

WINTER 2014

GEONews

Newsletter of the Association of Environmental & Engineering Geologists, Carolinas Section
2009, 2011, and 2013 AEG Section of the Year

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SAVE THE DATE

Winter Section Meeting
January 21, 2014
Dave & Busters, Charlotte area



GEONEWS Winter 2014
Issue Date: December 21, 2014
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Thanks to our Sponsors!

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, announcements, student member news, 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

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Cover: Jennifer Bauer, 2014 Piteau Award Winner

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MESSAGE FROM THE CHAIR

By Alex Rutledge, PG, PE
Chair—AEG Carolinas Section

Jennifer Bauer, past AEG President and Carolinas Section Chair, received the 2014 Piteau Award at this year's annual meeting. Those of you that know Jenn are aware that she excels in all three of the qualifying categories for this award: technical accomplishment, service to the association, and service to the engineering geology profession. As a tribute to Jenn, who has dedicated herself to supporting our Carolina's Section and AEG, we have included in this issue of GeoNews her heartwarming and gracious acceptance speech as well as some of the information related to her nomination.

In November, the Carolinas Section was a major sponsor of the North Carolina Science Teachers Association meeting in Winston Salem, NC. We distributed almost 500 AGI Earth Science Toolkits to teachers from across the state, and funded two awards that recognize exemplary accomplishment in earth science education: the Outstanding Earth Science Educator (OESE) Award and the Outstanding Earth Science Teacher (OEST) Award. This year's recipient of the OEST award was **Mark Townley**, an earth science teacher at Holly Springs High School in Holly Springs, NC. The OESE winner was **Cynthia Woolery**, an elementary teacher at Elizabeth Traditional Elementary School in Charlotte, NC. For the first time, we also provided \$1,000 to secure an Earth Sciences Room for all of the geology-related presentations. **Tim Martin**, the 2011 winner of the OEST award, said that "having many similar presentations in the same physical location facilitated networking and interacting with other like-minded teachers. It also provided a bit of continuity for this conference." **Paul Weaver** and **Madeline German** deserve special thanks for handing out the toolkits and representing AEG at the conference.

At the fall section meeting in Greensboro, NC, **Charles Livingston**, the founding chair of the Southeastern Section of AEG, gave a colorful and entertaining talk on the many things that life has thrown at him as an engineering geologist. Charles' presentation was in stark contrast to many of technical talks at our section meetings, since he focused not on a geo-problem or solution, but elaborated on the precarious situations he found himself in as a direct result of practicing geology for the last 54 years.

Our next Section meeting is scheduled for Wednesday, January 21, 2015 at Dave and Buster's in Concord, NC. **Ken Ferguson**, PG, the current AEG President and Senior Geologist with AMEC Environmental & Infrastructure, Inc., will be giving a presentation titled "The Geologic, Geohazard, and Geotechnical Field Investiga-

tion for the Hoover Dam Bypass Bridge." I look forward to seeing you there!

Our annual section sponsors allow us to provide activities and outreach opportunities to our membership and the public. **Rick Kolb**, our Sponsorship Chair, was successful in recruiting 25 sponsors this year, with annual contributions totaling approximately \$8,000! Thanks to Rick for all of his hard work, and thanks to all of our sponsors whose contributions give the Carolina's Section the opportunity to support local geologists and earth science education.

As always, we appreciate any feedback you wish to provide. I encourage you to contact me or other Board members with your suggestions or concerns related to our section.

Sincerely,



Alex Rutledge, PG, PE
frutledge@schnebel-eng.com



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AEG CAROLINAS SECTION 3Q TREASURER'S REPORT

By Susan Kelly, Section Treasurer

AEG Carolinas Section Treasurer's Quarterly Report

July 1, 2014 to September 30, 2014



BALANCE As Of July 1, 2014

Checking Account	\$6,636.60
Savings Account	\$16,682.50
	<u>\$23,319.10</u>

INCOME

Field Trips

Section Field Trip and Meeting	\$3,425.00
--------------------------------	------------

Member Dues

Dues from AEG National	\$20.00
------------------------	---------

Conferences

VI Conference Proceeds from National	\$22,034.57
--------------------------------------	-------------

