The bank charged members' credit cards for the meeting, but never deposited the money in AEG's account.

(Continued on page 6)

## AEG CAROLINAS JANUARY 2009 MEETING

**Program:** Basics of Deep Foundations: What Every Geologist Should Know

**Speaker:** Xavier C. Barrett, P.E., Engineering Group Manager, Trigon | Kleinfelder

**Place:** Rock Bottom Brewery, 401 N. Tryon Street, Charlotte NC

**Directions:** Map and directions on page 4

**Date:** Thursday January 15, 2009

**Time:** 6pm social, 7pm dinner, 8pm speaker

**Cost:** Member/Non-member \$25

Students: FREE with student ID

**Reservations:** By Monday, Jan. 12, 2009

Paul Weaver at 336-668-0093 or  
pweaver@kleinfelder.com

**Or by snail mail to:**

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The Board voted to change the current Fiscal Year term from July 1 - June 30 to the calendar year. This change allows for the annual CPA report to be prepared ahead of the spring BOD meeting for approval by the BOD. This also makes it easier to budget for membership dues, which are based on a calendar year cycle, and get the CPA review shortly after the Annual Meeting.

Since the mid-year 2008 Board meeting, AEG reviewed changing the Incorporation status from California to Colorado. COO Roland had discussions with AEG's attorney and CPA, both of whom recommended remaining incorporated in California, and the Board voted in favor of this.

Past President Kuper reported on the AGI Congressional Visit Days in which she and COO Becky Roland participated.

Future Annual Meetings are progressing well with 2009 in South Lake Tahoe, 2010 in Charleston, 2011 in Anchorage, 2012 in Salt Lake City, and 2013 approved at this meeting to be in Seattle, WA.

Julie Keaton, who has served as AEG's Annual Meeting Manager since 1997 is retiring in December 2008 but will continue to provide support planning the Shlemon Specialty Conferences. AEG has contracted Colorado Event Organizers (CEO) to assist with Annual Meeting Planning in the future starting with the 2009 meeting. CEO representative, Heather Lopez, shadowed Julie during the 2008 Annual Meeting, and these expenses will be covered by the discretionary funds presented to the Board at the 2008 mid-year meeting. In addition, responsibility

for associated AEG functions (e.g. Corporate Luncheon, banquet, awards) will be handled by Phoenix AMC who will work with CEO to coordinate these with the meeting planning.

AEG Foundation President Hempen gave a report and promoted the member benefits of the Foundation to the Board. He emphasized that Sections are the primary donors and beneficiaries for the Foundation. Please visit [www.aegfoundation.org](http://www.aegfoundation.org) for more information on the different funds and scholarships, and how to donate.

Doug Boyer gave the Communications Committee report requesting that Section Chairs encourage submissions to the E&EG Journal. He also requested that Sections solicit advertisers for the AEG NEWS in order to help offset the cost for the recently added color photos. Additionally, AEG is working with AIPG to develop a joint issue of AEG NEWS focusing on students, which will come out in the Spring of 2009.

AEG members can become members of IAEG for \$17 or \$50 if they wish to receive *The Bulletin*.

The Strategic Planning Committee, chaired by Paul Hale, intends to focus on updating the website, continuing the Visiting Professionals Program through the Student and Young Professionals Support Committee, and surveying the membership again to guide the SP workshop for the 2009 Mid-year Board Meeting.

All present Section Chairs answered two questions: What's working for your section? What challenges are you (the Section) facing that Headquarters could assist you with? Section reports will be available on the website.

The Advocacy Committee led a workshop on Licensure. Four break-out groups came up with several ways that AEG can be more proactive in promoting and supporting Sections regarding licensure and associated legislation. An ad-hoc committee will be established to compile pertinent information on licensing and implement the recommendations of the workshop.

The Board approved the San Joaquin Chapter of the Sacramento Section and four new student chapters: University of Missouri – Kansas City, Fresno State, Cal Poly Pomona, and California State Univ. - Chico. Two more are pending formal application.

The Board supported AEG looking into co-hosting the International Landslide Symposium in 2012 with the Canadian Geotechnical Society in Banff and co-

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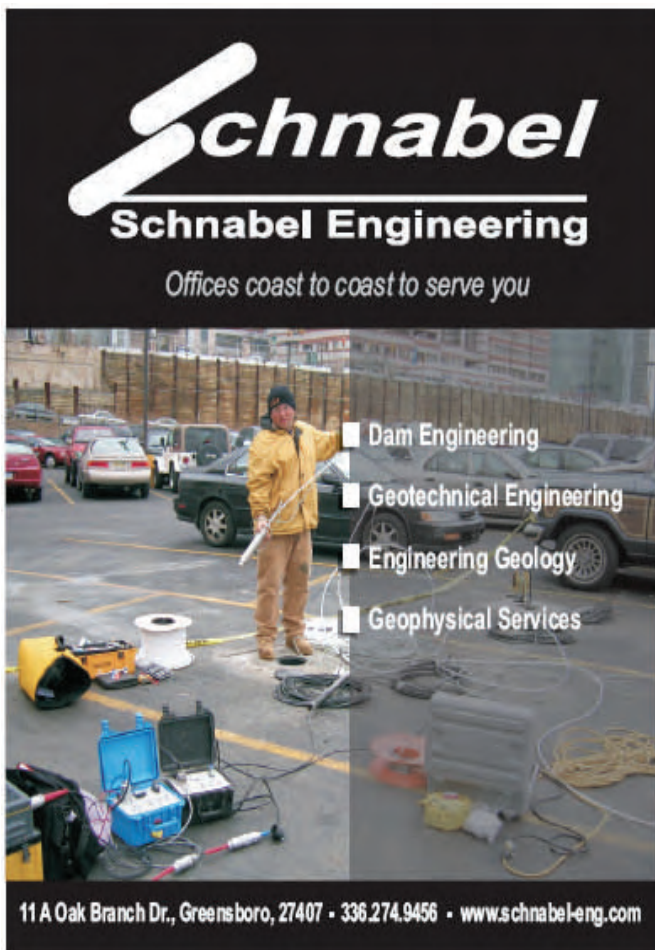
hosting a Geohazards Conference in Central America with GSA.

The Joint Task Force on Areas of Practice (JTFAP) draft document has been prepared. The Task Force includes members from AEG, ASCE-GeoInstitute, and AIPG and the document is under review by each organization's Board members. After Board review, the Task Force will review the comments and prepare a revised draft for general membership review from each organization.

In the upcoming year, the Governance Committee, co-chaired by Andrea Prince and Dale Andrews, will take a look at the governance structure of the organization again, and will revisit the issue of Board size as it relates to efficiency. The GC will work with Headquarters to inform incoming Board members about the Director's Handbook.

Planning for the 2009 Shelmon Specialty Conference to be in the Midwest on the New Madrid Fault system is going well. The Board is in support of a second Shlemon Specialty Conference on Ground Rupture Regulation in California in February 2009. A formal approval will be voted on after a budget is presented to the Board via email in October.

The next Board meeting will be April 18-19, 2009 in Seattle, WA.



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## AEG CAROLINAS TREASURER'S REPORT

*By David Duncklee, Treasurer*

### AEG Carolinas Section Treasurer's Report July 1, 2008 - December 31, 2008

<b>Balance Carried over</b>	
Checking Account	\$6,274.14
Money Market Account	\$15,029.29

<b>INCOME</b>	
Dinner Meetings	\$1,200.00
Sponsorships	\$1,125.00
AEG Dues rebates	\$410.00
Defined donations	
AGI Toolkits	\$2,650.00
Scholarships	

<b>SUBTOTAL</b>	<b>\$5,385.00</b>
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<b>EXPENSES</b>	
Dinner Meetings	\$1,383.71
Section Beer Glasses	\$419.96
Educational Programs	
AGI Toolkits	\$4,457.60
Student Memberships	\$50.00
Student Travel Grants	\$2,000.00
Visiting Professionals	\$132.67
AEG National	\$950.00

<b>SUBTOTAL</b>	<b>\$9,393.94</b>
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<b>BALANCE</b>	
Checking Account	\$2,265.20
Money Market Account	\$15,029.29

<b>TOTAL</b>	<b>\$17,294.49</b>
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*Respectfully Submitted,*

*David L. Duncklee*  
Treasurer, AEG Carolinas

## GEORAMBLINGS

By Dr. Charles W. Welby

When the GEORAMBLINGS column for GEONEWS was first conceived some years ago, it was thought that there might be a time when the column might consist of a series of random observations and thoughts. Because of some recent happenings, it seems that this might be one of those times when random thoughts come more easily than some systematic, logical (?) train of thought. So here goes the “stuff.”

Sometime back in the late Paleozoic I was working on a project in the Champlain Valley in which the attempt was being made to understand the Chazy Stage a bit better and to see if it were possible to relate Chazy rocks to some of the events in the Taconic Mountains. One summer my family and I were staying at a motel on the outskirts of Chazy, NY. I dreamed of the large gastropod *Maclurites magna* from the Crown Point Formation and how to distinguish it from *M. logani* from the Orwell Formation. However, one night the “extra sensory perception” was interrupted all night by vibrations from passing trucks on U.S. 9 in front of the hotel followed a few minutes later by vibrations from a freight train rumbling down the tracks behind the motel. Interspersed with these two sources of vibrations were the noise and vibrations from the B-29s of the Strategic Air Force Command taking off and landing on a scheduled training mission.

