



SUMMER 2011

# GEO NEWS

Newsletter of the Association of Environmental  
& Engineering Geologists, Carolinas Section



## IN THIS ISSUE:

Candidates for 2011 AEG Carolinas Section Elections.....	12
College Visits for the Visiting Profes- sional Program .....	14
Restoration of a Failing Gabion Wall by Frank Amend, Geobruigg .....	19
Letter of support for the Landslide Mapping Program .....	20
Discussion and links on Hydraulic Fracturing .....	22
Update on Haitian Water Well Project by Dave Duncklee .....	26

**SAVE THE DATE!**  
**Joint AEG—ASCE Meeting**  
**October 27 in Greensboro**

**GEONEWS SUMMER 2011**  
**Issue Date: June 21, 2011**  
**TABLE OF CONTENTS**

**Articles**

AEG Committee Highlights by Jennifer Bauer – AEG VP / President-Elect.....	7
AEG Carolinas Social Event Options .....	10
Candidates for Upcoming AEG Carolinas Section Elections .....	12
Letter of support for the Landslide Mapping Program .....	20
Update on Haitian Water Well Project by Dave Duncklee, Duncklee & Dunham.....	26

**Columns and Regular Features**

Message from the Chair by Paul Weaver .....	3
GeoRamblings by Dr. Charles Welby .....	8
Announcements .....	18

**Education Section**

College Visits for the Visiting Professional Program by Rick Kolb, Duncklee & Dunham .....	14
Geology of North Carolina for Teachers (flyer) .....	15
Call for Volunteers and Donations for AGI Kits for NCSTA Conference .....	17
Environmental Ed Conference Coming to NC .....	17
Letters from Randy by Randy Bechtel, NCDENR .....	16

**Technical Section**

Restoration of a Failing Gabion Wall by Frank Amend, Geobruigg .....	19
Discussions and links on a Controversial Topic - Hydraulic Fracturing by Jane Gill-Shaler .....	22

**Upcoming Events**

Calendar of 2011 Events .....	29
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**Section and Association Stuff**

Deadlines for Submittals .....	2
Section Officers .....	2
AEG Carolinas Treasurer's Report .....	4
AEG Carolinas Section Quarterly Board Meeting June 8, 2011—Minutes .....	4
AEG Student & New Graduate Member Membership Application (flyer) .....	30
AEG Membership Application (flyer) .....	31
Sponsor Application (flyer) .....	32
Thanks to our Sponsors .....	33-34

Cover: Installation of a community well at Ti Moustic in Haiti. See article page 26.

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**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 AEG Carolinas 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 Sept. 21

Winter – deadline December 1, issue date December 21

**Deadlines for submittal for the National AEG News:**

March issue – January 15

June issue – April 15

September issue – July 15

December issue – October 15

**AEG Carolinas Section ..... Current Officers and Contacts**

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Treasurer . Dave Duncklee, [dave@dunckleedunham.com](mailto:dave@dunckleedunham.com)

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## MESSAGE FROM THE CHAIR

By Paul Weaver, PG,  
Carolinas Section Chair

The Carolinas Section held our spring meeting at Sparian's Bowling Boutique in Raleigh in April. This was a joint meeting with the Eastern Branch of the North Carolina Section of ASCE. AEG's President, Bruce Hilton, presented a talk at the meeting on the Martis Creek Dam located near Truckee, California. We had a very good attendance with approximately 96 people. Thanks to all of you who attended the meeting.

Our next section meeting will be held in Asheville the first part of September. We are still finalizing the date and venue, and we will send out an email announcement of the meeting as soon as it is finalized. We will have our fall meeting in Greensboro on October 27 at Natty Greene's. We also still plan to hold a fall meeting in Columbia so as to better serve our members in the Palmetto State. More information on that meeting will be sent out to our membership once it is finalized.

The Carolinas Section Board has decided that beginning with our next section meeting, a surcharge of \$5 will be charged for non-members to attend the section meetings. The purpose of this is twofold: 1st - to help hold down the financial losses we typically experience due to what we charge our members to attend section meetings and what it actually cost per person in venue charges, and 2nd - to encourage non-members to become members. Students, as always, will not be charged to attend the section meetings, and representatives of our section sponsors will be charged the membership price, whether they are individual members or not. We have also decided to charge public school teachers only \$10 to attend our section meetings in an effort to get them more involved in AEG.

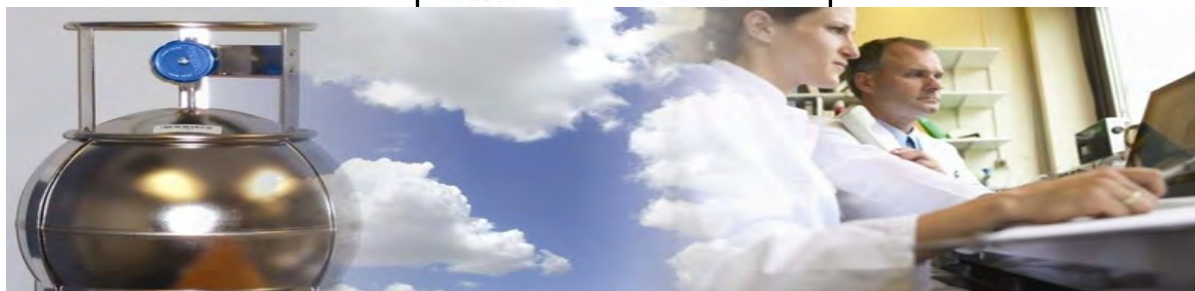
Rick Kolb, past section chair, has agreed to be the Chair of the Carolinas Section K-12 Education Committee. The purpose of this committee is to advocate for K-12 earth sciences education. As Chair of the Committee, Rick will also be the liaison between the Carolinas Section K-12 Education Committee and AEG's Advocacy Committee (which ought to be easy since Rick is also the Chair of the Advocacy Committee).

August will be time to hold elections for your section board elections again. Dave Dunclee, our Treasurer for the last two years, has decided not to run for another term. Dave has been a great Treasurer and will be greatly missed. I feel that it is in no small part due to his efforts that our section is on the firm financial ground that we find ourselves. Ballots will be sent out to the membership the later part of July. If anyone reading this article is interested in running for a position on the Board, please let me know.

For those of you who are not aware of this, the AEG Board of Directors meets each spring in the home city of the AEG President, and each September immediately after the Annual Meeting. The Chair of each Section is also a member of the AEG Board of Directors. Therefore, I attended the Mid-Year Board of Directors' meeting in Sacramento, California on Saturday, April 15 and Sunday, April 16. This was an intense day-and-a-half of meetings to see where the Association is at, where we want to go, and what we need to do to get there. In addition to my duties as a board member and the Chair of the Carolinas Section, I volunteered at that meeting to serve as a member of the Finance Committee while in Sacramento. Among the issues discussed at the mid-year board meeting was the need to increase Association revenue by bringing in new members, what to do to help support licensure issues as they arise across the country, and how to reach out even more to our student members.

On another matter from the mid-year board meeting, we discussed different ways that the Association can

*(Continued on page 7)*



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## AEG CAROLINAS SECTION TREASURER'S REPORT

By David Duncklee, Section Treasurer

<b>BALANCE As Of December 31, 2010</b>	
Checking Account	\$1,899.86
Money Market Account	\$12,094.56
Charleston Planning Account	<u>\$2,529.76</u>
<b>INCOME</b>	
Dinner Meetings	\$1,226.00
Sponsorships	\$7,900.00
AEG Dues rebates	\$530.00
Charleston National Meeting	
Meeting Proceeds + Sponsor Check Return	\$5,280.44
Interest	
Charleston 2010 Account (Closed Out)	\$0.00
Money Market	<u>\$23.97</u>
<b>SUBTOTAL</b>	<u>\$14,960.41</u>
<b>EXPENSES</b>	
Dinner Meetings	
Concord Mtg. Venue and Food	\$2,194.18
Meeting Cake	\$67.87
Educational Programs	
Booth Rental GSA Conference	\$80.00
Food for UNC-Ch Visiting Professionals Mtg.	\$219.11
Grants to GSA Conference	
Mark Case and Josh Roberts (2)	\$300.00
Corresponding AEG Memberships (2)	\$70.00
Administrative	
Website Maintenance/Domain Name	\$256.96
Name Tags	\$196.22
Fee During Closure of Charleston Account	\$12.00
Stamps for Jane Gill Mailings	\$44.00
Gifts	
Books for Bruce Hilton and Later Speaker	<u>\$99.90</u>
	<u>\$3,540.24</u>
<b>BALANCE As Of March 31, 2011</b>	
Checking Account	\$6,296.06
Money Market Account	\$21,648.29
Charleston Planning Account (Closed Out)	<u>\$0.00</u>
<b>TOTAL</b>	<u><u>\$27,944.35</u></u>



**Karey Green**  
Account Executive

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## AEG CAROLINAS SECTION QUARTERLY BOARD MEETING CONFERENCE CALL

By Alex Rutledge, Section Secretary

AEG Carolinas Section Board Conference Call Meeting  
Minutes, June 8, 2011

Meeting was called to order at 3:30 PM.

### Attendees:

Paul Weaver (Chair)  
Brad Worley (Vice-chair)  
Dave Duncklee (Treasurer)  
Alex Rutledge (Secretary)  
Frederick Love (Membership Chair)  
Jane Gill-Shaler (Newsletter Editor)  
Adam Phillips (Social Committee Chair)  
Jennifer Bauer (Advisor)  
Gary Rogers (Advisor)

**Carolinas Section Treasurer's Report** – Dave deposited \$2300 in the last two months, sent out checks totaling \$5200. The section does not have much income in the 2nd quarter. Financially, the section is doing fine.

**GeoNews**—Jane is formatting the Summer GeoNews, so please send her any articles or announcements immediately.

(Continued on page 5)



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*Quarterly board meeting minutes (Continued from page 4)*

Adam Phillips is going to write an article on the social committee and upcoming gatherings for GeoNews.

June 21st is the issue date. Jane is writing an article on hydro-fracturing, and she would like contributions if you have them (technical or political).

**Section meeting** in early September in Asheville. This will be a joint meeting with the Western Branch of the North Carolina Section of ASCE.

Fred has the contact info of someone that will setup the meeting, but we need to let them know our preference on date and time. Jenn says they will set the place. We'd like to do the meeting in the evening on a Friday; although ASCE usually has a lunch meeting on a Thursday.