Interest

Savings Account	\$2.11
-----------------	--------

SUBTOTAL - INCOME \$25,481.68

EXPENSES

Banking Fees

Credit Card Reader Fees	\$61.87
Online Deposit Fee	\$0.00

Conference and Field Trip Expenses

Section Meeting	
Food	\$621.89
Campground	\$386.79
Field Trip Food	\$508.64
Vapor Intrusion	
CLE Fee	\$1,800.00

Donations

Sponsorship of Annual Meeting Awards Luncheon	\$1,000.00
---	------------

Additional Expenses

Web Design Services	\$210.00
Annual Meeting	\$526.20

SUBTOTAL - EXPENSES \$5,115.39

BALANCE As Of September 30, 2014

Checking Account	\$27,000.78
Savings Account	\$16,684.61
TOTAL	\$43,685.39

GEORAMBLINGS

By Charles W. Welby

Have you ever thought about the fields which you encounter in your work or as you pass by them in your travels? Is there a message that one field sends to you about its history as you stand alongside it or a pattern of fields seen from 30,000 feet from an airliner?

In a book entitled "Four Fields" Tom Dee describes four green fields that are "knowable" and walkable. The fields have various uses and modifications, attract various bird species. So in this GeoRamblings Column I thought it might be interesting to mention some fields I have observed while doing geologic work of one kind or another or just wandering the globe.

What did the newer of the two runways at RDU Airport look like before the runway was built. The field was just an open field with crops growing on it. However, construction of the runway required excavation of the Triassic rocks to make an estimated 20 foot deep trench which was backfilled and compacted to take the weight of the landing aircraft before the pavement was put down.

Then there is the Bridgeport, VT airport which sits on the surface of an alluvial fan at the western edge of the Green Mountains. The runway is paved in an east-west direction from the base of the mountains. To take off from the field, one takes a small airplane to the base of the mountains, turns west and moves down the runway. If not airborne by the end of the runway, the plane is when it reaches the end, or else.

As one flies across the country at about the latitude of Chicago, IL, one can observe agricultural field patterns related to the Homestead Act. The pattern is based upon the 160 Acres of the Homestead Act with a mosaic of crops and urban areas reflecting the westward growth of the U. S.

(Continued on page 10)

Jennifer Bauer Wins 2014 Piteau Award



A member that we are proud to call our own, Jennifer Bauer, recently received the Douglas R. Piteau Outstanding Young Member Award from the Association of Environmental and Engineering geologists for her unparalleled support of the Association and the engineering geology profession. We would like to recognize and honor this achievement by including a partial list of items demonstrating her exceptional service, the support letter written by members of our section, and Jenn's gracious acceptance speech. Thank you, Jenn, for all you have done for our Section, the Association, and the profession!

Jenn's Service to the Association:

- Instrumental in launching AEG's Needs Assessment (2012-2013)
- AEG President - September 2011-September 2012
- Member AEG Executive Council - September 2008-September 2013
- Chair - Field Trips, AEG Annual Meeting in Charleston, South Carolina (2010)
- Co-Chair - AEG Governance Committee (2006-2008)
- Member- AEG Section/Chapter Support Committee (2004-2008).
- Presented Technical Papers at numerous AEG Annual Meetings (2004-present)
- Member - AEG Board of Directors (2004-2005)
- Chair - AEG Carolinas Section (2004-2005)
- Vice-Chair - AEG Carolinas Section (2003-2004)
- Secretary - AEG Carolinas Section (2002-2003)

Jenn's Service to the Engineering Geology Profession:

- Dedicated to Public Outreach and Education on the Value of the Environmental and Engineering Geology profession (2011-present)
- Presented Research at the North American Landslide Conference (2012)

Attended U.S. Congress, STEM Congressional Visit Days, Washington, D.C.(2012)

Presented Technical Papers at numerous Geological Society of America Meetings (2000-present)

Published article on North Carolina geologic history for the Highlands, North Carolina Nature Center publication (2000)

Founding Member and Secretary - Carolina Undergraduate Geoscience Society (2000)

Some other Carolinas Section members that have received awards from AEG include:

2010 – Gary D. Rogers – Floyd T. Johnston Award, presented to a Member for outstanding active and faithful service to the Association over a minimum period of 9 years

2009 – Briget C. Doyle – Douglas R. Piteau Award


2003 – Briget C. Doyle – Student Professional Paper Award

Korey Drew
Account Executive



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Jennifer Bauer: Support Letter

To: Selection Committee for Piteau Outstanding Young Leader Award:

There are many of us in the Carolinas Section who have had the honor and privilege of working with Jennifer Bauer from the very beginning of her involvement with AEG. Throughout this time we've seen Jenn take on more and more responsibility with vigor and success. She has accomplished much and, by giving so much in her own unique way, made AEG and the profession much better. There is not a single one of us who has been surprised by her accomplishments, having known from the first meeting with her that we had met someone of character with a strong work ethic.