Bleary-eyed the next morning, I arose, climbed into a boat moored in Lake Champlain across U.S. 9 from the motel, and putted out into the lake looking for outcrops on islands in the near offshore which might contain rocks with *Maclurites* in them. Late in the morning a K-9 tanker plane was making “lazy circles in the sky” (to take a phrase from the musical *Oklahoma*) as it returned from a refueling mission, or more likely awaited another refueling as its “umbilical cord” was out. Some of the limestone specimens and pieces of *Maclurites magna* from that adventure now reside in my front yard atop the Raleigh Gneiss. Some tectonics expert may figure out in the future the existence of a massive thrust fault of some kind in North Raleigh perhaps.

If you should ever visit Ben and Jerry’s ice cream factory near Stowe, VT, you might want to take a side trip to the Round Church in nearby Richmond, VT, a historically interesting building. There you can also find the large gastropod, *Maclurites magna*, in the steps of the church. And if you should visit the Congregational Church in Middlebury, VT, those circular objects in the stone steps are not fossil haloes of the founding fathers but rather are *Maclurites magna* fossils from the Chazy Middlebury Limestone.

This next “passing thought” involves publications. I recently read the book *The Oracle* by William J. Broad. The author describes how Jelle De Boer, who

taught at Wesleyan University in Connecticut, pursued the question of whether or not the Oracles at Delphi were truly put into a trance when they made their predictions and if so, how. Several possible readers of this column may recognize events in which they participated mentioned in the book. It is an interesting tale of Forensic Geology conducted over a period of about 20 years. An AEG People to People trip to Italy and Greece some years ago probably stopped at the fault scarp that first caught the attention of De Boer and became an important clue to the eventual solution of the source of the gas that affected the Oracles.

A recent summary article on the San Andreas Fault in the AGU publication, *EOS*, places Parkfield, CA in the Carrizo Plain. Most of you have seen in elementary physical geology textbooks aerial views of the Carrizo Plain and the trace of the San Andreas Fault at the base of the Temblor Range. You have to be aware that Parkfield is a long way north of Carrizo Plain. If Parkfield is in the Carrizo Plain today, then there has recently been a MAJOR movement on the San Andreas that remains unrecorded and unacknowledged, or perhaps like the Village in the musical *Brigadoon*, Parkfield appears on some regular basis out of the mists (more likely dust storms).

In a book recently published about J Harlan Bretz and his efforts to establish the “Big Flood” across the scablands of Washington, Chapter 2 begins noting that in 1910 the Lakeview Gusher poured 18 to 100 thousand barrels of oil a day into the surrounding landscape near the town of Lakeview, CA. I guess someone had a bad map, for the Lakeview Gusher occurred between Taft (in 1910 known as Moron before it burned down, was rebuilt, and renamed after the sitting President) and Maricopa. The gusher’s site is a California Historical Site, and one can see the burlap bags of sand that were placed around the well in attempts to contain the oil. The surface casing protrudes above the ground. The price of oil dropped to 10 cents a barrel, and the oil markets went into shock.

Lakeview, CA is located in San Bernardino County according to my latest map of California and is in an area of intrusive and metamorphic rocks, an area hardly conducive to petroleum production. On the other hand, John Soennichsen, the author of the book, Bretz’s Flood, uses this instance and several others to set the stage for the time that Bretz began his serious examination of the area of the scablands and his work there.

One of the things that I enjoy doing as I travel is to look at rocks that are used in buildings. There is a “marble” that has been used in a number of buildings for decorative purposes. My understanding is that its source is in Italy, although I have no exact location for it. The marble has been used in flooring, window sills, wall trim, and perhaps other things as well. The color is somewhere between Moderate Reddish Orange (10 R 6/6) and Moderate Reddish Brown (10 R 4/6) on the

(Continued on page 9)



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Munsell Color Scale. The marble is a prominent feature of some of the entrances at Crabtree Mall in Raleigh, it was used as trim to the elevators in the old Durham Life Insurance building on Fayetteville Street in Raleigh (now a Wake County Office building), and as window sills and trim in a hotel in Apollonia, Libya, among other places. In the never-ending search to find fossils in ornamental limestones, I have observed large gastropods in the trim to the elevators in the old Durham Life building and in the window sills of the hotel in Apollonia, and I keep looking for them in Crabtree Mall. Then there are the corals and the old friend, Maclurites, found in another type of limestone facing the walls of the bathroom in a hotel in Shanghai, China – old friends for sure.

As many of you have learned, my wife, Eleanor, “sprouted wings” in mid-November. My family and I have greatly appreciated the messages of sympathy and condolence as they have been of considerable support to all of us during the last few weeks. Eleanor thoroughly enjoyed meeting people at the various professional geologists meetings and looked forward to those encounters and friendships. Thanks for the cards, e-mails, and words of encouragement and support.

*Charles W. Welby*



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## EDUCATION SECTION

### CAROL CALDWELL SCHOLARSHIP

By Jane Gill-Shaler

Dr. Welby was contacted regarding a preferred scholarship to honor his late wife, Eleanor Morse Welby. The Carol Caldwell Scholarship is in the NC State Foundation records under the Caldwell Fellowes. The Scholarship is administered by the NCSU Woman's Club through the NC State Foundation.

The endowment was established in 1983, and amended in 2004, to provide financial need based scholarships for mature students beginning or returning to NCSU to complete an undergraduate degree in any college. It is the desire and recommendation of the Woman's Club that this scholarship assist a female student of at least 25 years of age who is beginning or returning to study toward an undergraduate degree while possibly balancing home and work responsibilities along with their academic studies.

The Woman's Club acknowledges that it cannot make the awarding of this scholarship to a female student 25 years or older mandatory, but asks that this recommendation be considered every year.

#### Address:

NC State University Women's Club  
Carol Caldwell Scholarship  
c/o University Development  
Campus Box 7501  
Raleigh, NC 27695-7501

Please make out checks to the NC State University Foundation. Mention in your cover letter that your donation is to the Carol Caldwell Scholarship, in honor of Eleanor Morse Welby.

Donations are tax-deductible. More information may be found at <http://www.ncsu.edu/giving/ways.php>.

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## EDUCATION SECTION

### A SCIENCE EDUCATION ADVENTURE

By Jane Gill-Shaler, Editor, GeoNews

Have you ever seen a fire sale? Well, it sure seemed like that in the last few crisp, beautiful fall days of October, as thousands of science teachers swarmed around the SME/GEM Minerals Coalition and the North Carolina Department of Environment and Natural Resources (NC DENR) Division of Land Resources booths at the Charlotte Convention Center. The occasion was the National Science Teachers Association (NSTA) 2008 Area Conference on Science Education in Charlotte, North Carolina, attended by over 3400 science teachers, assistants, and professionals from the southeast and all around the country.

The draw for these resource-hungry teachers was an abundance of free teaching materials, including tons of bagged mineral and rock samples at the SME/GEM Rock and Mineral Exhibit, and hundreds of AGI Earth Science Week Tool Kits. By late afternoon of the first day of the conference, all 650 kits were gone, and more than 90% of the bagged rock samples were snapped up and toted away. There were some heavily laden and very happy science teachers walking out the door.

The NSTA has been around since 1944, and has a membership of 60,000, primarily science teachers, supervisors, business and industry, and others involved in science education. Their mission is to promote excellence and innovation in teaching science. Their programs include conducting conferences with science teaching workshops; presenting cash awards and school supplies to science teachers and students; and advocating for science and

science teachers. Their website is [www.nsta.org](http://www.nsta.org).

The NC DENR Rock and Mineral Exhibit has been sponsored for many years by the NC Aggregates Association, with cooperation from the AIME/SME-Carolinas Section, AIPG-Carolinas Section, AEG-Carolinas Section, Carolina Geological Society, and Groundwater Professionals of NC. Basically what they do is provide bagged rock samples for earth science teachers, coupled with a description geared for earth science teachers to use in their classrooms.

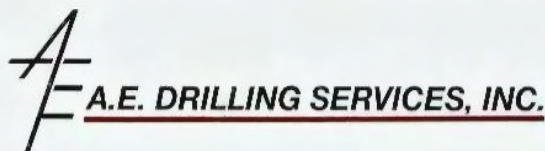
AEG Carolinas' involvement in the Rock Give-away began many years ago, when members of our section volunteered their time to bag rocks for the local North Carolina Science Teachers Association (NCSTA) meetings. Members Jennifer Bauer and Rich Lovett

expanded our participation by donating funds out of our treasury to purchase AGI Earth Science Week Tool Kits, as part of our ongoing commitment to support earth science education. The kits were such a tremendous success at the meetings that we have made it a standard part of our yearly schedule. As the NCSTA conference this year was included in the NSTA Area Conference, our section voted to donate the much larger sum of \$2,000 from our treasury, and were fortunate to be able to solicit

additional larger donations from the AEG Southeast Section, Groundwater Professionals of NC, AIPG Carolinas Section, Nicholson Construction, Schnabel Engineering, Environmental Equipment, Dr. Charles Welby, and the Gill-Shaler and Lovett families. We purchased 650 of the kits, just about double last year's amount, and this year for the first time we placed a label on each kit, thanking the science teachers and identifying our sponsors.