Greensboro meeting on October 27. Progress Energy employee will be speaking about the nuclear power industry.

**Meeting cost and discount for members.** We will increase our meeting cost per person to \$30 beginning at the September meeting, but members will get a \$5 discount. Representatives of sponsors who are not members will be given the member discount.

**Admission for public school teachers to Section meetings.** We will start offering a \$20 discount to public school teachers to attend our Section meetings starting in September

**Annual membership renewals.** We still have quite a

few non-renewals for this year. Fred suggests focusing on new memberships for next year, because it's late in the year for a renewal. Everyone on the list has been contacted 3 to 4 times since February. Jenn suggested to Fred to send reasons why members didn't rejoin to Paul and headquarters.

**Shlemon Specialty Conference** on hydrofracking. We will not be doing a Shlemon Specialty Conference this year. Some thoughts on other conference possibilities and/or future Shlemon conferences include:

There is a bill proposed and a study commission ongoing in NC right now regarding hydro-fracturing.

Shlemon conferences are meant to be leaders in the field presenting on the topic, and posters in the evening. Field trips should be a part of conference.

Gary: For hydro-fracturing as a resource, it should be a NC-based conference. For a NC Shlemon conference, coastal process and management would be a good idea.

**Scholarships from Carolinas Section.** The Board voted to grant \$500 for a student to attend the annual meeting, \$500 for a student to attend school, and \$500 for a student to attend field camp. Paul is trying to figure out a process to do this, so it may not happen this year. Any suggestions or help would be greatly appreciated. Jane will send some scholarship info to Paul from past experience. We need to establish criteria that applicants have

*(Continued on page 6)*



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*Quarterly board meeting minutes (Continued from page 5)*

access to. We can modify Foundation scholarship for our new scholarships, and have applicants apply for Foundation and other student scholarships at the same time. Jenn can send draft copy to Paul. The new scholarships are only for student members in the Carolina's Section.

**Donations to Haiti.** Would the Section like to donate \$300 or \$600 to pay customs/duties for well supplies for Haiti? Dave: We sent \$2000 worth of well casings to Haiti for about \$400 in duties and gas. Casing was donated by Mid-Atlantic Associates and Geologic Exploration. Fall is the next shipment. We should send out a press release in Raleigh. Board agreed to donate \$600 for future duties/customs charges on supplies.

**K-12 Advocacy Committee.** Rick has agreed to be the Section's K-12 advocacy representative. The purpose is to push for more and better geoscience education for grades K-12. The national K-12 Committee sent a list of 4 or 5 teacher associations to all the Sections so we can contact them and let them know about the advocacy committee.

**Alaska meeting.** The Carolinas Section is sponsoring the special event for \$1000. Who besides Paul is going? Bridget and a student will attend. Jenn will attend. We need to talk this meeting up to everyone. We need exhibitors for Alaska meeting; send info to Jenn or Duane Kreuger. Paul will bill section for plane fare (\$860) and hotel during conference.

**Carolinas Section Social Committee.** Adams Phillips of SGS has come up with some great ideas and a column will be printed in the next GeoNews to gauge interest. Some camping options: Asheville or Brevard area/Spruce pine area/Boone area/New River State Park canoeing. Send Brad an email with your preference on camping spots. Adam: Beach volleyball tournament is another option for an AEG social event.

**Website update.** What is the status of our website? Tami: Haven't received a bill yet, corrections have been made, our webmaster is posting as he needs to.

**Section Meeting in Columbia** this year. Raymond, where do we stand on this? Paul will send email to see if we can get some info on the meeting and to see if Raymond needs help with getting the meeting organized.

**GSA SE Meeting in Asheville in 2012.** Rick thinks the

Carolinas Section should be a financial sponsor. What is your opinion? AEG/GSA joint luncheon or dinner? Perhaps the AEG Carolinas would like to use it for a section event? Jenn will send Paul contact info for someone with GSA who is interested in doing a joint lunch. We should display the AEG booth

**GSA Annual Meeting in Charlotte in 2012.** What level of participation do we want to take on (financially and personnel wise)? Paul will contact the organizers to see what different levels of involvement may be available to us so we can decide how we would like to proceed

**NCSTA Meeting.** Coming up this November. There will be a rock giveaway again. Expect about 2,000 teachers to attend. Paul will order Toolkits soon. How many should we order? Can we get additional sponsors like in previous years? Jane suggested we order them as soon as they're available. Ordered 450 through section last year and they were all distributed.

**AEG Mid-Year Board meeting** April 16 and 17 in Sacramento. Dues will be increasing starting in January. Jenn: Half of dues increase will go to a fund for sections dealing with local legislative issues (e.g. professional licensures). Will most likely be giving a \$10 discount to those who renew prior to January. There is a big push to increase new members. Please talk up the organization with everyone you know to try and boost membership. Jenn suggested we should speak with larger companies that aren't currently represented in AEG and encourage them to join. Adam: SGS Anchorage Alaska lab - we should contact them about a sponsorship. Adam will send Duane Kreuger an email. Consideration is being given to making AEG News electronic instead of paper unless a paper copy is specifically requested.

**Carolinas Section Board elections.** Is Briget still O.K. with running for Secretary? Yes. Is Dave O.K. with having the ballots sent to him? Yes. Can we get Vulcan to mail the ballots? When should we send them out? Vulcan can send them out. Give them three weeks' notice before they have to be sent. Jenn: Ballots should be out by the first week in August.

**Meeting was adjourned at 4:50 PM**

Respectfully submitted by Alex Rutledge, AEG Carolinas Section Secretary. Minutes approved by Paul Weaver, AEG Carolinas Section Chair



**Drew Baird, P.G.**  
Southeast District Manager

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(Message from the Chair—Continued from page 3)

save money from what we are currently doing. One item that was brought up was the possibility of our membership receiving AEG News in electronic form instead of as a paper issue. If you have a strong opinion one way or another on this issue, I would really appreciate hearing your view.

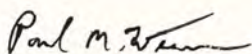
At the Annual Meeting in Anchorage in September, Jennifer Bauer, current section advisor and former Chair of our section will become the President of AEG. We are all very proud of Jenn, and this means that next spring's mid-year Board meeting will be held in Asheville (I will only have to travel 2.5 hours to attend!!).

Speaking of the Annual Meeting, I am sure you are all aware by now that AEG's Annual Meeting will be held this year in Anchorage, Alaska on September 19 through 24. I believe that it will be an exciting week of field trips, technical sessions and symposia, and getting together with your peers. For those of you who have never attended an AEG Annual Meeting, I highly recommend it. You can't imagine the fun and conversations that ensue when you get several hundred geologists all congregated in the same place! I know that many of you are thinking that this trip just isn't affordable, but it is much cheaper than you might think. You can get round-trip airfare if you book early for a little as \$650! As an incentive for students from the Carolinas Section to attend the meeting, we will provide a \$500 travel grant to a deserving student from the Carolinas Section. If you are a student and are interested in receiving this grant, please write a couple of paragraphs about why you think you should receive this grant, why you would like to attend the meeting in Anchorage, and what you hope to get from the meeting. Email your short composition to me at the email address below, and the Board will award the grant by the first of August.

The Geological Society of America (GSA) will be holding their Southeast meeting in Asheville and their annual meeting in Charlotte next year. They have requested that AEG let our membership know that they are looking for volunteers to assist with various aspects of the planning of these meetings, and for helping out during the meetings themselves. If you are interested in helping GSA, please contact me and I'll put you in touch with the people who can sign you up.

Thank you all for your membership and support of the Carolinas Section.

Sincerely,



Paul M. Weaver, P.G.  
AEG Carolinas Section Chair  
pmweaver@bellsouth.net

## AEG COMMITTEE UPDATES

By Jenn Bauer, AEG President Elect

This is an update on the recent work done for our organization by the AEG standing committees. Volunteers are always welcome—please contact Jenn Bauer, AEG President Elect, at jennbbauer@gmail.com for more information or to help out.

**Strategic Planning** – We conducted a workshop at the mid-year Board of Director's meeting on ways to better serve our members. Keep an eye out for enhanced member services!

**Licensure** – Check out the new online resource center for licensure information here. Do you keep tabs on what's going on in your state? If so, contact Committee Chair, Ken Neal (KenGNeal@aol.com) to become your Section's liaison to the committee.

**Section Chapter Support** – Enhancing the Outstanding Section Award and including a financial incentive to be the best Section in AEG. Log in as a member and check out their conversation on the AEG forum.

**Advocacy/K-12 Education Subcommittee** – We are looking for interested Carolinas Section members to be K-12 Education Chairs and to be liaisons between the Association level committee and the Section level. Contact Rick Kolb for more details (rkolb0915@aol.com).

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## GEORAMBLINGS

By Dr. Charles W. Welby

Recently I attended the combined Cordilleran and Rocky Mountain Sections of GSA meeting in Logan, Utah. Not only were the papers on the program inviting, but the trip afforded a chance for me to renew my acquaintance with Logan, Utah, and the front of the Wasatch and associated ranges as well as to visit with a coterie of friends and acquaintances and to meet some of the younger generation.

Some number of years ago I had the opportunity to attend a six weeks long NSF Short Course on Water Resources convened at Utah State University and to spend the summer with Logan as a base exploring the areas east of Logan with my young family. Thus the meeting provided also a chance to visit some places in Logan and nearby that had been of interest in the past and to see how Logan had grown in the ensuing decades.

As happens sometimes, the "small world" catches up with one. During the reception at the beginning of the meeting one of my friends, a well-known member of AEG and GSA and I were talking about my attendance at the short course. He told me that he was there also. Neither one of us remembered the other as being at the short course, but what we learned about various aspects of water resources during the six weeks has been a good base for furthering our interests in water resources and evaluating what goes on in the world of water supply. The use of water resources in California and Israel were of particular interest at that time as they have continued to be.

Topics in the Poster Sessions provided an opportunity to sample diverse subjects and to broaden ones geologic perspective.

The Oral Sessions on Reading Landscapes and Dirt (T12) and the one on Water Resources of the Densely Populated Alluvial Valleys of the Western States (T14) were of particular interest to me.