The list of her contributions to both the Carolinas Section of AEG and at the national level is long. We've done our best to list each of her contributions to the Carolinas Section at the end of this letter. In developing the list it has felt a bit like counting sand grains at the beach- you know you're not going to be able to find each one. Instead, we'll focus on her qualities, as shown through her actions, to highlight the qualities that we think make Jennifer Bauer, PG, a deserving recipient of the Douglas R. Piteau Award.

Enthusiasm

Jenn has a special way of quietly and contagiously expressing her enthusiasm for people, the profession, and AEG. Each of us has experienced this, and Jane Gill-Shaler expresses it very well in this story: "During an AEG Carolinas field trip in 2001 I was walking next to a young woman who was in her last year at University of North Carolina in Chapel Hill. She was one of the few other women geologists, or soon to be geologists, in the group, and I found her remarkably perceptive in her questioning. I had been a geologist in California, and was then applying to North Carolina for my license, and she wanted to know all about my experiences, even though I had been a professional geologist for only a few years. She was friendly, intelligent, and patient, and for her youth, exceptionally calm and mature."

Commitment

Jennifer has been a real pillar for the Carolinas Section. She has shown both a long term commitment to the Section through organizing and participating in events such as Section meetings, short courses, field trips, and newsletters. She is a regular attendee at evening Section meetings that may be hours away from her home. She has been a regular contributor to the highly successful Section newsletter, GeoNews.

Inclusiveness

You always knew that you would get a warm welcome from Jenn each time you met her and this made a lot of new and student members feel at ease at meetings. She put a lot of emphasis on student participation at Section meetings and she and Rick Kolb have had great success in building student involvement at Carolinas Section meetings.

Initiative

The "s" in our name, Carolinas, was not always there. Most of us geographically alert geologists knew that there are two Carolinas but it took Jenn's initiative, and sense of inclusiveness, to propose the formal name change and to bring plurality to the name. While many of us had talked about wanting the name change it took Jenn's initiative to start the process and her follow through to get it done.

Rick Kolb shared this story of how Jenn's initiative in recruiting him for a leadership position in the Carolinas Section led to his very active involvement in AEG: "Jenn has a sweetness that those who know her have seen, but this trait cannot be put into words. I was an AEG member when I was in the geotechnical department from 1998 to 2000, but when I transferred back to the environmental department, I let my membership lapse. A few years later, AEG added "Environmental" to its name. One day in the late summer of 2005, Jenn came up to my office and sat down in the chair across from my desk. In her own way, she asked me if I was interested in serving on the board of the Carolinas Section. No longer being a member, I was a little wary. I asked what position was available, and she told me it was the vice chair, and I would be the chair a year later. She assured me that the chair, Tyler Clark, would be there to help, and as past chair, she would, too. She didn't lobby me intensely, but I couldn't say no."

"Git er Doneness"

There is undoubtedly a more grammatically correct name for this trait, but probably not one that better reflects Jenn's ability to take initiatives and turn them into rock solid accomplishments. One of the key traits that allows her to do this is her uncanny ability to show up prepared and ready, take on assignments that you knew would be completed on time, and ending with a job well done. We first saw this in her contributions to the "Tools of the Trade" seminar in 2003 and in her organization of several field trips for the Section.

Jennifer's involvement in the profession has extended well beyond her involvement in the Carolinas Section. She has become a well-respected expert in landslides in the Appa-

(Continued on page 7)

(Continued from page 6)

lachians, first through her employment at the North Carolina Geological Survey and now as an independent consultant. In this professional facet of her life her technical accomplishments have included numerous publications and presentations. Through her public outreach she has raised awareness of geologic hazards and increased the stature of the engineering geology profession. Her accomplishments in this area are well expressed in the attached letters from the State Geologist of North Carolina, Dr. Kenneth Taylor, PhD, PG, retired State Geologist Jim Simons, PE, PG and from the NC Geological Survey's Senior Geologist for Geohazards and Engineering Geology, Rick Wooten, PG. We find it fitting that Jennifer's area of expertise in landslides was one of the areas in which Douglas Piteau excelled.