Photo 1. Randy Bechtel, NCGS, (left) and Mona Vandervoort, SME. Rachel Owens in background, bagging rocks.



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## EDUCATION SECTION

The coordinators we worked with during the conference were Randy Bechtel, education geologist for the North Carolina Geological Survey (NCGS) since 2004, and Mona Vandervoort, education coordinator for the Society for Mining, Metallurgy and Exploration (SME). Randy was previously in museum public education for over 7 years. He is an energetic and organized coordinator, with twinkling blue eyes and a ready smile, and appeared to be in several places at once as he coached the volunteers and solved every knotty problem that came up, from samples that didn't arrive on time to the placement and storage of the tons of bagged samples.

At SME, Mona is in charge of Career Information, Student Chapters, Membership Education, College Program Accreditation, NSTA, and Government, Education and Mining (GEM). She is an accomplished, savvy, kind and energetic leader who is able to work very well with all the various members of the volunteer team, even getting us all out of there by closing time.

AEG Carolinas members who participated in the bagging and Kit giveaway this year were Rich Lovett and his wife (Rich is former Vice Chair for the Carolinas Section and Senior Geologist for MACTEC in Greensboro), and Jane Gill-Shaler, AEG-Carolinas newsletter editor. Other volunteers included Rachel Owens, Mary Carol Forkner, Jodi Pace, and Rebecca Latham. In total, there were over 45 volunteers that included, in addition to AEG volunteers, teachers, college students, and DENR Division of Land Resources staff.

### NO ROCK LEFT UNBAGGED

The Rock and Mineral Exhibit, one of the most popular in the entire show, gives science teachers a collection of up to ten varied rocks and minerals for use in their classrooms. The teachers leave the exhibit with their own personal rock kit and a collection of publications and other teaching resources offered by the NC Geological Survey.

This year, eight rock and mineral types were donated by North Carolina companies, along with coal samples from Kentucky. The rocks arrived on the conference floor the day before opening day in 55-gallon drums and 5-gallon buckets. Our job as volunteers was to take a handful of each sample, put it into a quart size zippered plastic bag, and label it with a number coinciding with a key description on a flyer to accompany the samples. The flyer is a two-sided page of descriptions, compositions, and uses of each of the specimens in the collection. Well, let me tell you, even with 15 or so volunteers, it was a huge task to fill over 9,920 bags of rocks! Randy and Mona were everywhere at once – the group took up several aisles and tables, and worked from when we were allowed in at noon to the closing bell at about 6:15 that evening. No one let up for a minute.

The rocks included Alaskite, a very light colored granite made up mostly of white feldspar, quartz and mus-

covite from the Unimin mine in Spruce Pine. It is used to make glass and ceramics, and as a filler in household cleansers and building materials and paints. Another rock was the Henderson augen gneiss, provided by Vulcan Materials' Hendersonville Quarry. Its signature is the metamorphically modified plagioclase rectangular feldspars crystals, called augen (German for "eyes"). This is a particularly hard rock, excellent source for construction related crushed rock. Porphyritic Lilesville granite, also provided by Vulcan Materials, is another source of crushed stone for construction.

Other rocks and minerals bagged for science teachers were Murphy Marble (Nantahala Talc and Limestone), limestone (Martin Marietta Aggregates), and quartz gravel (Hedrick Industries). The gravel is 99.9% pure quartz, and some of the gravel, because of its purity, is used to manufacture silicon chips.

One of the more interesting samples was bituminous coal (Kentucky Coal Association, University of Kentucky, and Engineering Consulting Services), which managed to impart a layer of black coal dust on the hands, gloves, faces, and clothes of all of the volunteers! Another sample was Phosphate Tailings, from PCS Phosphate Company, Aurora, NC. These are "rejects" from the mining of phosphate, which is processed to form fertilizer and industrial chemicals, as well as food additives.

*(Continued on page 13)*

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## EDUCATION SECTION

(Continued from page 12)

The material often contains shells and fossil debris, which is exciting for students to discover.

### NO CHILD LEFT INSIDE

One of my favorite plays on a phrase is the name of this year's AGI Earth Science Week Toolkit, "No Child Left Inside," a parody of the unfunded "No Child Left Behind" program. AGI found that the name of the kit this year was so memorable and got such a positive reaction that they are going to make it permanent. Each year the kits gain bulk in resources, activities, and materials. This year the fat, colorful envelopes contain the following, according to the AGI website ([www.earthsciweek.org/materials](http://www.earthsciweek.org/materials)):



Photo 2. Phosphate Rejects

- A 12-month school-year activity calendar, suitable for hanging
- The new Earth Science Week poster, including an activity
- A geological poster with 3D glasses from USGS (these are great fun, even for adults)
- A 3D postcard on polar geoscience from NASA
- A CD of Earth Observations from Space from NASA
- A "Journey 3D" Educator Guide with 3D glasses
- A National Park Service poster on caves nationwide
- Climate literacy materials provided by NOAA
- A genuine field notebook, with an activity, by Rite



Photo 3. Volunteers bagging rocks before the NSTA Conference in Charlotte.

### in the Rain

- A CD on GIS technology and activities from ESRI
- An EarthCaching CD by the Geological Society of America
- Information about the National Wildlife Refuge System
- A careers brochure, magnet bookmark, fact sheets, and more

The fundraising coordinator for the project was this author, who was on the phone and internet for months chasing down sponsors. When the final results were in, we had enough for 650 kits, which, if you multiply it by

an estimated science class size of 25 students, is enough to benefit well over 16,000 students with some of the best earth science information available for teaching today. Now, that project is worth the time and effort!

However, nothing gets done without a glitch or two. A week before the Conference, I received a phone call from Randy that the direct shipment to the Charlotte Convention Center had been refused. Aaaargh! Apparently

there was only a narrow window of time that direct shipments could be accepted, so the entire pallet of 20 boxes had been turned away. Thinking in overdrive, and worried that the shipper would send the pallet back to the printer and the entire project would be on hold until next year, we had them relay it to my home an hour away.

My back porch has served as a loading dock in

(Continued on page 14)

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## EDUCATION SECTION

the past, and I could easily fit 20 boxes in my pickup truck to bring them south to the Charlotte Convention Center the following week. This was actually a blessing in disguise, as the extra week gave me and my husband the opportunity to complete the time consuming job of sticking the sponsor labels on the kits.



Due to another commitment, I wasn't there for the actual giveaway, but Randy and Mona tell me that it was a huge hit. Teachers lined up and happily hauled away pounds of bagged rocks, flyers, and Tool Kits for hours, until the

tables were empty. All the Kits were gone by the afternoon of the first day, and the bagged rocks went nearly as fast.

**PLANS FOR NEXT YEAR** This project was a complete success for our section by every standard. AEG Carolinas volunteers and sponsors provided some of the labor and funding; science teachers were provided with free teach-

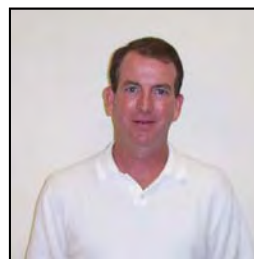
ing resources and samples; volunteers got to help out, and also were allowed to keep their own kits and samples; we made some good friends and teaching or professional contacts; and we all learned something about coordination, flexibility and leadership. As the project was so very successful, next year we are planning to increase the funding, the volunteers, and the number of Kits that we provide.

So join us! When you decide to donate funds and volunteer your time, you are part of the process that puts the youth of America on the path of higher science learning and leadership.

*For more information on this program, please contact Jane Gill-Shaler, [janehgill@aol.com](mailto:janehgill@aol.com). Jane is the AEG Carolinas Newsletter Editor.*

## ABOUT OUR MEMBERS: PAUL WEAVER, LG

Paul Weaver is the new vice-chair of the AEG Carolinas Section. Paul is a Licensed Geologist in both North Carolina and South Carolina, and has been an AEG member for over six years. He earned his geology degree from the University of North Carolina at Wilmington in 1981. Since graduation from college, he has worked as a well analyst the oilfields of Louisiana (both on-shore), as the limestone mining operation, chemical stabilization specialist with the NCDOT, and at various positions in various engineering consulting firms.



Paul is currently the Manager of the Transportation/Drilling department of Trigon/Kleinfelder in Greensboro, North Carolina. In this position, he serves as Project Manager for all their transportation related projects in North and South Carolina, plus manages all of the drilling equipment (12 drill rigs of various sizes and capabilities) and three drill crews.

His primary area of specialization is in geotechnical engineering, especially the performance of subsurface investigations for bridge foundations and roadways. He started out with Trigon as a soil and concrete technician in 1985, and this is his third stint with Trigon, which is now Trigon/Kleinfelder.