The landslide papers from both the oral and the poster sessions were nice supplements to the article in the June 2010 issue of the Earth Magazine article entitled, "Slippery Slopes." In that article the work that the North Carolina Geologic Survey has been doing on landslides in the mountainous regions of North Carolina is described along with some observations on the work by Rick Wooten. Many of the landslide papers presented at Logan were the results of studies of landslides and related mass movement events that occurred in the lowlands in front of the Wasatch Mountains along the banks of the canals bringing water from the mountain front for irrigation purposes on the benches and the valleys below.

On a more personal note, the Earth Magazine article cites the observation of David Montgomery that there are deep landslides in the hills of North Berkeley, CA which affect many structures built there. During WW II my late wife's family moved from the east to Berkeley. The first house that they occupied was on Keith Avenue (for those who know Berkeley). A neighbor's house was located on part of a deep-seated landslide which caused the house to move downward toward San Francisco Bay. The house was mounted on skids of some sort. Periodically the owners would pull the house back to its original geographic position, a position higher on the hillside, a novel solution to an ongoing mass movement problem. However, one can but wonder what might have happened if there had been a movement along the nearby Hayward Fault. "Oopsy Daisy" perhaps, or something akin to a ski jump effect – a "flying house??"

In another part of the general area cracks in the pavement of Euclid Avenue needed to be repaired periodically, and the trolley lines straightened in response to movements from deep-seated landslides. At the time of my last visit to Berkeley there was evidence in Euclid Avenue that north Berkeley is slowly slipping downhill. (No wisecracks from Stanford People.) The trolley lines are long gone as buses have taken over the public transportation needs. One Poster Session paper at the Logan meeting addressed the fluid movements through fractures and faults and thereby raised questions about the efficacy of sequestration of carbon dioxide as a method of "engineering" climate change. The work studied the occurrence of chemical changes along fractures which were reflected in changes in mineralogy and the color of the parent rock. The evidence attested to the movement of a fluid, gas or liquid, along the fracture or fault. Such findings should not come as a surprise to those interested in

(Continued on page 9)



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*GeoRamblings (Continued from page 8)*

the movement of water through the crystalline rocks of the North Carolina Piedmont.

In petroleum exploration work faults are often found to be seals for oil and gas accumulation. In contrast to that observation is the recognition that in many places evidence exists indicating that fluids have moved through fractures in earlier times. So questions arise about whether or not the fracture systems or fault zones in even deeply buried rocks can allow the carbon dioxide to escape and also about the time needed for the carbon dioxide to return to the atmosphere from thousands of feet below the surface. Certainly one question that needs addressing for example is, "What chemical conditions might cause the carbon dioxide to precipitate as a carbonate in the fractures or as caliche in overlying soils before it reaches the atmosphere again?"

Historically the visit to Logan brought back a long time question that perhaps those more intensely involved with structural geology and tectonics can perhaps address. In the Champlain Valley of Vermont and New York and extending into the Hudson River Valley is a formation known as the Glens Falls Limestone. It is of Middle Ordovician age and is in general a thinly bedded limestone with shale interbeds. A common fossil in the formation is the trilobite known as *Cryptolithus tessellatus*. For teaching purposes it is known informally as the "lace collared trilobite."

This same trilobite occurs in similar limestone and shale beds outcropping in the Wasatch-Cache National Forest. So the question is in the colloquial fashion, "How

come?" When I asked the Ranger at the Wasatch – Cache National Forest Headquarters in Logan, about their occurrence, she knew exactly where the outcrops containing them could be found and immediately cautioned me against trying to collect any. I assured her that I had seen them back on the early Silurian and that I was not going farther up the Logan River canyon toward Bear Lake in the time that was left for me to be in the Logan area.

Q.E.D.

*Charles W. Welby*

*Dr. Charles W. Welby is a former Section Chair for AEG Carolinas and a regular contributor to this newsletter. He may be reached at cww\_ral@hotmail.com.*

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## AEG CAROLINAS SECTION 2011 SOCIAL EVENTS

By Adam Phillips, SGS

AEG Carolinas Section really enjoys seeing members get together for a good time to socialize. During our busy lives it is hard to find time to get together with colleagues and professional business peers, so scheduling and gauging interest is key to having successful events. This is the opportunity to let AEG Carolinas Section know what you would prefer and when you could make it. Keep in mind that the events listed below are not our only options; if you have a suggestion please let me know via email ([adam.phillips@sgs.com](mailto:adam.phillips@sgs.com)).

One of the most popular outings for us, with various locations and options, are professional sporting events. During the summer months, baseball games are a great option and include the Greensboro Grasshoppers, Durham Bulls, and Carolina Mudcats (Zebulon, NC). The Greensboro Grasshoppers group ticket prices start at \$5.50 for lawn seats for groups of 25-99. Reserved seats go for \$6.50, Box seats for \$7.50, and Premium seats are \$8.50 per ticket. There are two additional group options for \$14.50 plus the cost of a group ticket which include food: Barbeque Picnic (BBQ, Hot Dogs, Baked Beans, Cookies, Tea & Lemonade) and All Star Picnic (Hamburgers, Hot Dogs, Fried Chicken, Baked Beans, Cole Slaw, Cookies, Tea & Lemonade). Soda, beer, and bottled water are available for an additional fee. See <http://greensboro.grasshoppers.milb.com/> for more info. The Durham Bulls group packages start at \$7.00 for Diamond View, \$8 for Terrace Reserve, and \$15 for Time Warner Cable Field Box (\$9 ticket plus a \$5 concession/merchandise credit per ticket). They have a special group

area called the Herald-Sun Home Run Patio in right field. It is the "ballpark's perfect hangout for groups of 20 or more wanting an all-inclusive picnic package." At \$25 per person, it includes a 2-hour ballpark cookout, exclusive Durham Bulls ballcap for everyone in the group, secure seats before they go on sale to the public, a free gift for your group leader, video board recognition for your group, and entry into the Group Raffle giving one lucky member of your group the chance to win a Bulls jacket. <http://www.dbulls.com/>

If soccer is popular amongst our crowd, the Carolina Railhawks are another good option. Located in Cary, NC, their group ticket prices start at \$8 for groups of 10-30 for Spectator seats, \$12 for Premium, and \$16 for Club. Groups of more than 30 get even better discounts. <http://www.carolinarailhawks.com/>

This one mixes a little bit of sport with a little bit of comedy, the Carolina Rollergirls. Home games take place at Dorton Arena on the NC State Fairgrounds in Raleigh. There are 3 home games remaining for this summer season, Saturday, June 11th, Saturday, Sept. 3rd., and Saturday, Nov. 19th. There are also two away games which could work, Saturday, July 23rd, in Charlotte, NC, and Saturday, August 28th, in Greensboro, NC. <http://www.carolinarollergirls.com/>

Last but most definitely not least on the sporting event options are the Carolina Hurricanes Hockey. NHL Hockey season starts in September and is the earliest we could schedule this event. Group ticket prices start at \$18 for groups of 10 or more for Upper Goal Zone, and range all the way up to \$95 per ticket for Center Ice Club. Options are available from \$18, \$23, \$33, or \$38 per ticket depending upon the seating section chosen. Pre-game catering options are also available for an additional fee. <http://hurricanes.nhl.com/>

Aside from sports, there are quite a few more options for us to get together. The Chatham Hill Winery in Morrisville, NC, is a wine-lovers standout. Standing Tasting, conducted at the Wine Bar, is available Monday through Friday for \$8 per person. Seated Tasting, which is conducted at reserved tables in the Tasting Room Art Gallery is also available at \$12 per person. Private Wine Tasting is presented in their intimate Winemaker's Barrel Room for \$16 per person and must include a minimum group size of 20 people. These are daytime events, with even more options for evening events available. <http://www.chathamhillwine.com/>

NC is host to a wide range of additional vineyards, all of which are options and can be found by



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(Continued on page 12)



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(Social Events -Continued from page 10)

visiting the NC Wines website at <http://www.visitncwine.com/>.

Another alternative event option which has been suggested is a drive-in theatre located slightly north of Raleigh in Henderson. The Raleigh Road Outdoor Theatre has nightly showings for \$6 per person (not per vehicle). An attractive feature of this theatre is it being "pet-friendly", but it also comes with a drawback that alcohol is not allowed. For more info visit <http://www.raleighroaddrivein.com/index.html>.

The NC Zoo also stands out as a fun event to schedule. It is located in Asheboro, and groups of 15-50 people can purchase tickets for only \$9. <http://www.nczoo.org/visit/tickets.html>

Rounding third and heading for home are the various Campground locations available throughout the states. The Uwharrie National Forest has been suggested as a top camping location, and it hosts quite a few private campgrounds that would be glad to have us visit. North Carolina State Parks are camper friendly as well and available - <http://www.ncparks.gov>. South Carolina also holds an additional 3,000 campsites statewide <http://www.southcarolinaparks.com/camp/camp-main.aspx>.

If you have any ideas you would like to suggest, please feel free to contact Adam Phillips at [adam.phillips@sgs.com](mailto:adam.phillips@sgs.com). We must know that our mem-

## CANDIDATES FOR BOARD ELECTIONS FOR 2011-2012

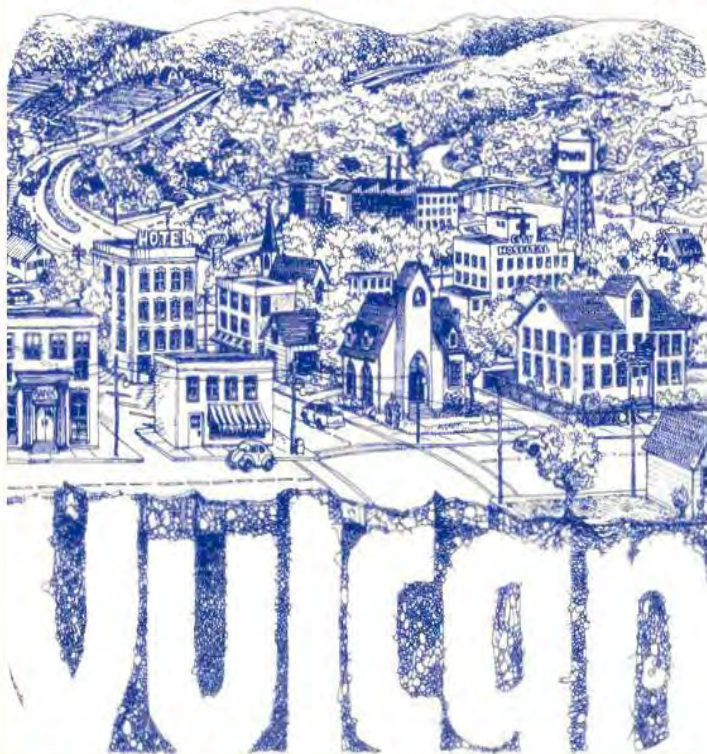
Candidates for the 2011-2012 AEG Carolinas Board are below. If you are a current AEG Carolinas Section member, you will receive your ballot in the mail. The candidates running for offices this year are Paul Weaver (Chair), Brad Worley (Vice Chair), Alex Rutledge (Treasurer), and Briget Doyle (Secretary).