We heartily recommend Jennifer Bauer for the 2014 Piteau Award.



Jennifer Bauer with past Piteau Award winners (including Carolinas Section Briget Doyle)

F. Alex Rutledge, PG.
AEG Carolinas Chair, 2014

Rick Kolb, PG
AEG Carolinas Chair, 2006-08

Tami V. Idol, PG
AEG Carolinas Chair, 2003/04
(signed by verbal authorization)

Brian Banks, PG
AEG Carolinas Chair 2003
Supervisor at Mactec 2001-03

Gary D. Rogers, PG
AEG Carolinas Chair, 2002

Richard M. Wooten, PG
AEG Carolinas Chair, 1995

Paul Weaver, PG
AEG Carolinas Chair, 2009-13

Jane Gill Shaler, PG
AEG Carolinas Newsletter Editor, 2003 – 2013

Doug Canavello, PG
AEG Carolinas Chair, 2003

Briget Doyle, Ph.D.
AEG Carolinas Secretary 2004, 2011-2012
AEG Carolinas Treasurer 2012-2014
AEG Foundation Director, 2012-2014
(signed by verbal authorization)

Charles W. Welby, PG
AEG Carolinas Chair 2000, 2001
(signed by verbal authorization)

Jennifer Bauer: Acceptance Speech

Jennifer Bauer has been awarded the Douglas R. Piteau Award from the Association of Environmental & Engineering Geologists. She accepted her award at the AEG Annual Banquet in September this year.

This award is presented to a Member who is age 35 or under and has excelled, either singly or in combination, in the following areas: Technical Accomplishment, Service to the Association, and Service to the Engineering Geology Profession. Jennifer was nominated by the Carolinas Section and AEG members at large from across the country.

This is her acceptance speech for this award.

"My Sincere Gratitude"

Fellow AEG Members,

What an honor it is to receive this award. I wouldn't be here without the help and support of you, my AEG family. Receiving this award has given me reason to pause and reflect on my experience as an active AEG member. When I look back, I see there are three main reasons I dedicated much of my free time over the last 10 years to this organization: energy, opportunity, and friendships.

Energy

The first is energy. Have you ever left a Section or Annual Meeting feeling like you were buzzing? Not from the beer or the wine, but from the energy of the members in the room. I felt the contagious energy of AEG members from the first Section meeting I attended in 2002. This energy enticed me to become a more active volunteer as Section Secretary up through Chair, then on to the Board of Directors, Association committees, and through EC. This energy kept me going.

Opportunity.

The second reason I dedicated my time and energy was the opportunities AEG presented me. Like many of you, I started as a staff geologist behind drill rig with few opportunities to build my leadership skills. Because of AEG, I had the opportunity to grow these skills where I didn't in my job. I learned more about the applied geology field, and my place in it. All the while I was acquiring skills I didn't know I would be using sooner rather than later as owner of a consulting firm. Gaining confidence that I could undertake this challenge. As President of AEG, I had the opportunity to speak to and meet people from many different backgrounds and knowledge levels. I learned the importance of advocating for our profession. I continue advocating as part of my firms' dedication to outreach and education. These opportunities have helped me become a better geologist, a better business owner, and a better person.

Jennifer Bauer: Acceptance Speech (Cont'd)

Friendships

The third, and most important reason for my dedication to this organization, are the friendships I have built with many of you. My life is so much richer because I have been a part of AEG. You have exposed me to new ideas, ways of living, and professional growth I would not have found on my own. You have taught me to challenge myself. In AEG, I have found natural mentors. I know there are many of you I can call on with any questions I may have about business, landslides, or simply life. You have helped me through career changes, lay offs, the ups and downs of volunteering, and made it worth the while.

I am so grateful to my friends and colleagues who nominated me for this award; many of you at the Annual Meeting, the Carolinas Section, colleagues at the NC Geological Survey, Past Presidents. I am grateful to those I have had the pleasure of working with and growing with. Those who have taught me the value of relationships and communication. It is your energy, the opportunities you have opened to me, and the friendships we share that have led to this honor tonight. It is with sincere gratitude that I accept this award.