Paul resides in Greensboro with his wife and 11-year old son. In his free time he enjoys wood working and performing in theatre. He has performed in numerous musical (acting, dancing, and singing) and non-musical theatrical productions over the last 30+ years including lead roles in several productions.



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## EDUCATION SECTION

### EARTH SCIENCE WEEK AN UNPRECEDENTED SUCCESS

*From ESW Update, AGI, November 2008*

Record numbers of people gained a new awareness of the geosciences through the 11th annual Earth Science Week last month. An estimated 10 million people worldwide learned about Earth science through program promotions, education efforts, and media coverage. The event celebrated the theme “No Child Left Inside” by encouraging students, teachers, and the public to go outdoors and experience Earth science firsthand. Earth Science Week events ranged from individual teachers and classes conducting playground science projects to open houses at major USGS field stations.

One of the week’s highlights was “No Child Left Inside Day,” celebrated on Oct. 14 by Langston Hughes Middle School in Reston, Virginia. Hundreds of students hiked around nearby streams and ponds, where USGS and AGI scientists and educators offered learning stations on topics ranging from water quality to biodiversity. The event was covered by local NBC and radio affiliates.

Earth Science Week activities were promoted and covered by scores of newspapers, television stations, websites, and other media outlets worldwide.

Learn more at <http://www.earthsciweek.org>. If you conducted a special activity to celebrate Earth Science Week, please let us know. Email information, news clips, and images to [info@earthsciweek.org](mailto:info@earthsciweek.org).

### VISITING PROFESSIONALS, NC STATE GEOLOGY CLUB

*By Rick Kolb, AEG Carolinas Section Chair*

Five geologists -- members **Dave Duncklee**, **Kristen Lloyd**, **Tami Idol** and **Rick Kolb**, and soon-to-be member **Brad Worley** -- made presentations on geology careers to NC State University’s Geology Club on Monday, November 17.

Our section provided (HUGE!) pizzas and soft drinks for the attendees. Each geologist made a presentation on his or her specialty: engineering geology, environmental geology, dam inspections, life as a new hire, and working for/owning a small company vs. benefits of working for a large company. We had around 25 students attend our 6:00 PM presentation, and several asked good questions.

After our presentation, several of our members and students convened to Sammy’s on Avent Ferry Road for liquid refreshments and further discussions on careers. **Evan Riddle**, Section Membership Co-chair, provided the publicity for our presentation and recently recruited seven

students to AEG membership, which is free for students. Evan identified a faculty member who has agreed to serve as the advisor for a student chapter of AEG, so we expect NC State will soon be our second student chapter.

Similar presentations to students are planned for UNC-W and UNC-CH in early 2009. We’ve also begun discussions with faculty to have presentations at Appalachian State, Western Carolina and UNC-C. If you are interested in participating in our presentations (especially if you are a graduate of schools in North or South Carolina), please contact **Rick Kolb**, Section Chair at [ra-kolb@mactec.com](mailto:ra-kolb@mactec.com).

### CAROLINAS SECTION SCHOLARSHIP COMMITTEE

*By Rick Kolb, AEG Carolinas Section Chair*

Through the generous support of our sponsors, the Carolinas Section has the financial wherewithal to establish an annual scholarship program. This effort is part of our section’s ongoing activities to support student geologists and advocate for our profession. We intend to award our first scholarships for the 2009/10 academic year. Initially, we will award two scholarships of \$500 each, one to a student in North Carolina and one to a student in South Carolina. Awardees can be undergraduate or graduate students.

We need to establish a Scholarship Committee, and put out this request for volunteers from our section. This committee will be responsible to establish the scholarship guidelines, prepare applications and announcements, and select the winners. We anticipate that all work will be done via teleconference and email, so in-person meetings will probably not be necessary. You won’t have to work from scratch. The AEG Foundation, which also offers scholarships, can provide help and advice. We need to establish this committee soon so that applications are available in the spring.

If you are interested in being on the Scholarship Committee, please contact Section Chair Rick Kolb at (919) 831-8054 or [ra-kolb@mactec.com](mailto:ra-kolb@mactec.com).



**Scott Pearce**  
Vice President

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## NEW MEMBERS IN OUR SECTION

*From AEG Membership*

We are growing! Here are the new members in our section in the second half of 2008, as of November. Welcome to new members and student members, and welcome back to renewed members. If you are a new member and don't find your name on this list, please let us know!

Rebecca Latham, Monroe NC  
 Joshua White, Cary NC  
 Clyde Livingston, Jr., P.G., Columbia SC  
 Erin Must, Chapel Hill NC  
 Christina Bruinsma, Raleigh NC  
 Colleen Clark, Midland NC  
 Christian Borrel, Durham NC  
 Collin Day, Winston-Salem NC  
 David Lubell, Raleigh NC  
 Matthew Frederick Cooke, Columbia SC  
 Mark Whittle, Lexington SC  
 Norman S. Levine, Charleston SC

Richard Lovett, Summerfield NC  
 Susan Kelly Black, Mountain NC  
 Angela Moore, Greensboro NC  
 David Duncklee, Raleigh NC  
 Catherine Jacobs, Morrisville NC  
 Brad Hubbard, Columbia SC  
 Peter Pozzo P.G., O.R.C. Greensboro NC  
 Michael Shaw, Huntersville NC  
 Clark Wipfield, Raleigh NC  
 Frederick Rutledge, Greensboro NC  
 Melissa Roberts, Columbia SC  
 Jeremy Strohmeier, Greensboro NC  
 David Lowery, Charlotte NC  
 Michael Armour, Charlotte NC  
 Nancy Agosta-Kolb, Cary NC  
 Martin Meriwether, Greensboro NC  
 Eva Rasdal Moore, Charleston SC  
 Phillip Perkinson, Tarboro NC  
 Robert Davies, Raleigh NC  
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## OCTOBER AEG MEETING IN GREENSBORO

There was a last minute change to the October AEG meeting in Greensboro, when the previously scheduled speaker, past AEG President Dorian Kuper, had a family tragedy and could not attend. Steve Stadelman, of Novozymes North America, Inc. was able to fill in with a very interesting talk on "Turning A Sows' Ear Into A Silk Purse; Hydrogeologic Characterization and Prospecting in the Lower Piedmont of North Carolina." We are reprinting his abstract and bio here for your interest.

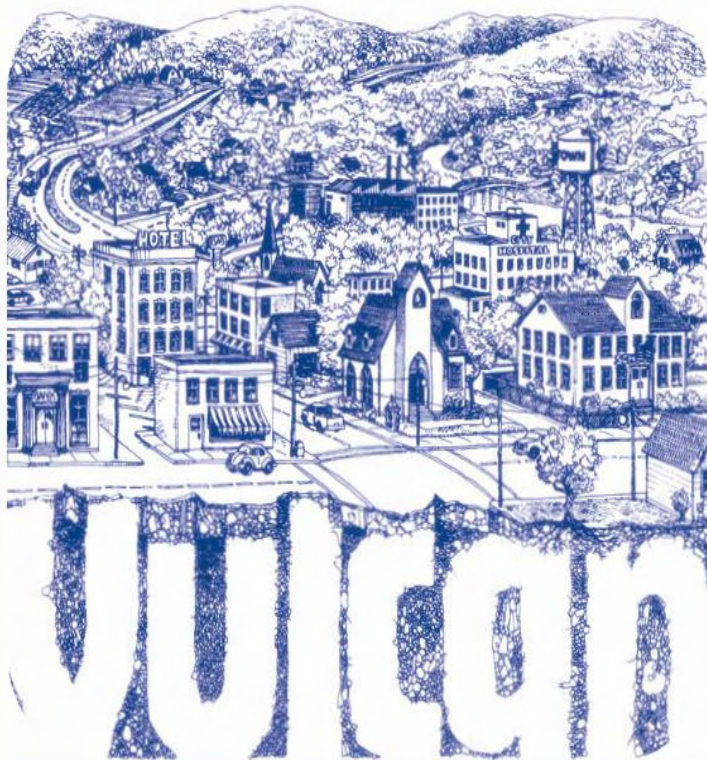
### Abstract

In 2003 we began an intensive landscape-scale hydrogeologic assessment on 2000 acres located in the Raleigh Belt in the lower Piedmont of North Carolina about 25 miles northeast of Raleigh. The site resides at the western edge of the Rolesville granitic pluton near the Raleigh gneiss. The site lies within the Piedmont physiographic province about 5 miles east of the upper Coastal Plain. The scarcity of outcrops initially gave us a low confidence in the ability to accurately locate key hydrogeologic features and confidently predict groundwater behavior. Our accuracy increased as we tried a suite of geophysical methods with varying success. We had very good success mapping mafic dikes using a proton free-precession magnetometer, and we were also very success-

ful mapping high-angle bedrock fractures using a very low frequency electromagnetic meter (VLF). The magnetometer accurately located two mafic dikes with different orientations. The eastern dike is linear while the western dike exhibits numerous en-echelon offsets. Both dikes act as barriers to groundwater flow. The VLF meter greatly improved our accuracy in locating significant high-angle bedrock fractures and fractures associated with the mafic dikes. Drilling encountered predicted fractures and associated mineralized zones and slickensides, and predicted fractures provided significant increases in water yield. Two marine/fluvial clay-rich sedimentary sequences blanket the study area to varying extents. Geophysical methods were not successful in mapping these deposits which has required more traditional, intrusive methods. The older sediment sequence is up to 15 feet thick with much of the landscape covered by truncated deposits. A complete sequence consists of thin, coarse sand overlain by dense kaolinite-rich deposits and capped by sandy to gravelly clays. Coarse cross bedding, clay balls, and wave-features are present in outcrop. These clay-rich units act as confining layers for shallow groundwater along stream margins. To date, we have installed approximately 200 groundwater wells and 300 temporary, shallow boreholes.