Other candidates may still be proposed by members; we are accepting nominations until September 3, 2011. Please send your nominations to Section Chair Paul Weaver at [pmweaver@bellsouth.net](mailto:pmweaver@bellsouth.net). When you receive your ballots in the mail, please mark them and mail them to Dave Duncklee, current Section Treasurer. His address will be on the ballot.

(Continued on page 13)

bers are interested in these outings by receiving emails expressing interest before we commit to organizing the social event(s). Please respond to me as soon as possible so we can proceed with putting some events together before the summer is over.

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(Continued from page 12)

## CANDIDATES

**Section Chair: Paul Weaver.** Paul is the current Section Chair, and is a Licensed Geologist in both North Carolina and South Carolina. The Section Chair is a two year term, but Paul has agreed to run for a second term with the blessings of his Board. Paul has been an AEG member for over nine years. He earned his geology degree from the University of North Carolina at Wilmington in 1981. He is currently Subsurface Drilling Unit Manager/Senior Geotechnical Professional for Summit Engineering in Hillsborough, NC. Paul resides in Greensboro with his wife and 13- year old son. In his free time, he enjoys wood working and performing in theatre.

**Vice Chair: Brad Worley, L.G.,** the current AEG Carolinas Vice-Chair, is with NCDOT Geotechnical Engineering Unit. Brad graduated with a bachelor's degree in geology in 1995 from University of North Carolina at Wilmington. He then entered graduate school at UNC Wilmington, finishing in 2000 with a master's degree in geology. Brad's main emphasis during graduate school was metamorphic petrology/petrography and kinematics in metamorphic terrains. His master's research in the eastern Blue Ridge involved an in-depth and updated study of the deformational history of the Brevard Fault Zone, near the type locality of Brevard, N.C. In May of 2000, Brad began working for the NCDOT Geotechnical Unit, in the Raleigh Field Office, as a field geologist. In September of

2002, he moved to the Geotechnical Unit's Consultant Coordination Unit where he currently works as a Project Geological Engineer. Brad is a licensed geologist in North Carolina. He resides in Pine Level, N.C., and spends most of his time away from work with his 14-year old daughter.

**Treasurer: Alex Rutledge, L.G., E.I.T.,** Schnabel Engineering. Alex is currently the Secretary of AEG Carolinas. He graduated with a bachelor's degree in geology in 2002 from West Virginia University, a master's degree in geophysics in 2004 from the University of Kentucky, and a master's degree in geotechnical engineering in 2006 from Virginia Tech. Alex's professional experience has been primarily related to dams, including work on various dam inspections, rehabilitation projects, and new dam designs. Alex is a licensed geologist in the state of North Carolina and an Engineer in Training in the Commonwealth of Virginia. He currently works as a Project Geologist/Engineer with Schnabel Engineering in Greensboro. Alex also served as Moderator Chair for the 2010 National AEG meeting in Charleston, SC.

**Secretary: Briget Doyle.** Briget is a Assistant Professor of Geology at the University of South Carolina - Upstate. She has degrees in Hydrogeology and Geological Engineering, served as General Chair for the 2010 AEG Annual Meeting, and is a committee member for the Students and Young Professionals Support Committee and the AEG Foundation Programs Committee.



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## EDUCATION SECTION

### COLLEGE VISITS FOR THE VISITING PROFESSIONAL PROGRAM

*By Rick Kolb, Duncklee & Dunham, Section Student Liaison*

Geologists from the Carolinas Section made presentations on geology careers to students at the following schools during the spring semester: UNC-Asheville, Chapel Hill, and Charlotte; NC State, Western Carolina University, Guilford College, Furman University, East Tennessee State University and Wake Technical Community College. East Carolina University, UNC-Wilmington and Appalachian State University expressed interest but couldn't fit us into their schedule this year. Our student/faculty audiences range in size from a dozen at the smaller schools to 75 at the larger schools. Usually we have geologists in the private and public sector, and their backgrounds are in environmental geology, engineering geology, and the wide-ranging disciplines in the public sector.



**Paul Weaver** talking about AEG to a group of students at UNC Chapel Hill

We buy pizzas and soft drinks for consuming during our presentations, and afterwards we've taken the students out for a couple beers. Our presentations are generally on a late Thursday afternoon, starting between 5:00 and 6:00, and we are done by 8:00.

Presenters this past semester included **Brad Worley**, **Tami Idol** and **Brian Smith** at Wake Tech;

### GRADUATE COURSE FOR K-12 TEACHERS "GEOLOGY OF NORTH CAROLINA"

NC State is offering a new graduate course for K-12 teachers this summer entitled "Geology of North Carolina for Teachers" (see flier on next page). This course will cover geological processes, as well as strategies to bring that information back to students. It is being designed with the North Carolina standards in mind.

The summer session runs from June 30-August 5 and folks should register through this website <http://www.ncsu.edu/summer/>.

Carolyn Bachl (former consulting geologist, now an attorney), **Dave Duncklee**, **Kevin Miller** and **Rick Kolb** at NC State; **Will Grimes** and **Gary Rogers** at Guilford College; **Matt Flinchum**, **John Pilipchuk** and Rick Kolb at UNC-Charlotte; **Ken Taylor**, high-school teacher **Josh Roberts**, **Rachel Kirkman** and Rick Kolb at UNC-Chapel Hill; **Brett Laverty** at UNC-Asheville; **Rick Wooten**, **Brett Laverty**, and **Kathy Webb** at Furman University; **Judd Mahan**, **Mark Lassiter**, and **Jennifer Bauer** at Western Carolina University; and **Brett Laverty**, **Judd Mahan**, and Jennifer Bauer at East Tennessee State University.

Partly as a result of our visits to these schools, the Carolinas Section now has over 130 student members. Through the support of our section sponsors, the Carolinas Section paid for student memberships until last year, when AEG HQ saw our results and decided to make student membership free. We are also able to pay for student dinners at our quarterly section meetings, so we always have at least a dozen students at each.

If you attended college in North or South Carolina, we invite you to participate in our presentations to colleges and especially your alma mater. Contact Rick Kolb at [rkolb0915@aol.com](mailto:rkolb0915@aol.com) if you are interested.



**Rachel Kirkman**, Golder Associates, and UNC students.



**EDUCATION SECTION**

MEA 592.002: Special Topics in Earth Science  
**Geology of North Carolina for Teachers**  
Summer II 2011  
3 credits



**Explore the Geology of North Carolina through Field Experiences with Scientists from NC State University**

**Course Description:** This course is designed specifically for North Carolina K-12 teachers, emphasizing the geological processes that have influenced our state, including plate tectonics, landscape evolution, and resulting geologic formations. **The course will include local field experiences with NC State faculty on stream characterization, water analysis, fossil preparation, and the opportunity to select either a mountain or coastal field trip.** We will discuss specific strategies to bring geology resources into the classroom. The course will culminate in the development of a website to share with other K-12 teachers and students.

**Format of the Course:**

- Tuesday / Thursday for 3 weeks: June 30<sup>th</sup>, July 5<sup>th</sup>, 7<sup>th</sup>, 12<sup>th</sup>, 14<sup>th</sup>, and 19<sup>th</sup>  
*Attendance is mandatory; please check your schedule before registering.*
- 10am – 4pm (Jordan Hall, NC State University)
- Attendance on one of two field trips:
  - Mountains: Saturday July 9<sup>th</sup> - Sunday July 10<sup>th</sup>
  - Coast: Saturday July 16<sup>th</sup> - Sunday July 17<sup>th</sup>
  - Camping at National Park campgrounds

For more information, contact: Katherine Almquist, [kdalmqui@ncsu.edu](mailto:kdalmqui@ncsu.edu)

## EDUCATION SECTION

### LETTERS FROM RANDY

By Randy Bechtel, NC Geological Survey,

Below are several links relating to the N.C. Geological Survey's Landslide Hazard mapping team and program, information about landslides in North Carolina, and current news articles about the elimination of the team and program in the proposed state budget.

**N.C. Geological Survey – Hazards - Landslides.**

[http://www.geology.enr.state.nc.us/Landslide\\_Info/Landslides\\_main.htm](http://www.geology.enr.state.nc.us/Landslide_Info/Landslides_main.htm)

**Final N.C. budget takes aim at environmental policy** (Refers to the story of the Donin family house being destroyed by a landslide). <http://www.jdnews.com/common/printer/view.php?db=jdn&id=91705>

**Macon County considers steep-slope law.** <http://www.citizen-times.com/article/20110603/NEWS/306010067/Macon-County-considers-steep-slope-law?odyssey=mod|newswell|text|Frontpage|p>

**NC budget cuts target environment, state project in Asheville.** <http://www.citizen-times.com/article/20110603/NEWS/306030028/Environmental-changes-final-NC-budget?odyssey=tab|topnews|text|Frontpage>

**NC Science Teacher Association Conference:** Just a reminder that NCSTA is just around the corner! The deadline for presentations is June 30th! Let's try and have a bunch of geology-related activities this year to coincide with the N.C. Aggregates Association Rock Giveaway.

I would like you to present your favorite activity, or activities, using the rock kit samples to show the other teachers what to do with the samples when they get them back to the classroom. Even if you don't have rock kit-related activities, send in a proposal for any geology-related activity that you like to do. Let's have presentations for all levels: elementary, middle and high school. **Proposals are due by June 30, 2011**

Follow the directions to fill out the NCSTA-PDI Educator Presenter Application linked here (Do not send them to me): [http://www.ncsta.org/index.php?option=com\\_jforms&view=form&id=11&Itemid=101](http://www.ncsta.org/index.php?option=com_jforms&view=form&id=11&Itemid=101)

(Ed: See related article on page 39.)