Jennifer Bauer

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(Continued from page 4)

Then there was the field in the Midway Sunset Oil Field at the southwest corner of the San Joaquin Valley. My parents had invited my girlfriend and future wife down for a visit to get to know her. I was showing her around some of the oil fields, and as she had some geologic training, I was showing some alluvial fan stratigraphy. There was a 15 ft. diameter pit dug near one of the drill sites, and we jumped into the pit. Unknown to either of us there was a rattlesnake skin about three feet long that had been shed as the snake grew and needed a new set of clothes.

I had not seen the snake skin initially, but the event almost ended what was to become eventually a 60-year marriage.

How about the use of ground water to irrigate grass fields of perhaps 20 acres or more in the valleys of Nevada for the hay to feed horses for personal use?

Each of us may have a "Field of Dreams" much like that described in the movie by that name. How do we work to accomplish the Dream?

Considering that Veterans Day last month, originally Armistice Day of WWI, "the 11th hour of the 11th day of the 11th month," brings to mind the poem "In Flanders Field" by Lt. Colonel John McCrae of the British Army. "In Flanders fields the poppies blow, Between the crosses, row on row....."

QED

Charles Welby

Development of Carolina Bays' Oval Depressions

By Harry LeGrand

My interest in the Carolina Bays was generated in 1937. As a geology student at the University of North Carolina, I was a member of a team studying the Bays near Darlington, S. C.

After intermittent, persistent studies, I now put thoughts in poetic form.

The Carolina Bays are a geologic wonder.
Of their origin we can only ponder.
Beautiful landscape scars seen from the air
Elegant oval sags, they lie on land with a flair.

In parts of the Coastal Plain that are flat and low
Their abundance and southeast orientation show.
Geologic characteristics here are unusual on earth,
But questionable thoughts arise about their birth.

An early theory focused on a shower of meteorites
Postulated as having hit the earth in angular flights.
Another geologist visualized Neptune's racetrack
With lakes and eddies for wind currents to pack.

Effort has been directed to artesian springs
In a complex hypothesis that also brings
Solution that produced basins occupied by lakes
With a beach and sand ridge that a current makes.

New ideas and questions arise each year,
And better knowledge of their origin is near.
The theory I expressed 50 years ago failed,
But the thoughts here might be nearly nailed.

Focus is on compaction and subsidence of clay beds.
The sequence of events holds tightly on strong threads.
Compound actions occurred that were elsewhere rare
To consider them carefully is only fair.

The impacts of Pleistocene sea level fluctuations
Need more emphasis and deliberations.
As the most recent seashore moved out more,
The bays began their life inland from the shore.

Sand and clay beds are inter-layered closely.
The beds increase and tilt southeastward mostly.
The fluid pressure in the aquifer system declined,
And compaction of clay beds was not far behind.
The compaction of a clay bed led to subsidence
Slightly at local haphazard spots, and hence
Another subsided clay bed above or below,
Combined subsidence in the ground would grow.

(Continued on page 13)



Brian C. Bauer

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AEG President's Message

Constitutional Vote and Governance Restructure
Ken Fergason
AEG 2014-15 President

Last summer there was a membership vote to change the AEG constitution, which essentially will allow for two changes to be made to the Association – the elimination of the requirement that a Section Chair must also serve as a Director of the Association and it will reduce the number of Directors from 25 to 10-to-12 regionally-based Directors, in addition to the five Association Officers. For a constitutional vote to pass, it requires a 2/3 majority endorsement by our eligible voting members. The votes were counted a few weeks ahead of the Annual Meeting and the results passed the Constitutional amendment with 86% of the voting membership in favor of the change.

This vote was authorized by the Directors at the 2014 midyear Board of Directors Meeting and ultimately originated from recommendations that came out of the Needs Assessment process. The Needs Assessment pointed out that our Board of Directors was less effective than it could be and that changes should be made to create a more flexible and strategic body by reducing the size of our Board. Added benefits of this change will also decrease the likelihood of the Board not achieving a quorum due to the absence of Directors at meetings as well as allow the direct election of Directors instead or requiring that this duty be performed by our elected Section Chairs.

At this time, the changes to the constitution that resulted from this vote have not yet been implemented because the changes are also contingent on bylaws revisions that are under review. There is a team of volunteers that consists of current Board members, Past Presidents, and other interested members that are looking at the bylaws and policies of the Association and how those need to change to implement a new governance structure. Part of this effort is to define regions that Directors will represent. At the Board of Directors 2014 Annual Meeting in Scottsdale potential options were discussed and one of these will be distributed to the membership for comment and discussion (a draft is included as Figure 1). If you are interested in volunteering for the Governance Restructure Team, please contact me.