The accurate location of critical features allowed us to construct a detailed hydrogeologic model using Modflow. Based on our understanding of the saprolite and bedrock fracture porosity, we selected two representa-

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(Continued from page 17)

tive areas for a series of three-dimensional pumping tests. The pumping test areas were selected based on three key factors: (1) 'stratigraphy' of saprolite, weathered bedrock, and unweathered granite and gneiss crystalline formations; (2) location of regional and local fracture sets; and (3) the position of the two extensive mafic dikes. Based on geologic and pump test knowledge, we established seven distinct hydrogeologic regimes in our model as follows: (1) saprolite; (2) moderately weathered to unweathered bedrock; (3) intermediate unweathered bedrock; (4) deep unweathered bedrock; (5) moderately productive fracture zones; (6) highly productive fracture zones; and (7) diabasic hydraulic barrier zones. Rather than defining a conventional, layered sequence as is typical of Modflow model construction, the three-dimensional distribution of these zones required that all four layers representing the vertical extent of the model be transected by fracture zones and diabase barriers. This required a regular and small, 50-foot node spacing throughout the model. The model construction allowed accurate calibration of vertical and horizontal gradients observed in an extensive array of dozens of wells.

In 2007, severe drought conditions raised concerns about adequate short-term water supply to support enzyme manufacturing. With the knowledge and confidence gained in locating water-bearing fractures, we turned our experience to prospecting for groundwater for emergency use. We assessed a 40-acre area and selected

four locations and subsequently drilled three of them. Predicted hydrogeologic features were encountered at all 3 locations with very good yields at the time of drilling. One location was subsequently developed and successfully pump tested. Further prospecting has yielded additional hydrogeologic features with good potential for groundwater production. At this time, we are evaluating the sustainability of groundwater withdrawals in the study area.

#### About the Speaker

Steve works for Novozymes North America, Inc. as the Manager of Environmental Operations. He manages the reuse of byproducts from the production of industrial enzymes at Novozymes which includes process wastewater irrigation, residuals land application, and residuals composting and marketing. In this capacity he works with 200 agricultural growers to reuse enzyme manufacturing byproducts as fertilizer on 12,000 acres of farmland annually.

Steve holds a BS in Geology from the University of Cincinnati and a MS in Geology and a Ph.D. in Agronomy from Texas Tech University. He has worked for Novozymes since 1994 and previously worked as an environmental consultant in North Carolina. He is a licensed geologist and licensed soil scientist in North Carolina and served one term on the soil scientist licensing board, and for the past 10 years has served as an instructor for the wastewater spray irrigation and physical chemical systems operator training programs.

## ZEBRA



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## AEG 2010 ANNUAL MEETING MAKES GREAT PROGRESS

Over a dozen Carolinas Section members of the AEG 2010 Planning Committee met in Charleston on November 8 to tour the meeting facility, the Francis Marion Hotel, and work out tentative plans and discuss options for the 2010 AEG Meeting. Heather Lopez of Colorado Event Organizers set up the meeting in Charleston, and prepared a preliminary schedule, budget and scope of work with action items and deadlines. Heather also negotiated a reduced hotel rate and complimentary meeting room for the planning meeting, and prepared an updated schedule and meeting-needs chart for the Convention Services Manager.

Present were (from left to right in photo) **Rick Kolb**, AEG Carolinas Section Chair; **Jane Gill-Shaler**, Sponsor Solicitation Chair; **Peter Pozzo**, Technical Sessions Co-Chair; **Briget Doyle**, General Chair; **Gary Rogers**, Publicity Chair; student member **Madelyne Adams**, Special Activities Chair; **Paul Weaver**, Technical Sessions Co-Chair; **Carin Kromm**, Short Course Teachers Workshop Chair; and **Heather Lopez**, Colorado Event Organizers. **Norm Levine**, Vice Chair, and potential volunteer **Chuck Black**, came later. On the right is **Ami Calhoun** of the Francis Marion Hotel staff. **Raymond Knox**, Outstanding Geologic Project Chair, and **Jennifer Bauer**, Field Trip Co-Chair, participated by conference call.

Led by Ami Calhoun, the committee went on a site tour of the Francis Marion rooms. This is a beautiful, historic hotel in the heart of downtown Charleston, with views of the city and surrounding area that will make it such a pleasure to spend several days there. The staff was gracious, knowledgeable, and friendly. We decided on the locations of most of the planned events, and made suggestions for giveaways, which included a special printed carrying bag, a fossil shark tooth, engineering field manual and (yes, geologists!) a beer glass imprinted with the meeting logo. The logo will be an outline of North and South Carolina with a Palmetto superimposed over the states, and the theme will be "Appalachians to the Atlantic...Hurricanes, Landslides and Earthquakes, OH MY!" We had fun with that one! Look for the logo on the cover of future newsletters.

We have reserved USS Yorktown for a special event on the Hanger Deck. Field trip suggestions included "Appalachians to the Atlantic," (2 days), Savannah River Site, Lake Murray Dam, Coastal Processes, Forensic Geology of the Confederate Submarine Hunley, Downtown

Charleston Earthquake Walking Tour, and Macroeffects of the 1886 Charleston Earthquake (led by Pradeep Talwani).

Guest Tour ideas and proposals include Fort Sumter / Patriots Point, a carriage tour of Charleston, Plantation Tours (Boone Hall, Drayton Hall, Magnolia Gardens, etc), Charleston Cooks and a Cooking Class, Charlestown Landing State Park (original Charleston settlement), Art Gallery Tour, and Garden / Architecture Tour led by Gary Rogers' wife, Lee, who is a landscape architect.

Short Courses we are working on include FEMA Hazards Program (HAZUS) (2-day course); ESRI – Arc Info Certification (2-day course); and 3D Visualization (1-day course). We brainstormed all day, and afterwards went downtown to a colorful local restaurant, Hyman's, for an evening meal to be remembered.

Since the November meeting, we have been working hard to implement our ideas. Heather prepared meeting notes with action items and deadlines, we have a logo in digital form, and we even have our own blog for discussion of ideas, contacts, links and graphics. We are moving along! Even so, we could always use volunteers and sponsors. Let us know if you are interested in participating in the 2010 AEG Meeting in Charleston. Contact 2010 Chair Briget Doyle (doyleb@cofc.edu) or Vice-Chair Norm Levine (LevineN@cofc.edu) in Charleston, or Rick Kolb, AEG Carolinas Chair in Raleigh (rakolb@mactec.com).

## AEG INVITED TO JOIN IN ON GSA 2009 MEETING

*GSA Press Release*

AEG Members are invited to participate at GSA Annual Meeting. The 2009 GSA Annual Meeting will be in Portland, OR on Oct. 18-21, 2009.

Topical submissions are due by Jan. 6, 2009, and will be reviewed during the month of January 2009. Field trip and short course ideas are due Dec. 2, 2008.

If you have any ideas for a topical session, field trip, or short course, please submit them as soon as possible by going to <http://www.geosociety.org/meetings/2009/> and accessing the appropriate link(s) under "Call for Proposals." Abstracts for these sessions will be due this summer – details will follow later. Please remember that the abstract format has now changed to a limit of 2000 characters (it used to be 350 words.)

Thank you,  
J. David Rogers,  
GSA EGD Chair-Elect

## JOB OPPORTUNITIES

### DUNCKLEE DUNHAM HIRING

**Project Manager** - Seeking a licensed/registered professional with 8 to 15 years of experience managing soil and ground water remediation projects. Projects to be managed include chlorinated solvent, nutrient, petroleum hydrocarbon, and Brownfields sites. Registered site manager (RSM) certification by NC DENR and experience across the southeastern US is a plus. This position is located in our Cary, NC office.

Please go to [www.dunckleedunham.com](http://www.dunckleedunham.com) for information on how to contact us.

## ANNOUNCEMENTS

### NU WAY AND A&D MERGER

We are pleased to announce that as of January 1, 2009 NuWay Environmental Services, LLC plans to change its name to A&D Environmental Services (SC), LLC. Earlier this year NuWay and A&D Environmental Services, Inc., a High Point, NC based company merged with one another. Since merging, we have worked hard to integrate the two companies. NuWay (A&D) will continue to be a premier provider of turn-key environmental services, and we are positioned to grow upon our long standing tradition of excellence and commitment to customer satisfaction. We have always taken an immense amount of pride in the faith that our clients have shown in us over the past 14 years.