Have a great summer!

*Randy*

Randy Bechtel, CEE

Project Geologist - Environmental Education

[Randy.Becht@ncdenr.gov](mailto:Randy.Becht@ncdenr.gov)

NCGS website: <http://www.geology.enr.state.nc.us/>



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## EDUCATION SECTION

### CALL FOR VOLUNTEERS AND DONATIONS FOR AGI KITS FOR NCSTA CONFERENCE NOVEMBER 10-11, 2011

Yes, AEG Carolinas members, supporters and sponsors, it's that time again! Even though it is only June, and the kids are out of school having fun at the beach or in the mountains or just hanging out with their family and friends, we professionals are getting ready to make their school experiences a lot more fun. AEG Carolinas has been participating in the Earth Science Kit Giveaway for years, purchasing hundreds of earth science kits developed by the American Geological Institute (AGI) for Earth Science Week. This valuable resource has never been more important than in the last several years of budget cuts to education. The AGI Earth Science Week 2011 Toolkit includes:

- \* A 12-month school-year activity calendar, suitable for hanging
- \* The new Earth Science Week poster, with learning activity
- \* American Chemical Society global water experiment materials
- \* National Park Service items on fossils, air & geologic heritage
- \* NASA education resources examining Earth from space
- \* A poster on earthquakes and seismology from IRIS
- \* A GIS-in-science-education resource from ESRI
- \* A poster by SPE on renewable and nonrenewable energy
- \* A genuine field notebook from Rite in the Rain
- \* Educational material from the U.S. Fish and Wildlife Service
- \* A USGS poster on the bicentennial of the New Madrid quake
- \* Activity sheets from the Association for Women Geoscientists
- \* Brochures, bookmarks, fact sheets, postcards, and more.

AEG Carolinas also provides volunteers to pack up rock samples and descriptive flyers for use in the classroom. The rocks are provided through the generosity of the North Carolina Aggregates Association and their members and colleagues. However, the rock samples are delivered to the Koury Convention Center in Greensboro in bulk. Our job as volunteers is to pick out several of the samples from each of about ten 55 gallon drums, and put them in a small carrying bag with the information flyer. It is heavy work, but with many hands the work is made light.

We also need volunteers to give away these ma-

### NC ENVIRONMENTAL ED CONFERENCE OCT. 2011

The 40th Annual Conference of the North American Association for Environmental Education (NAAEE) is coming to North Carolina in 2011. Join NAAEE and EENC (Environmental Educators of North Carolina) as they host attendees from around the world October 11- 15, 2011 at the LEED Silver certified Raleigh Convention Center. Six strands complement the conference theme: Rooted in Time: Branching to the Future. Visit the NAAEE website to learn more <http://www.naaee.org/conference/call-for-presentations>.

materials (Earth Science Kits and the rock kits) to each of hundreds of resource-starved teachers there for the conference in November. They come to the booth like a school of fish at a feeding frenzy, so the more volunteers the better! To donate funds for purchase of the Earth Science Kits, or to volunteer your time to pack the rock kits or distribute them at the NCSTA Conference, please email Paul Weaver, AEG Carolinas Section Chair at [pmweaver@bellsouth.net](mailto:pmweaver@bellsouth.net).

More information about the November 10-11, 2011 NCSTA Conference may be found at <http://www.ncsta.org/>.



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## ANNOUNCEMENTS

### GEOTECH OPENS OFFICE IN RALEIGH

**David Hathaway**, Office Manager for **Geotech Environmental Equipment, Inc.**, an AEG Carolinas Silver Sponsor, announced recently that their company has opened a new office at 2517 Noblin Road, Suite 103, Raleigh, NC 27604. Their phone is 919 876-1535, with the toll free number 1-800-293-5325. The fax number is 919 878-1269. David Hathaway may be reached at davidh@geotechenv.com. Geotech manufactures and distributes sampling, filtration, analytical and remediation products for the ground and surface water industry. They also rent, sell, and service environmental sampling and monitoring equipment. Geotech's website is [www.geotechenv.com](http://www.geotechenv.com). A map to the new office location is [http://www.geotechenv.com/pdf/maps/n\\_carolina\\_map.pdf](http://www.geotechenv.com/pdf/maps/n_carolina_map.pdf).

### AE DRILLING SERVICES NEW PROJECTS

**Mark Lassiter**, of **AE Drilling Services**, recently sent a note that their company has been busy in 2011 with extensive core drilling for Duke Power's Lee Nuclear Station & the City Of Atlanta's Peachtree Caverns tunnel project, along with several major bedrock investigations at contaminated environmental sites in North Carolina & Alabama, and extensive geotechnical drilling at the Haille Gold Mine in South Carolina. AE President Mark Lassiter has been back on **Stone Mountain, Geor-**

**gia** inspecting, caulking, & cleaning the Confederate Memorial Carving. A.E. Drilling Services, LLC has been providing national clientele high quality environmental, geotechnical, mineral exploration, geothermal, and water supply drilling services since 1969. AE Drilling Services website is [www.aedrilling.com](http://www.aedrilling.com); Mark's email is [mlas-siter@aedrilling.com](mailto:mlas-siter@aedrilling.com).

### Gary Birk Joins Tersus Environmental

Tersus Environmental, a marketer of advanced, innovative technologies for the remediation of soil and groundwater, announces that Gary M. Birk, P.E., has joined the company as Managing Partner. "We are excited to have Gary lead our sales and marketing efforts, and believe that we offer an excellent business platform for Gary to contribute his leadership to our team in service to the groundwater remediation community," said John Archibald, President of inVentures Technologies. "All of our partners, affiliates and staff around the world look forward to working with Gary and Tersus Environmental."

Gary Birk joins Tersus Environmental from his recent position as a Director of Sales and Marketing at EOS Remediation. His professional life is focused on engaging cutting-edge sustainable green technologies that help environmental consulting companies restore contaminated groundwater and soil at challenging sites associated with Fortune 500 companies, the U.S. Departments of Energy and Defense, and NASA. His experience in the environmental remediation industry dates back to 1984 and includes two decades as an environmental contractor and consultant focused on project management of multi-phase, multidisciplinary environmental design and construction projects, predominantly for industry and utilities. Gary has a bachelor's degree in chemical engineering from North Carolina State University and holds registrations as a Professional Engineer in North Carolina, Virginia and Florida. Gary's Contact Information: Cell 919.638.7892 • Skye In: 919.809.7626 Skype: Gary.Birk [gary.birk@tersusenv.com](mailto:gary.birk@tersusenv.com)



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## TECHNICAL SECTION

### RESTORATION OF A FAILING GABION WALL

By Frank Amend, PE, Geobrugg NA

A gabion wall was constructed along a steep hillside at the US Postal Service Distribution Center in Asheville, North Carolina. Over time this gabion wall has shifted, allowing the parking lot above the wall to settle. In early 2008 the U.S. Postal Service proposed to install soil nails with a shotcrete facade. As an alternative, Wurster Engineering & Construction recommended the installation of anchored high strength steel mesh with soil nails to stabilize the failing gabion wall. The selected TECCO mesh resulted in reduced cost and improved aesthetics.

Stabilization of the gabion wall was achieved by drilling through the gabions, inserting soil nails, and then grouting. Modeling of the slope using the soil nailing program "Goldnail" and the slope stability program "Slope/W" resulted in a soil nail spacing of about 8 ft horizontally and 2.5 ft vertically (the height of each gabion basket). The mesh was then rolled onto the slope, and tensioned against the gabion baskets' surface by tightening spike plates.

While shotcrete was originally specified to be placed over the gabion baskets and attached to the soil nail, TECCO mesh was used as a less expensive (in materials and labor costs), and a more attractive repair. Wurster Engineering & Construction in Greenville, SC provided the design and construction for this project.

This system has now been in place for three years and the slope has remained stable. Without the stabilization system, the rainfall events that occurred within this period would likely have resulted in severe settlement of the parking area and eventual loss of the pavement.

Frank Amend is Southeastern USA Regional Manager, Geobrugg North America, LLC. He can be reached at [frank.amend@geobrugg.com](mailto:frank.amend@geobrugg.com)



*Gabion wall shifted, settlement of parking lot*



*Repaired and reinforced gabion baskets*



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*Association of Environmental and Engineering Geologists  
Carolinas Section  
5005 Birnamwood Trail  
Greensboro, North Carolina 27407*

May 5, 2011

Senator Don East  
Co-Chair Committee on Appropriations on Economic and Natural Resources  
NC Senate  
300 N. Salisbury Street, Room 521  
Raleigh, NC 27603-5925

Dear Senator East,

I am writing to ask you to include funding for the NCDENR Geological Survey Landslide Mapping Program in the FY2012 budget.

The Landslide Hazard Mapping program was started in response to the widespread damage and loss of life caused by tropical storm-triggered landslides in 2004. The basic intent of the mapping program is to increase public safety by identifying potentially hazardous areas of landslide activity that could impact existing and newly proposed development. Many engineering geologists, civil engineers, geotechnical engineers, land planners, developers, architects, local governments and private citizens have come to rely on these maps as an invaluable, objective planning resource. AEG is a national professional organization that is made up of around 3,000 environmental and engineering geologists, 200 of which are in the Carolinas Section and do business in North Carolina. The landslide mapping program staff have also been called on to assist during landslide emergencies to help ensure the safety of residents and emergency responders near the impacted area, as well as to provide technical support to local governments so that they can secure funding for emergency responses and clean-up.

Thank you for your support. Retaining funding for the Landslide Hazard Mapping Program is needed to help save lives and to help ensure safe development of mountain slopes.

Sincerely,

Paul M. Weaver, P.G.  
AEG Carolinas Section Chair  
Greensboro, North Carolina





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## TECHNICAL SECTION

### DISCUSSION AND LINKS ON A CONTROVERSIAL TOPIC - HYDRAULIC FRACTURING

by Jane Gill-Shaler, LG, GEO

Little did I know when I decided to look into the topic of hydraulic fracturing (fracking), a topic I was only peripherally familiar with, what a huge amount of information and opinion was available for even this daily browser. Whoowee! Article upon article, opinion upon opinion, professionally produced informational videos, and a staggering quantity of talking points from business owners and analysts, environmentalists, and everyone in between.