The move to a regional model for governance of the Association will have little to no effect on how AEG functions at a local level and local governance boards will not be constrained by regional boundaries. Sections, Chapters, and other groups of AEG members will continue to meet however works best for them, regardless of regional boundaries. The regional changes will only effect how membership is represented at the Association level. Based on the Needs Assessment recommendations, the leadership of AEG believes that this new model will ultimately allow for greater flexibility for local AEG activities.

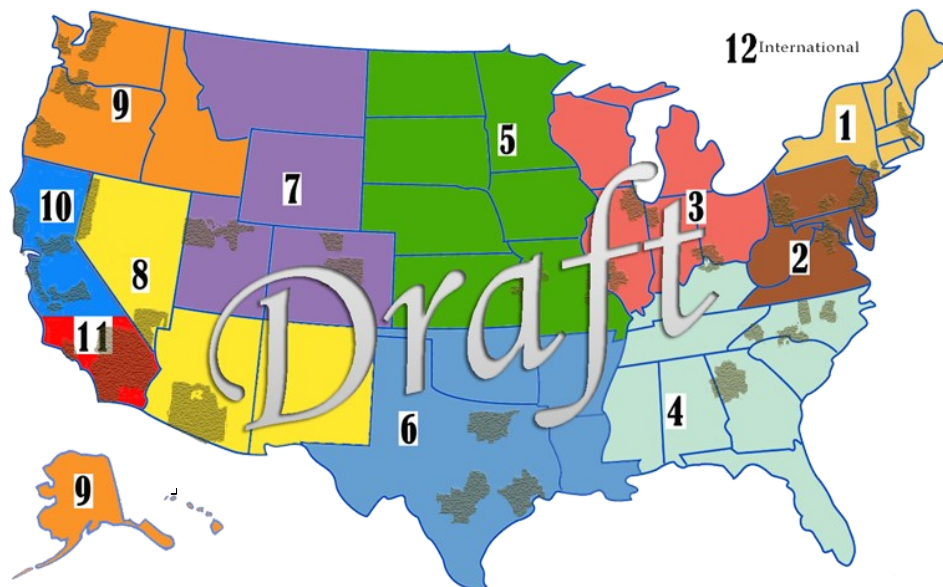
Additionally as part of these efforts it has been realized that the constitution, bylaws, and other governing documents of AEG are somewhat out of date and contain internal inconsistencies. As part of these governance changes, these documents will be updated and made internally consistent. The first step in this process will be another constitutional vote that will likely occur in summer, 2015, that is intended to ensure the constitution and articles of incorporation are consistent with current law and internally clear in their language. These changes are not intended to cause any structural change in the way AEG governs itself and will likely be minimal with only a few words changing to eliminate misinterpretation. An ad-hoc committee with representatives from the Board of Directors, Executive Council and Governance Committee will be looking into these changes and proposed changes will undergo legal review.

AEG President's Message (Cont'd)

Communicating change is always a tricky issue, and past communication has not always been what it needs to be. In an effort to do everything we can to mitigate potential miscommunication, frequent updates on this process will be forthcoming through various media, including NEWS articles, Insider updates, communications at the Section level, and direct email. I encourage all Sections, Chapters and all AEG member gatherings to discuss these changes and to bring forth any comments, concerns, and suggestions to their Section Chair, members of the Executive Council, and/or myself as President.

In closing, I know that change can be an uncomfortable process; however it is in the best interest of AEG's future success. These changes will make AEG's governance more strategic and effective and will improve the overall management of the Association. As geologists we understand that what fails to evolve is doomed to extinction, and it's changes like these that will allow AEG a bright future.

Proposed regions:



Environmental
Conservation Laboratories

Cary, NC Lab:

ENCOCRY@encolabs.com

Tel: 919-677-1669

Fax: 919-677-9846

Orlando, FL Lab:

ENCOORL@encolabs.com

Tel: 407-826-5314

Fax: 407-850-6945

Jacksonville, FL Lab:

ENCOJAX@encolabs.com

Tel: 904-296-3007

Fax: 904-296-6210

Corporate Office:

10775 Central Port Drive,
Orlando, FL 32824

(Continued from page 10)

The shape of a bay would not be round at land surface
But would be oval because of tilted beds in place.
Upper or lower local subsidence would be in laps
Which cause coastward migration of collapse.