This combination of our two proven companies into one company creates the largest provider of turn-key environmental services in the Carolinas. We provide a full range of services, including industrial cleaning, soil and groundwater remediation, emergency response, and environmental transportation. Our service centers based in the metropolitan areas of High Point, NC, Burlington, NC, Rock Hill, SC, Columbia, SC and Greenville, SC allow us

to efficiently cover more of the Southeast and to quickly respond to your needs.

Our customers will benefit in the expanded service area which encompasses the Southeastern United States. This is an exciting time for our employees, and we all look forward to servicing your environmental needs within this geographical region. You will continue working with the same company representatives in order to maintain the high-level of service that you have come to expect and deserve from us.

Eric D. McManus

President, A&D Environmental Services, Inc.

Jonathan (Jono) K. Rabley, President

NuWay Environmental Services, LLC

### ANNOUNCEMENTS FROM AE DRILLING

AE Drilling Services has been working with SCDOT completing deep geotechnical boreholes for seismic analysis for bridge designs on I-526 in Charleston and I-73 near Myrtle Beach. A 500 ft boring was completed for I-73 and an 800 ft hole for I-526.

AE Drilling has just taken delivery on Geoprobe's new 8040 unit, the next generation machine capable of driving 4.5" casing to depth allowing for 2 inch IDW free well installation. This machine will have the advantage of speed & no cuttings generation, but is less expensive to operate than sonic rigs.

AE will begin drilling in early 2009 on a large rock coring project at Plum Brook Ordnance Works in Ohio for Shaw Environmental.

The History Channel will be featuring AE Drilling's work on the Confederate Memorial Carving on Stone Mountain, GA in an upcoming segment. Filming is slated for Dec 18, 2008.

Mark Lassiter, P.G., President

[mlassiter@aedrilling.com](mailto:mlassiter@aedrilling.com)

visit us: [www.aedrilling.com](http://www.aedrilling.com)

### SCHNABEL ENGINEERING RECEIVES PLACEMENT ON "BEST CIVIL ENGINEERING FIRMS TO WORK FOR"

Schnabel Engineering, Inc., Glen Allen, Virginia,

(Continued on page 21)



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Rick Kolb, [rakolb@mactec.com](mailto:rakolb@mactec.com)

MACTEC is headquartered in Atlanta and is a leading consulting firm that provides engineering, environmental, and construction services. MACTEC has over 3,000 employees in 80 U.S. locations and has offices in Asheville, Charlotte, Greensboro, Research Triangle Park, Raleigh and Wilmington, North Carolina and in Greenville and Columbia, South Carolina.



SGS Environmental Services is a full service laboratory, project service centers, and environmental drilling offices located throughout the United States. Offices are located in Alaska, California, Florida, Hawaii, Illinois, Maryland, New Jersey, New York, North Carolina, Ohio, and West Virginia.

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Wilmington Laboratory  
5500 Business Drive  
Wilmington, NC 28405  
Phone: 910.350.1903  
Fax: 910.350.1557



(Continued from page 20)

is pleased to announce that they again have been named as one of the "Best Civil Engineering Firms to Work For" by CE News magazine. The criteria used to make the selection included culture, benefits, compensation, performance/ recognition, recruiting and employee retention, and professional development, as well as an employee satisfaction survey. Schnabel ranked #38 on the list, moving up from #45 on the 2007 list.

Schnabel's CEO, Gordon M. Matheson, Ph.D., P.E., P.G., states, "We at Schnabel are proud of this accomplishment. We understand that Schnabel's future depends on our ability to serve our clients by creating an inviting workplace to attract and retain quality staff, and we are committed to that goal."

Schnabel is an ENR Top 10 geotechnical engineering firm employing nearly 400 in offices coast to coast. Schnabel specializes in geotechnical engineering, geostructural design, dam engineering, tunnel and underground engineering, environmental services, geophysical and geoscience services, construction monitoring, and resident engineering services for the government and commercial sectors. Reach us on the web at [www.schnabel-eng.com](http://www.schnabel-eng.com).

#### SCHNABEL NAMED TO WHITE HOT FIRMS LIST

Schnabel Engineering, Inc., is pleased to announce they have been named to the Zweig White Hot Firm List for the second year in a row. The Hot Firm List

identifies the 200 fastest growing U.S. architecture, engineering, and environmental consulting firms. This annual list features the design and environmental firms that have outperformed the economy and competitors to become industry leaders.

Schnabel ranked #43 on the list of 200. Having also been named as one of the "Best Civil Engineering Firms to Work For" by CE News Magazine, again for the second year in a row, Schnabel was again awarded the prestigious Pinnacle Award for this achievement.

#### ANNOUNCEMENT FROM SCAEP

We just received clarification from the SCPG Board that all of the South Carolina Association of Environmental Professionals (SCAEP) talks since the last biennium (on June 30, 2007) have just been approved for 1 CEU each. If you attended SCAEP meetings on one of the following dates you can put yourself down for 1 regular CEU for each meeting: 9/20/07, 3/20/08, 5/15/08, 6/19/08 & 9/18/08.

If you attended SCAEP meetings on one of the following dates you can put yourself down for 1 "professional development" CEU for each meeting: 11/20/07, 2/21/08 & 10/16/08. Please remember that SC PG's need 32 CEUs during the biennium from June 30, 2007 to June 30, 2009. Of these 32 CEUs, only 12 may be "professional development" CEUs.

We are currently lining up speakers for our 2009 meetings and have one confirmed for February 19, 2009. We are hoping to confirm a speaker for our January 15th meeting and will keep you posted on that. Please note that it is likely that our talk lined up for February 19th will be approved as a regular CEU.

Finally, if anyone attended the recent Carolina Geological Society Field Trip in Little Switzerland, NC (November 1-2, 2008), the SC PG Board has just approved that field course for 18 regular CEUs if you attended both days (only 14 regular CEUs, if you only attended Saturday).

We hope to see you all at the 2009 meetings.

Ron Herrygers, SCAEP President., SCAEP

Web: [www.geocities.com/scaep](http://www.geocities.com/scaep)

Email: [scaep@columbia.sc](mailto:scaep@columbia.sc)

(Continued on page 22)



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(Continued from page 21)

**WINTER 2009 REVIEW COURSES for the ASBOG GEOLOGY LICENSING EXAM**

The Association of Environmental and Engineering Geologists (AEG) is pleased to announce the Winter 2009 series of review courses for the ASBOG geology licensing exam taught by REG REVIEW, Inc. AEG and REG REVIEW, Inc. have partnered to provide these courses since 1992. In the Winter of 2009, review courses will be offered in Portland, OR - for the Pacific Northwest region, Orlando, FL and Charlotte, NC - for the Southeast region, Baltimore (BWI), MD - for the Central East Coastal region, Manchester, NH for the Northeast region, Indianapolis, IN - for the North Central region, Kansas City, MO - for the Central Midwest region, Dallas, TX for the South Central region, Denver, CO - for the Central Western region, as well as Northern and Southern California locations in Sacramento and Santa Ana. Course dates and locations are as follows:

**Central US Courses - Winter, 2009**

2009NCUS-1 - Indianapolis, IN, January 8, 2009, 8am to 4pm  
 2009SCUS-1 - Dallas, TX, January 9, 2009, 8am to 4pm  
 2009CUS-1 - Kansas City, MO, January 10, 2009, 8am to 4pm  
 2009CWUS-1 - Denver, CO, January 11, 2009, 8am to 4pm

**West Coast Courses - Winter, 2009**

2009PNW-1 - Portland, OR, January 16, 2009, 8am to 4pm  
 2009SC-1 - Santa Ana, CA, January 17, 2009, 8am to 5pm  
 2009NC-1 - Sacramento, CA, January 18, 2009, 8am to 5pm

**Eastern US Courses - Winter, 2009**

2009SEUS-1 - Orlando, FL, January 23, 2009, 8am to 4pm  
 2009SEUS-2 - Charlotte, NC, January 24, 2009, 7:30am to 3:30pm  
 2009CEUS-1 - Baltimore-Wash. Area, January 25, 2009, 8am to 4pm  
 2009NEUS-1 - Manchester, NH, January 31, 2009, 8am to 4pm

We are also teaching a course for the Puerto Rico DNR

2009PR-1 - February, 2009, 8am to 4pm

California Courses are \$515 for AEG members, \$530 for nonmembers. ASBOG Courses are \$445 for AEG members, \$460 for nonmembers.

Preregistration deadlines for the Winter, 2009 courses are a postmark date of December 18, 2008 for all Central U.S. and West Coast courses, **January 2, 2009 for Eastern US courses**, and January 16, 2009 for the Puerto Rico course.

REG Review, Inc. has been teaching these courses in California since 1985. In March 2000, we began to direct our teaching towards the ASBOG geology licensing exam. The pass rate for students in classes since then has ranged from 85 to 99%. The courses are taught by Patti Sutch, California PG 3949, CEG1641, and CHG 25, and Lisa Dirth, California PG 3951, CEG 1240, and North Carolina RG by ASBOG exam.