In preparation for writing this article I have read all I can reasonably read, in between eating, sleeping, and doing the laundry, and have found a number of documents, articles, and resources on the web that you may find helpful in understanding the issues. The editor has been a card-carrying Shell customer since 1977, and owns shares of mutual funds that include oil and gas producers in their holdings. The editor is also a registered geologist in North Carolina, specializing in environmental work (semi-retired). However, knowing that we as a people today face complicated, difficult and confusing issues in energy, economics, politics, and the environment, and also knowing that our dwindling carbon-based resources are finite, this list of links, though far from complete, may help to get you started. I challenge you to go to and read at least five of the links by the end of July. I did at least 50! Send me more!

#### Background

Hydraulic fracturing (fracking) is a process of employing fluid pressure through a drilled and cased borehole to cause a series of conductive fractures in reservoir rock to facilitate and increase recovery rate of oil and/or natural gas. At great depth, shale reservoir rock has naturally very low permeability (microdarcy to nanodarcy range), so fracking facilitates economic recovery of natu-

ral gas. The small fractures introduced are kept from closing up by including sand or other suspended particles in the injected fluid. It is estimated that approximately 90% of US natural gas wells use fracking.

The process has been around for over a century. Mt Airy Quarry in North Carolina has used fracking to separate granite from bedrock up to the present time. But in the last several years, with the fusion of new advances in completion technology and horizontal drilling techniques, economic shale gas production has become viable in areas of the country that were not significant before this. Increase in oil and natural gas prices, political push for local sources of energy, and increasing instability in traditional foreign sources, all converge to cause a great rush to develop this promising source of energy.

However, other aspects of this “gold rush” are coming to the attention of the public and public agencies as the wells are being installed and managed. Some problems have arisen with groundwater and surface water contamination, including human health affected by high levels of methane in the air near natural gas drilling areas, fatal explosions from natural gas leaking into water supplies, and significant spills of fracking fluids into the environment. It is important to remember that Congress, under the Federal Energy Policy Bill of 2005, amended the Underground Injection Control provisions of the Safe Drinking Water Act to exclude fracking fluids. It also exempted fracking operations from the National Environmental Policy Act, the Clean Water Act (fracking materials are exempt from being considered a pollutant), and RCRA (anything that is produced during the removal of produced water, including used fracking fluids, is exempt). There have been reports of small earthquakes, reservoir subsidence, and loss of pore pressure as a result of fracking. There are also some reports that there is radioactivity in some drilling waste. So, something to think about:

- High prices, dwindling supplies, and the sometimes unstable political leaderships of petroleum exporting countries are forcing exploration and development of

(Continued on page 23)

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## TECHNICAL SECTION

(Fracking -Continued from page 22)

- new technologies for America's large native supply of natural gas locked up in deep shale formations.
- Modern technology developed in the last 5-10 years includes improvements in horizontal drilling and hydraulic fracturing to make development of shale gas economically viable.
  - Development and extraction of the natural gas from the shale formations is highly profitable for the first year or two, with steeply lessening yields afterwards.
  - During the first stages of drilling and production, large quantities of water are needed, as much as 10 million gallons of water with chemical additives and propping agents for each well, depending on depth and the configuration of the source formation at that location.
  - Methane and other chemicals from drilling may escape the target formation and migrate to local aquifers, compromising drinking water supplies and potentially causing explosive concentrations of methane. Industry experts indicate that these environmental problems may have been caused by improperly cased wells, and not the process itself.
  - Depths to shale gas formations in North Carolina are believed to be shallow, about 2,500 feet below ground surface. Other formations in other areas of the country have varying depths and thicknesses.

### Conversion links

Converts units of energy for the mathematically disinclined. <http://www.onlineconversion.com/energy.htm>

### Educational and Informational links

**Abstract:** Methane and the greenhouse-gas footprint of natural gas from shale formations, a letter. <http://graphics8.nytimes.com/images/blogs/greeninc/Howarth2011.pdf>

**Article:** Great informational background article on the Marcellus Shale, with stratigraphic diagrams, areal maps, etc. A good read for a curious geologist. <http://geology.com/articles/marcellus-shale.shtml>

**Courses** on hydraulic fracturing techniques. <http://www.midwestgeo.com>

**Information flyer:** A Fluid Solution: Typical solution used in hydraulic fracturing. <http://www.energyindepth.org/frac-fluid.pdf>

**Publication:** Modern Shale Gas Development in the United States: A Primer. Exhaustive report prepared for US Department of Energy by Ground Water Protection Council and an industry consultant in April 2009. 116 pages. [www.netl.doe.gov/technologies/oil-gas/shale\\_gas\\_primer\\_2009.pdf](http://www.netl.doe.gov/technologies/oil-gas/shale_gas_primer_2009.pdf)

**Publication:** Overview of the Modern Shale Gas Development Primer 2 pages. This link is longer than the overview! <http://docs.google.com/viewer?a=v&q=cache:8W6jyeuOfq0J:www.all-llc.com/>

[publicdownloads/](#)

[ALLShaleOverviewFI-](#)

[NAL.pdf+modern+shale+gas+development&hl=en&gl=us&pid=bl&srcid=ADGEESh1ftmPj5w7mMFD1E5aXXqfooSc56ACJ5d0Z9p0uPLvWk9P0ugZdCyYvfoEvXEIqJKmTxJJ3XwvUY5cXqgXvcghicpeP4HR2gcVs2fCiMfQPIDmGYDzyntHtU-x9gAX-](#)

[vEdj\\_FF&sig=AHIEtbTRaeikws9RwUhj2qhdeKjHLWqptA](#)

**Video:** Shell video explaining fracking. <http://www.youtube.com/user/shell#p/u/21/vO82b2auSdo>

**Website:** Frequently asked Questions: What are Mcf, Btu, and therms? How do I convert prices in Mcf to Btus and therms? This site also has some links to other FAQs about Natural Gas, and a form into which you may ask questions of an expert. <http://www.eia.gov/tools/faqs/faq.cfm?id=45&t=8>

**Website:** Halliburton informational website. [http://www.halliburton.com/public/projects/pubsdata/Hydraulic\\_Fracturing/index.html](http://www.halliburton.com/public/projects/pubsdata/Hydraulic_Fracturing/index.html)

**Website:** Natural Gas weekly update; changes in prices and resources from an investor perspective. <http://www.eia.gov/oog/info/ngw/ngupdate.asp>

**Website:** North Carolina Energy Fact Sheet. Outdated (2009) but gives good basic background information. Did you know that NC has an oil seaport? <http://www.eia.gov/state/state-energy-profiles.cfm?sid=NC>

**Website:** ResourceApp.com: Interactive well operations data management system for commercial applications. Very informative website and application; visitors have to sign in. <https://www.resourceapp.com/>

**Website:** Seeking Alpha. Gives background, advantages, disadvantages, and links to potential investors of various market sectors and commodities, including natural gas. <http://seekingalpha.com/article/274272-the-ultimate-guide-to-natural-gas-investing>

**Wikipedia article** on hydraulic fracturing. Good article, has at least 82 references, as of June 21 2011. Interesting that Mt. Airy Quarry has been using hy-

(Continued on page 24)



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## TECHNICAL SECTION

(Fracking -Continued from page 23)

draulic fracturing to separate granite blocks from bedrock for over a hundred years. [http://en.wikipedia.org/wiki/Hydraulic\\_fracturing](http://en.wikipedia.org/wiki/Hydraulic_fracturing)

**Wikipedia article** on Marcellus Formation. Interesting background, especially the thickness and aerial extent. [http://en.wikipedia.org/wiki/Marcellus\\_Formation](http://en.wikipedia.org/wiki/Marcellus_Formation)

**Wikipedia article** on shale oil extraction. [http://en.wikipedia.org/wiki/Shale\\_oil\\_extraction](http://en.wikipedia.org/wiki/Shale_oil_extraction)

### Politics & Opinion links

**Article:** Baffled about Fracking? You're Not Alone. <http://www.nytimes.com/gwire/2011/05/13/13greenwire-baffled-about-fracking-youre-not-alone-44383.html>

**Article:** Despite the dangers of fracking, North Carolina lawmakers want to legalize it. Indicates pressure from industry to pass laws, and cuts to DENR budget may not allow enough manpower to regulate fracking to protect human health and the environment. GeoNews obtained permission to reprint the article, but it is too long for our tiny newsletter. Worth a read. It includes an analysis of upcoming bills (as of May 11, 2011) and links to these bills. <http://www.indyweek.com/indyweek/despite-the-dangers-of-fracking-north-carolina-lawmakers-want-to-legalize-it/Content?oid=2454484>

**Article:** Duke Researchers Respond to Comments on Fracking Paper. <http://www.nicholas.duke.edu/hydrofracking/responses-about-gas-shale>

**Article:** Duke Study: High Levels of methane in drinking water wells linked to fracking. <http://www.indyweek.com/triangular/archives/2011/05/09/duke-study-high-levels-of-methane-in-drinking-water-wells-linked-to-fracking>

**Article:** EPA to do a New Study On Natural Gas 'Fracking' [http://www.huffingtonpost.com/2010/03/19/epa-to-do-a-new-study-on- n\\_505531.html](http://www.huffingtonpost.com/2010/03/19/epa-to-do-a-new-study-on- n_505531.html)

**Article:** EPA Wants to Look at Full Lifecycle of Fracking in New Study. The comments section is

worth reading, too. Most of the comments are intelligent and well thought out, with a few notable exceptions. <http://www.propublica.org/article/epa-wants-to-look-at-full-lifecycle-of-fracking-in-new-study>  
**Article:** Explore offshore driller as part of energy policy. <http://www2.journalnow.com/member-center/share-this/print/?content=ar1084577>

**Article:** Federal Fracking Panel Heavy with Industry Influence, Critics Charge. [http://www.huffingtonpost.com/2011/06/09/fracking-panel-challenge\\_n\\_874251.html](http://www.huffingtonpost.com/2011/06/09/fracking-panel-challenge_n_874251.html)

**Article:** Flammable Well Water Fires Alberta Lawsuit. [http://www.huffingtonpost.com/marcia-g-yerman/fracking-in-new-york-stat\\_b\\_877672.html](http://www.huffingtonpost.com/marcia-g-yerman/fracking-in-new-york-stat_b_877672.html)

**Article:** Fracking in California Prompts State Legislators to Introduce Regulation Bill. [http://www.huffingtonpost.com/2011/06/06/fracking-california-regulation-bill\\_n\\_872170.html](http://www.huffingtonpost.com/2011/06/06/fracking-california-regulation-bill_n_872170.html)

**Article:** Fracking in NY State – is the train out of the station? [http://www.huffingtonpost.com/marcia-g-yerman/fracking-in-new-york-stat\\_b\\_877672.html](http://www.huffingtonpost.com/marcia-g-yerman/fracking-in-new-york-stat_b_877672.html)

**Article:** Gasland Attack Group 'Energy In Depth' Funded By Major Oil and Gas Interests. [http://www.huffingtonpost.com/brendan-demelle/gasland-attack-group-ener\\_b\\_824396.html](http://www.huffingtonpost.com/brendan-demelle/gasland-attack-group-ener_b_824396.html)

**Article:** Hydraulic Fracturing 101. <http://www.earthworksaction.org/FracingDetails.cfm>

**Article:** N.C. landowners signing one-sided agreements with fracking companies. Leasing practices of industry in anticipation of gas wells in Lee, Chatham, and Moore Counties. <http://www.indyweek.com/indyweek/nc-landowners-signing-one-sided-agreements-with-fracking-companies/Content?oid=2483380>

**Article:** Natural gas drilling coming to N.C.? Older article (July 27, 2010) on the potential economic benefits and downside potential for environmental harm. <http://www.charlotteobserver.com/2010/07/27/1584651/natural-gas-drilling-coming-to.html>

**Article:** Natural gas lobby offers swag to supporters to attend public meeting. [http://www.huffingtonpost.com/2011/06/10/gas-lobby-bribery-public-meeting\\_n\\_874903.html](http://www.huffingtonpost.com/2011/06/10/gas-lobby-bribery-public-meeting_n_874903.html)

**Article:** NC House passes a bill on hydrofracking. <http://www.wral.com/news/state/nccapitol/blogpost/9724324/>

**Article:** New Study Underscores Enormous Potential Economic Benefits from NY's Marcellus Shale. <http://www.energyindepth.org/2011/06/new-study-underscores-enormous-potential-economic-benefits-from-ny%E2%80%99s-marcellus-shale/>

**Article:** Pennsylvania and Fracking. Interactive map with descriptions of industrial accidents. <http://>

(Continued on page 25)



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## TECHNICAL SECTION

(Fracking—Continued from page 24)

[earthjustice.org/features/campaigns/pennsylvania-and-fracking](http://earthjustice.org/features/campaigns/pennsylvania-and-fracking)

**Article:** Regulation Lax as Gas Wells' Tainted Water Hits Rivers. <http://www.nytimes.com/2011/02/27/us/27gas.html>

**Article:** The Fracking Public Relations Mess. [http://money.cnn.com/2011/06/21/news/economy/fracking\\_public\\_relations/index.htm](http://money.cnn.com/2011/06/21/news/economy/fracking_public_relations/index.htm)

**Article:** The Great Shale Gas Rush. Older article (October 17, 2010) with lots of photos and links to related articles. <http://news.nationalgeographic.com/news/2010/10/101022-energy-marcellus-shale-gas-environment/>

**Blog:** Checks and Balances Project. Weekly blog to unravel industry and political spin. <http://checksandbalancesproject.org/>

**Blog:** Fracture on Fracking. Opinions and quotes from various factions in the fracking debate on Capitol Hill. <http://green.blogs.nytimes.com/2011/05/06/fracture-on-fracking/>

**Blog:** Pressure Grows for Answers on Fracking. Discussion on radiation in drilling and hydrofracking wastewater. <http://green.blogs.nytimes.com/2011/03/02/pressure-grows-for-answers-on-fracking/>

**Documentary:** Gasland, an award-winning documentary about the dangers of hydrofracking. <http://www.gaslandthemovie.com/>

**Regulatory updates** on the most current energy topics, by Interstate Oil and Gas Compact Commission. <http://groundwork.iogcc.org/topics-index/hydraulic-fracturing/state-progress>

**Website** for American Petroleum Institute, an oil and natural gas trade association. Contains many articles and blogs presenting the industry perspective. <http://energytomorrow.org/>

**Website** for the Groundwater Protection Council and Interstate Oil and Gas Compact Commission. Many articles from industry perspective; also a number of short informational articles. <http://fracfocus.org>

**Website:** Energy in Depth, with many articles on potential for energy independence from the industry perspective. <http://www.energyindepth.org/>

**White Paper:** Research and Policy Recommendations for Hydraulic Fracturing and Shale-Gas Extraction. This is the Duke University study that concludes that shale-gas extraction would benefit from further study, review of health consequences of methane and other hydrocarbons in drinking water, industry-driven approaches to develop safer and more consistent extraction technologies, and consideration of stronger regulation. <http://nicholasinstitute.duke.edu/climate/policydesign/researchandpolicyrecommendationsforhydraulic-fracturingandshale2010gasextraction>

### Some Pending Legislation in North Carolina

**House Bill 242**, Natural Gas/Bond/Fee/Landowner Protection/Study. Increases amount of bond required and fees applicable to drill in NC; establishes provisions for protection of landowners relative to oil and gas leases; directs DENR to study the techniques; and calls for DENR to hold public hearings on fracking issues. Ratified on 6/17/11 and sent to the governor on 6/20/11. <http://www.ncga.state.nc.us/gascripts/BillLookup/BillLookup.pl?Session=2011&BillID=H242&submitButton=Go>

**Senate Bill 709**, the *Energy Jobs Act*. sets out how drilling revenues and royalties would be apportioned, directs the governor to enter into a new offshore energy compact with other regional governors, and requires the Department of Environment and Natural Resources to report to lawmakers “on the commercial potential of on-shore shale gas resources within the State as well as the regulatory framework necessary to develop this resource.” <http://www.ncga.state.nc.us/gascripts/BillLookup/BillLookup.pl?Session=2011&BillID=S709&submitButton=Go>

Results of a search for “Natural Gas” in the bills for the current legislative session. Includes 22 bills. <http://www.ncga.state.nc.us/gascripts/BillSearch/BillSearch.asp?typeTo=Search=ALL&chamberToSearch=&sortBy=relevance&sessionToSearch=2011&searchCriteria=%22natural+gas%22&submitButton=Go>

So there. You have your summer reading all lined up. Sit by the pool in the shade of an umbrella, or on a cool porch in the mountains, and look up some of these links. You will be as surprised as I was on the depth of information, the change in your way of thinking, and on the firing of your synapses.

Have a great summer!

*Jane Gill-Shaler is a licensed geologist in the State of North Carolina and is semi-retired. She has been a member of AEG Carolinas for over 10 years, and is currently editor of AEG Carolinas GeoNews. She may be reached at [janehgill@aol.com](mailto:janehgill@aol.com), when her ancient computer works.*

## UPDATE ON HAITIAN WATER WELL PROJECT

*By Dave Duncklee, Duncklee & Dunham*

This is an update to an article in the Spring 2011 edition of GeoNews. The previous article described the work **Doug and Susan Rakoczy** are doing in Haiti to drill new water supply wells at communities and orphanages in north central Haiti. Doug has access to drilling rigs and drillers, but the well casing materials have been wanting. For example, screen slots for water well screens are typically cut with a hand saw.

During the April 7, 2011, spring AEG Carolinas Section meeting in Raleigh, treasurer **Dave Duncklee**, of **Duncklee & Dunham**, made a request to the membership for help in donating supplies or equipment that could be shipped to Haiti. After the meeting, Mr. **Tom Proctor** of **Mid-Atlantic Associates** in Raleigh contacted Dave and offered a way to ship supplies to Haiti – they just had to fit in an 11 inch slot above food pallets in a trailer leaving Richmond in a few weeks! This offer of assistance was the key to the whole effort, as getting a shipment into Haiti was a potentially large problem.

Next, **Geologic Exploration** (GEx) of Statesville, NC, an AEG Carolinas sponsor, was contacted to see if they could help obtain slotted well casing or pipe.

Immediately, Mr. **Steve Taylor** indicated he thought GEx and one of their suppliers could help. Well, within a few short weeks thereafter, GEx had delivered well casing and screen to our door. The following supplies were donated by Geologic Exploration and one of their suppliers:

*8 boxes with two screens each – 10inches x 5 inches x 10feet*

*14 boxes with two risers each – 10inches x 5 inches x 10feet*

*1 box with one riser – 10inches x 5 inches x 10feet*

*1 box of end caps - 12inches x 13 inches x 18inches*

Dave Duncklee & Tom Dunham drove the casing to a distribution center in Richmond, Virginia, from where they were trucked to Norfolk and then shipped via Miami to the northern coast of Haiti – stacked in the 11-inch



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(Continued from page 26)

headspace in the trailer above the food pallets.

On May 20, 2011, Doug received the well casing and screen at an orphanage in Grison-Garde, Haiti, near his residence south of Cap-Haitien. The Stop Hunger Now organization was a tremendous help in getting the supplies through customs and near to Doug's residence. Dunklee & Dunham paid the customs fees and value added tax on the shipment.

Doug Rakoczy wrote at the end of May that they had used the casing and screen. "I'll keep you guys updated as we drill more wells and use more of the casing and screen. I've attached a few photos of the well that was



drilled in Ti Moustic (only about 2 miles from where we live) last week. The well is about 80 feet deep and development was completed today. It's producing between 5 and 10 gallons per minute and will be a community well. The 5 to 10 gpm rate is fairly typical for a community well."

"We're probably closer to 10 gpm with this well. Some wells can certainly do more, but our submersible pump that we use to develop the wells doesn't do much more than 10 gpm. The majority of wells (even community wells) just get an Afridev hand pump installed on it, so you can only pump at around 5 gpm (or a little less) anyway with the hand pump, and kids or women would probably go a little slower than that. We did get the end-caps and they come in very handy since they're threaded. I think the 20 slot screen works fine."

All-in-all, this effort was a tremendous success, and was made possible only due to contributions from several current and future AEG Carolinas Section members and sponsors. Thanks to all of you! We plan on making another shipment in the fall of this year.

If you would like to contribute supplies or equipment to this effort, please contact Dave Dunklee at [dave@dunkleedunham.com](mailto:dave@dunkleedunham.com), or contact any of the companies or persons mentioned in this article. Watch in future editions of GeoNews for photographs of the well casing and screen being used for new water supply wells.