Current information on study manuals, flash cards, and courses, including specific locations, may be found online on REG REVIEW, Inc's website at <http://regreview.com>. To contact REG REVIEW Inc.: e-mail - [regreview@aol.com](mailto:regreview@aol.com), mailing address - 178 Bowles Rd, Newbury, NH 03255, telephone - East Coast call Lisa Dirth at 603-763-3272, (fax) 603-763-3341. West Coast (evenings) Patti Sutch at 916-456-4870.

Please pass this information on to any geologist that you know is taking the state licensure examinations. Thanks. Lisa Dirth, REG REVIEW, 178 Bowles Rd., Newbury NH 03255. 603-763-3272.



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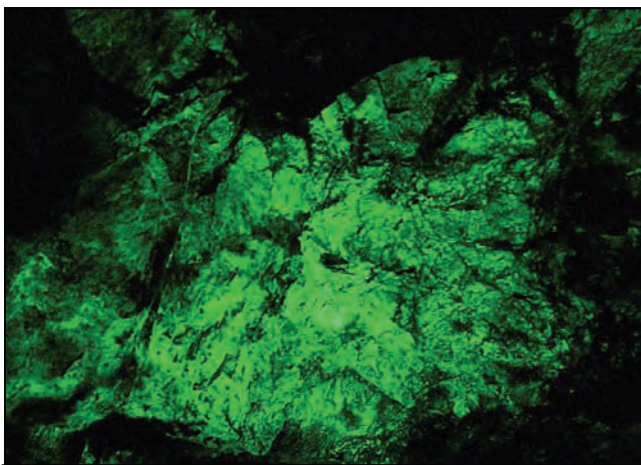
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## CGS 2008 FIELD TRIP TO SPRUCE PINE MINING DISTRICT

*By Jane Gill-Shaler, AEG-Carolinas Editor*

Nearly 260 people are standing in a dark cave late on the night after Halloween, cold and shivering, without a source of light. You hear shuffling, coughing, soft whispers, strange flutterings; the wind is blowing; the bats have already left for their evening foray, and may be back soon. The leader starts to talk, and as he talks, the ultraviolet lights go on, and a spectacular show of color shimmers from the dark ceiling and walls. Streaks and blotches, spots and bars of brilliant fluorescent green and yellow. Cries and murmurs of appreciation rumble from



Fluorescent Hyalite at McKinney Mine  
*Photo by Duncan Heron, CGS Secretary*

the crowd along with ooohs and aaaahs. The McKinney Mine has done it again!

This was the 2008 Carolina Geological Society Field Trip and Annual Meeting at the Spruce Pine Mining District, October 31 through November 2, co-led by Alex Glover, Operations Manager of the Attapulgit Division, Active Minerals International, LLC, and Ken Taylor, assistant State Geologist and Chief, N.C. Geological Survey. It was the first CGS field trip to the Spruce Pine area since 1939, and by far the best attended. Geologists and other geologically minded people from North and South Carolina, Georgia, Virginia, Tennessee, Florida, and other surrounding states made the trek up to Little Switzerland to have a fresh look at this richly endowed mineral treasure.

The trip leader, Alex Glover, is a Professional Geologist who lives in Little Switzerland. Even though Alex works in Quincy, Florida, he is no stranger to the geology of Spruce Pine, NC. He is the past Chief Geologist of Zemex Industrial Minerals Corporation and The Feldspar Corporation. Alex is also a current Commissioner of the NC Mining Commission as appointed by Governor Michael Easley. He is a past President of The

NC Mining Association, Past President of the Mitchell County Chamber of Commerce, and a former Vice Chair of the NC Board of Licensing of Geologists.

The schedule began at 7:00 am on Saturday, with 6 busloads of attendees carried to the North Carolina Museum of Minerals just off the Blue Ridge Parkway, where geologists Alex Glover and Peter Margolin spoke about the geology and the history of mining in the area.

The geologic story of the area begins about 380 million years before present, when the African continent subducted beneath the American Plate, and the subsequent superheated rock rose and very slowly cooled, allowing granite with large crystals of feldspar and mica to form. After cooling and uplift, it took millions of years for the overburden to erode. The granite of the area is unusually light, composed primarily of three minerals, feldspar (both plagioclase and microcline), light grey quartz, and silvery muscovite mica.

The early Native Americans mined mica for grave decorations and a form of money. In the 1700s the Cherokee mined lightly weathered feldspar and kaolin, transporting these minerals to the coast in ox-drawn sleds to sell to the English for use in ceramic manufacture. Over a period of centuries feldspar, mica, and quartz were mined, with more sophisticated processes and higher-capacity machinery producing ever increasing volumes of the minerals.



CGS 2008 Field Trip participants  
*Photo by Duncan Heron, CGS Secretary*

The field trip included a stop at the Vulcan Materials Company Spruce Pine Quarry, to look at the Ashe Metamorphic Suite (led by Vulcan Chief Geologist Jim Stroud). This suite is part of the Spruce Pine thrust sheet, which is in turn part of the Blue Ridge thrust complex.

After lunch at Crabtree Meadows, the group traveled to Emerald Village for a tour of the seven mines. These were abandoned in the early 1960's and have been refurbished as a tourist attraction, hosting tens of thou-

sands of tourists each year.

One of the mines, the Bon Ami Mine, produced feldspar for the well known Bon Ami scouring powder, which consisted of 94% feldspar and 6% soap. Another stop was at the Hoot Owl Pegmatite Mine, about 4.5 miles southwest of Spruce Pine (you can see the logistical nightmare of herding a diverse group of 260 rock lovers into and out of 6 buses and transporting them on a narrow, winding mountain road). This was mined, only from 1937 through WWII, for large sheet mica and feldspar. Even so, the mine ceiling is about 150 feet high. The mine is now abandoned and partly flooded, leading to some picturesque reflective views of the fall colors.

The group ended up at the Switzerland Inn on the Blue Ridge Parkway for dinner, and afterwards climbed into the buses again for the night trip to the McKinney



Hoot Owl Mine from the inside.

*Photo by Michael Jones, Pyramid Environmental*

Mine of Emerald Village (the first night field trip of the Society since 1937).

Sunday included a trip to the Linville Falls Fault led by Peter Margolin and Charles Trupe. The Fault was exposed by flooding from hurricanes Ivan and Frances in 2004. The progress on the landslide mapping and geological mapping along the Blue Ridge parkway was discussed by geologist Rick Wooten and NCGS staff.

Afterwards, the group (largest Sunday CGS attendance) traveled to Mount Mitchell where they were hosted by the Mt. Mitchell State Park staff to be the FIRST official group to visit the new summit overlook since the old rock tower was dismantled last year. Here Ken Taylor and Alex Glover paid tribute to geologist Elisa Mitchell, the second State Geologist of NC, at his newly restored gravesite. Geologist Kevin Stewart also gave a description of the Mt. Mitchell geology atop the summit. What better place for a geology discussion on a picture perfect fall mountain day in North Carolina!

The Carolina Geological Society has been around since 1937, and is now a fully tax exempt 501(c)(3) or-

ganization. They have an annual field trip, traditionally led by a professional or advanced graduate student who has studied the area in detail, and a concurrent membership meeting. Since 1957, the secretary of the CGS has



Spruce Pine Mines Overlook

*Photo by Michael Jones, Pyramid Environmental*



A beautiful fall day for the CGS 2008 field trip.

*Photo by Michael Jones, Pyramid Environmental*

been Duncan Heron, [duncan.heron@duke.edu](mailto:duncan.heron@duke.edu). The CGS website is <http://www.carolinageologicalsociety.org/>. The field trip guidebook will be online soon.

Corporate sponsors included Active Minerals International, LLC, Imerys North America Ceramics, Unimin Corporation, Vulcan Minerals Company, and Cabot Oil and Gas Corporation.

*The author wishes to thank Alex Glover, Michael Jones, and Duncan Heron for assistance with this article, and for the use of their photographs.*





## AEG CAROLINAS SECTION – SPONSOR INFORMATION

The Carolinas Section of AEG supports many of its activities with financial assistance provided by our sponsors. Our activities include quarterly meetings, periodic field trips and seminars, a quarterly newsletter, and email announcements about our meetings and geoscience related activities. In addition, we donate educational resources to science teachers.

We offer several levels of sponsorship, but they all have one goal: to keep the sponsor's name in front of our members and to bring you business. We have a real commitment to connecting our sponsors to potential buyers and will do all we can to help you build your business. Most of our members are practicing professionals with responsibility for selecting subcontractors, so our group is a great place to find new customers and to catch up with existing customers in an informal setting.

Our sponsors provide financial support that allows us to have reasonably priced dinner meetings, host seminars, provide student memberships and discounted dinner meeting costs for students, underwrites the cost of newsletters and our web site, and supports science education in our schools. All costs listed below are per year and begin on January 1.