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## CALENDAR OF EVENTS - 2011

### Geological Events in the Carolinas

Courtesy of AEG Carolinas Section – [www.aegcarolinas.org](http://www.aegcarolinas.org). Last updated June 19, 2011

Send updates/corrections to Rick Kolb, Duncklee & Dunham, [rkolb0915@aol.com](mailto:rkolb0915@aol.com).

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

**Date: July 11-15, 2011**

Event: The Groundwater Pollution and Hydrology Course

Location: Philadelphia, Pennsylvania

Contact: [www.Princeton-groundwater.com](http://www.Princeton-groundwater.com)

**Date: September 12-14, 2011**

Event: Principles of Groundwater: Flow, Transport, and Remediation

Location: Columbus, Ohio

Contact: National Ground Water Association, [www.ngwa.org](http://www.ngwa.org)

**Date: September 13-16, 2011**

Event: The New MODFLOW Course: Theory and Hands-on Applications

Location: Princeton, New Jersey

Contact: National Ground Water Association, [www.ngwa.org](http://www.ngwa.org)

**Date: September 15-16, 2011**

Event: Analysis and Design of Aquifer Tests Including Slug Tests and Fracture Flow

Location: Columbus, Ohio

Contact: National Ground Water Association, [www.ngwa.org](http://www.ngwa.org)

**Date: September 19-20, 2011**

Event: Environmental Forensics

Location: Albuquerque, New Mexico

Contact: National Ground Water Association, [www.ngwa.org](http://www.ngwa.org)

**Date: October 17-19, 2011**

Event: The Complete Ground-Water Monitoring Field Course

Location: Las Cruces, New Mexico

Contact: The Nielsen Environmental Field School;  
[www.envirofieldschool.com](http://www.envirofieldschool.com)

**Date: October 20-21, 2011**

Event: The Complete Surface Water and Sediment Sampling Field Course

Location: Las Cruces, New Mexico

Contact: The Nielsen Environmental Field School;  
[www.envirofieldschool.com](http://www.envirofieldschool.com)

**Date: October 24-28, 2011**

Event: The Remediation Course

Location: Miami, Florida

Contact: [www.princeton-groundwater.com](http://www.princeton-groundwater.com)

**Date: November 7-9, 2011**

Event: The Complete Soil Sampling Field Course

Location: Las Cruces, New Mexico

Contact: The Nielsen Environmental Field School;  
[www.envirofieldschool.com](http://www.envirofieldschool.com)

**Date: September 19-24, 2011**

Event: AEG Annual Meeting

Location: Anchorage Hilton Hotel; Anchorage, Alaska

Contact: Becky Roland, [aeg@aegweb.org](mailto:aeg@aegweb.org)

**Date: September 19-20, 2011**

Event: Geoscience Congressional Visit Days

Location: Washington, D.C.

Contact: Rick Kolb, Advocacy Committee Chairman,  
[rkolb0915@aol.com](mailto:rkolb0915@aol.com)

**Date: November 10-11, 2011**

Event: North Carolina Science Teachers Conference (NCSTA)

Location: Koury Convention Center, Greensboro

Contact: <http://www.ncsta.org/>

Ed: see related article page 17 of this issue.

**Date: October 9-15, 2011**

Event: Earth Science Week

Location: World-wide

Details: [www.earthscienceweek.org](http://www.earthscienceweek.org)

**Date: March 31-April 2, 2012**

Event: Geological Society of America Southeastern Section Annual Meeting

Location: Asheville, North Carolina

**Date: November 4-7, 2012**

Event: Geological Society of America Annual Meeting

Location: Charlotte, North Carolina



**Environmental  
Conservation Laboratories**

**Cary, NC Lab:**

[ENCOCRY@encolabs.com](mailto:ENCOCRY@encolabs.com)

Tel: 919-677-1669

Fax: 919-677-9846

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[ENCOORL@encolabs.com](mailto:ENCOORL@encolabs.com)

Tel: 407-826-5314

Fax: 407-850-6945

**Jacksonville, FL Lab:**

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- Free online access** to *Environmental & Engineering Geoscience*, co-published with the Geological Society of America, *AEG NEWS*, and *AEG's Annual Meeting Program with Abstracts*.
- STUDENT MEMBERSHIP IS FREE!**
- PLUS**, as AEG's gift to you for graduating, your first year of Professional Membership is **FREE!**



### Application Form

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Preferred Address: \_\_\_\_\_

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Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Please check one: ☐ Student ☐ New Graduate

**Submission:** Send this form to:  
 Association of Environmental & Engineering Geologists,  
 PO Box 460518, Denver, CO 80246  
 Phone: 303-757-2926; FAX: 303-757-2969;  
 Email: [aeg@aegweb.org](mailto:aeg@aegweb.org); Website: [www.aegweb.org](http://www.aegweb.org)



## 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.

IF YOU HAVEN'T RENEWED YOUR MEMBERSHIP, PLEASE DO IT NOW. WE NEED YOU! [WWW.AEGWEB.ORG](http://WWW.AEGWEB.ORG) FOR ONLINE APPLICATION.

## 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. Jahns 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.

## MEMBERSHIP APPLICATION

## ASSOCIATION OF ENVIRONMENTAL &amp; ENGINEERING GEOLOGISTS



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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[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 year of membership. Otherwise Annual Dues = \$115.00. Applicants who qualify for Member Class, but are engaged in full-time teaching at the Primary, Secondary or post-secondary 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 = \$75.00 (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 = FREE.

**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.

## APPLICATION FORM

Please complete this form and mail it with your Annual Dues payment to the Association's Headquarters office 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.)

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Second Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Home Phone: \_\_\_\_\_

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 \$ \_\_\_\_\_

☐ Credit Card Payment Option

☐ Discover ☐ Master Card ☐ Visa Amount of Dues to be charged to my card = \$ \_\_\_\_\_

Card Number: \_\_\_\_\_ Expiration Date: \_\_\_\_\_

**SUBMISSION:** Send this form with your check or credit card authorization to:  
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Phone: 303-737-2926; FAX: 303-737-2969; AEG Web: [www.aegweb.org](http://www.aegweb.org)





## 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 large quantities of 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 clients in an informal setting.

Our sponsors provide the financial support that allows us to have reasonably priced dinner meetings, host seminars, provide discounted dinner meeting costs for students and teachers, underwrite the cost of newsletters and our web site, provide geoscience mentors for students and young professionals, and support science education tools to our teachers and in our schools. All costs listed below are per year and end in December. New sponsorships received after October will continue to December of the following year.

### Silver Sponsor (\$250):

GeoNews Newsletter: Business card size ad (2" high x 3-1/2" wide), four times per year.

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Please complete the form below and mail to Jane Gill-Shaler, AEG Carolinas newsletter editor. Please call or email if you have any questions (contact information below).

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Something about your company (use back of page for more room) \_\_\_\_\_

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**Nicholson Construction Co.**, Brian O'Gara, 412-221-4500, [BOGara@NicholsonConstruction.com](mailto:BOGara@NicholsonConstruction.com), <http://www.nicholsonconstruction.com>; Nicholson is a versatile geotechnical contractor specializing in deep foundations, earth retention, ground treatment, and ground improvement. As the North American business unit of the Soletanche Bachy Group, one of the world's leading geotechnical contractors, we are part of a global network of geotechnical resources and expertise. We work in a wide range of industries and environments, from power plants and dams, to bridges and skyscrapers. Headquartered in Pittsburgh, Nicholson has offices around the country to address each region's unique geotechnical construction needs.

(Continued on page 34)

## Thank You, AEG Carolinas Sponsors!!

*GOLD Sponsors (Continued from page 33)*

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### SILVER

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**Geologic Exploration, Inc.**, Jason Mantak, 704-872-7686, jmantak@gexnc.com, www.geologicexploration.com; Geologic Exploration is an environmental drilling company serving the southeast. We have been in business

since the early '90's and specialize in monitoring and recovery wells. We also have experience in all types of injection wells.

**Geotech Environmental Equipment, Inc.**, David Hathaway, 919-876-1535, davidh@geotechenv.com, www.geotechenv.com; Geotech Environmental Equipment, Inc. manufactures and distributes sampling, filtration, analytical and remediation products for the ground and surface water industry. We also rent, sell, and service environmental sampling and monitoring equipment.

**Joyce Engineering, Inc.**, Hannu Kempainen, P.G., 336-323-0092, hkempainen@joyceengineering.com, www.joyceengineering.com; Joyce Engineering, Inc. is a leading consultant serving the waste industry for over twenty-five years. Our services include: Operator training; Operations consulting; Landfill Design & Permitting; Groundwater Remediation/ Monitoring; Landfill Gas Collection and Monitoring; Leachate Management; Air Quality Services; Construction Administration, & Construction Quality Assurance/ Quality Control. Joyce Engineering serves clients throughout the southeastern United States including local governments, private solid waste facilities, regional waste authorities, and industrial facilities.

**KB Laboratories**, Todd Romero, 352-367-0073, toddr@kbmobilelabs.com, www.kbmobilelabs.com; KB Laboratories, Inc. Our mission is to provide high quality mobile analytical and MIP direct sensing technology services meeting the on-site needs of engineering and consulting firms requiring rapid characterization of environmental contaminants.

**Pace Analytical Inc.**, Korey Drew, 704-875-9092, ko-rey.drew@pacelabs.com, www.pacelabs.com; Pace Analytical Services is a full service sampling and analytical testing firm operating a network of laboratories and service centers nationwide.

**Parratt-Wolff, Inc.**, Butch Stevens, 800-627-7920, bstevens@pwinc.com, www.pwinc.com; Parratt-Wolff, Inc., is a full-service environmental and geotechnical drilling firm.

**Pyramid Environmental**, Doug Canavello, 336-335-3174, doug@pyramidenvironmental.com, www.pyramidenvironmental.com; Environmental assessment and remediation, geophysical surveys.

**Regenesis**, Drew Baird, PG, 864-240-9181, dbaird@regenesi.com, www.regenesi.com; Regenesis develops, manufactures, and markets innovative technologies to clean up the environment. We are headquartered in San Clemente, CA with a regional office in Greenville, SC.

**SAEDACCO**, Peter Byer, 803-548-2180, pbyer@saedacco.com, www.saedacco.com; SAEDACCO - Specializes in direct push technology, drilling services and soil/ groundwater remediation services and remediation systems throughout the southeastern U.S.

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