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Email Announcements: Listing of your company name on each AEG Carolinas Section email announcement (our email list is currently over 1,000 people)

Web Page: Acknowledgement on the AEG Carolinas Section Web Page, [www.aegcarolinas.org](http://www.aegcarolinas.org).

### Gold Sponsor (\$375):

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### Platinum Sponsor (\$500):

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Meeting Exhibit: Space for tabletop display at three meetings. Cost of meeting waived for one person on the exhibit date.

Email Announcements: Listing of your company name on each AEG - Carolinas Section email announcement

Web Page: Acknowledgement on the AEG Carolinas Section Web Page, [www.aegcarolinas.org](http://www.aegcarolinas.org).

### GeoNews Newsletter Sponsorship Only

Businesses or individuals can also advertise in GeoNews without being a full sponsor. The annual rates for advertising in GeoNews are as follows:

Business Card	\$ 40.00
Quarter Page	\$ 60.00
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Please complete the form below and mail with your check to AEG Carolinas. Please call or email if you have any questions (contact information and address are below).

### AEG Carolinas Section Sponsorship Form

Please begin our sponsorship of the Carolinas Section of the Association of Engineering Geologists. Our level of sponsorship is:

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 For more information, email [JaneHGill@aol.com](mailto:JaneHGill@aol.com)

(Modified December 20, 2008)

## MEMBER BENEFITS

Networking, with colleagues at meetings, through technical publications and on the AEG web page, is a valuable professional development benefit because it allows a member to:

- ♦ Broaden and update technical, practical, and business knowledge.
- ♦ Keep career paths open by assuring that the value, utility and scope of engineering geology is recognized in the scientific, technical, legal, and regulatory arenas.
- ♦ Explore numerous opportunities for career enhancement through contacts at technical meetings and in continuing education programs.
- ♦ Influence the profession of environmental and engineering geology as it serves society and as it is regulated.
- ♦ Establish the standards of the profession.

§§§§§§§§§§§§§§

AEG members receive our quarterly professional journal, *Environmental and Engineering Geoscience* and six-issues of the *AEG NEWS* as a regular dues benefit.

Members also enjoy a 20% "member discount" on all special publications, registration fees at meetings, short courses, and field trips.

## PROFESSIONAL DEVELOPMENT

*AEG – Serving Professionals in Environmental, Ground-Water and Engineering Geology since 1957*

- ♦ AEG sponsors workshops and short courses for which official Continuing Education Units are offered.
- ♦ AEG encourages its members to participate in activities of mutual interest with other societies and organizations.
- ♦ The annual Richard H. Jahn Distinguished Lecturer in Engineering Geology is co-sponsored by AEG and the GSA Engineering Geology Division.
- ♦ AEG members make presentations and lead field trips for students at all levels.
- ♦ AEG's Technical and Professional Practice Committees keep the Association in a position of influence through their wide-ranging activities.
- ♦ AEG's 25 Sections and 20 Student Chapters provide educational and networking opportunities for members through regular meetings, field trips and local newsletters.
- ♦ Students compete for scholarships and awards, and interact with practicing professionals.
- ♦ Short courses, field trips, and technical sessions provide opportunities for AEG members to enhance their professional practice.
- ♦ International members are found in more than 20 countries and Designated Correspondents enhance technology transfer among more than a dozen countries.



The Association of Environmental & Engineering Geologists (AEG) is an international, non-profit scientific and technical society, whose 3,000 members include geologists specializing in engineering geology, environmental geology, and ground-water geology as well as other professionals in affiliated fields such as civil and mining engineering, land-use planning, public policy and education.

Through its technical and professional activities, AEG strives to promote the value and importance of geologic practice in:

- ♦ detecting, containing, and remediating contaminated soil and ground water;
- ♦ recognizing and mitigating hazardous geologic processes to promote public safety and welfare; and
- ♦ siting, planning, designing, constructing, and maintaining engineered works.

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Please complete this form and mail it with your Annual Dues payment to the Association's Headquarters for processing. New member applicants do not pay Section dues for their initial year of membership.

Name: \_\_\_\_\_ (Please print your name as you would like it shown on your membership certificate.)

PREFERRED ADDRESS: \_\_\_\_\_

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DESIRED CLASS OF MEMBERSHIP: \_\_\_\_\_ ANNUAL DUES AMOUNT: \_\_\_\_\_

CERTIFICATION: \_\_\_\_\_

(Signature)

My signature attests that, to the best of my knowledge, I meet the academic and practice requirements for the membership class I have requested and that all entries on this application are true and correct. I also authorize AEG to charge my credit card for the dues payment, if I selected the credit card payment option.

☐ Enclosed is my check for the amount of Annual Dues of \$ \_\_\_\_\_

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**SUBMISSION:** Send this form with your check or credit card authorization to:  
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 Phone: 303-757-2926; FAX: 303-757-2969; AEG Web: [www.aegweb.org](http://www.aegweb.org)

## MEMBERSHIP REQUIREMENTS

**MEMBER:** Applicants for Member Class shall hold a degree in geology, engineering geology or geological engineering, or a degree in a related professional field with 30 semester-hours of credit in the geosciences. In addition an applicant shall be practicing in the field of Engineering Geology, Environmental Geology or Hydrogeology. Annual Dues for new (first-time) Members = \$75.00 per year for the first three years of membership. Otherwise Annual Dues = \$115.00. Applicants who qualify for Member Class, but are engaged in full-time teaching at the Primary or Secondary (K-12) level are eligible for Teacher Status (Annual Dues = \$35.00).

**AFFILIATE:** Applicants for Affiliate Member Class shall be scientists or engineers who work with engineering geologists; teachers engaged in middle-school and high school Earth Science education; or persons interested in engineering geology. Annual Dues = \$70.00 (Teacher Dues = \$35.00)

**STUDENT:** Applicants for Student Member Class shall be full-time students enrolled in an academic program in the geosciences or in a related field in engineering. Annual Dues = \$25.00

**INTERNATIONAL:** Applicants shall hold the same requirements as for Member Class, but may select from the following dues schedule: \$35, which includes the *Environmental and Engineering Geology Journal*; \$45 with the *Journal*, the *Annual Directory* and the *Annual Meeting Abstracts*; or \$55 with the *Journal*, *Annual Directory*, *Annual Meeting Abstracts* and the *AEG News*.

AEG memberships are based on calendar year. Applications received after October 1 will be entered for following calendar year.

## CALENDAR OF EVENTS - 2009

### *Geological Events in the Carolinas*

Courtesy of AEG Carolinas Section – [www.aegcarolinas.org](http://www.aegcarolinas.org)

Send updates/corrections to Ben Draper, Benjamin\_Draper@golder.com

Last updated December 20, 2008

*Meeting Date, Time, and Location are Subject to Change – Please Verify Prior to the Meeting*

**Date: January 24, 2009**

**Event: ASBOG - Reg Review Course**

**Location:** Charlotte, North Carolina

**Time:** 7:30-3:30 pm

**Cost:** \$445 (AEG Member)

**Contact:** <http://regreview.com/winter2009courses.html>

**Date: March 19, 2008,**

**Event: Groundwater Professionals of North Carolina (GWPNC) Spring Meeting**

**Location:** Greensboro

**Contact:** Chris Hay-President  
(chay@kleinfelder.com)

**Date: March 30-31, 2009**

**Event: 8<sup>th</sup> Annual Gas Shales Conference**

**Location:** Marriott Quorum at Galleria, Dallas, Texas

**Contact:** Peter Duncan, President (888-777-1707)

**Date: May 18-22, 2009**

**Event: NCSU Wetland Delineation and Jurisdictional Determination: Post Rapanos-Carabell**

**Location:** Raleigh/New Bern, NC

**Cost:** \$895

**Contact:** <http://www.ces.ncsu.edu/nreos/forest/feop/wetlands/index.html>

**Date: June 18-19, 2009**

**Event: Groundwater Professionals of North Carolina (GWPNC) Summer Meeting & Golf Tournament**

**Location:** Little River Golf Course and Resort

**Contact:** Nicole Manning Nicole@choice-enviro.com 919-369-1001

**Date: June 28- July 1, 2009**

**Event: ARMA - 43rd U.S. Rock Mechanics Symposium**

**Location:** Asheville Renaissance Hotel, Asheville, North Carolina

**Contact:** <http://www.armasymposium.org/>

**Date: September 14-18, 2009**

**Event: NCSU Wetland Delineation and Jurisdictional Determination: Post Rapanos-Carabell**

**Location:** Raleigh/New Bern, NC

**Cost:** \$895

**Contact:** <http://www.ces.ncsu.edu/nreos/forest/feop/wetlands/index.html>

**Date: September 21-26, 2009**

**Event: AEG Annual Meeting**

**Location:** Lake Tahoe, California

**Contact:** [www.aegweb.org](http://www.aegweb.org)

**Date: October 18-21, 2009**

**Event: Geological Society of America Annual Meeting**

**Location:** Portland, Oregon

**Contact:** <http://www.geosociety.org/meetings/>

*Additional Calendar events were not received by publication date.*



## CALENDAR OF EVENTS - 2009

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