Elsewhere widespread pressures decline readily
When thick sand beds are pumped steadily.
The clay bed subsidence is even but not evident,
Contrasting here with multiple beds being prevalent.

Another reason the land has subsided sporadically
The fluid pressure had declined emphatically.
The briny aquifer water that before was dense,
Has pushed seaward by fresh and light water since.

Dampness and near-surface water table in the bays
Result in color and plant contrasts in several ways.
The darker bay soil and surrounding white sand
Have much to say about the Carolina Bay brand.

Here and there, overlapping of bays on the land
Depend on sporadic subsidence of the clay and sand.
Predicting actions at a specific time is only a game,
And specific spots for bays we cannot name.

Bays and humans have wrinkles somewhat akin.
Both with a period of dehydration under the skin
The underlying soft watery foundation is within.
Are bays' wrinkles prettier than those of women?

Of the origin we have long waited for news.
In the poem there may be likely clues
For someone to intellectually pursue
The makings of Carolina Bays as they grew.

Bay development will not likely be repeated
For thousands of years until the sea has retreated.
We may leave the bays as features of mystery.
They are a part of nature's elegant history.

Characterizing Geology with Electrical Resistivity Geophysical Surveys

Used with permission from Pyramid

Pyramid was contracted to perform an electrical resistivity survey across 230 acres of undeveloped land in North Carolina. The purpose of the survey was to quantify the lateral extents and approximate depth/thicknesses of sandy soils near the ground surface. The client was interested in the potential of the site to be utilized as a sand mine, and wanted to understand the potential yield of sandy soils at the property.

Prior to the geophysical survey, shallow soil borings were performed to obtain physical soil samples across the property that would provide groundtruth data for the geophysics. The soil borings indicated that sandy soils (a mix of sand, silty sands and clayey sands) that could potentially be used for mining purposes started at the ground surface, and were present at thicknesses ranging from approximately 7 to 30 feet. Having physical soil samples with which to groundtruth geophysical data is extremely important, and these recent soil borings provided a good baseline for geophysical analyses.

Pyramid performed a total of 12 electrical resistivity transects across the property. Although this was a relatively small number of transects for such a large area, the data provided a good generalized understanding of the geologic conditions across the 230 acres. The terrain was typically medium to dense forested areas. The benefit of resistivity surveys relative to other methods is that the test can be set up in areas that are largely inaccessible to other instruments that need to be dragged or pushed continuously, such as electromagnetics or ground penetrating radar.

(Continued on page 14)



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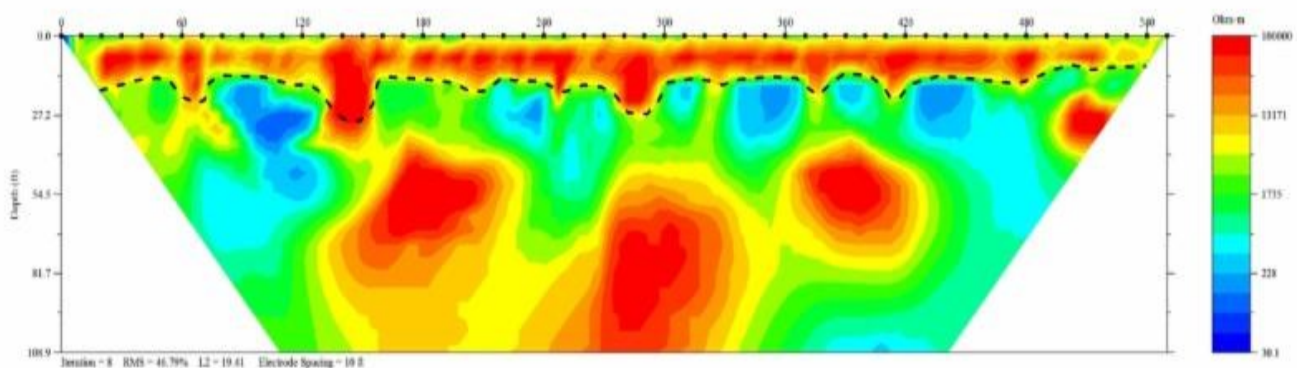
Locations of the resistivity transects performed at the property.

The resistivity testing provided geologic data down to depths of approximately 110 feet. The results of the geophysical testing indicated four main geologic strata that characterized the subsurface across the property:

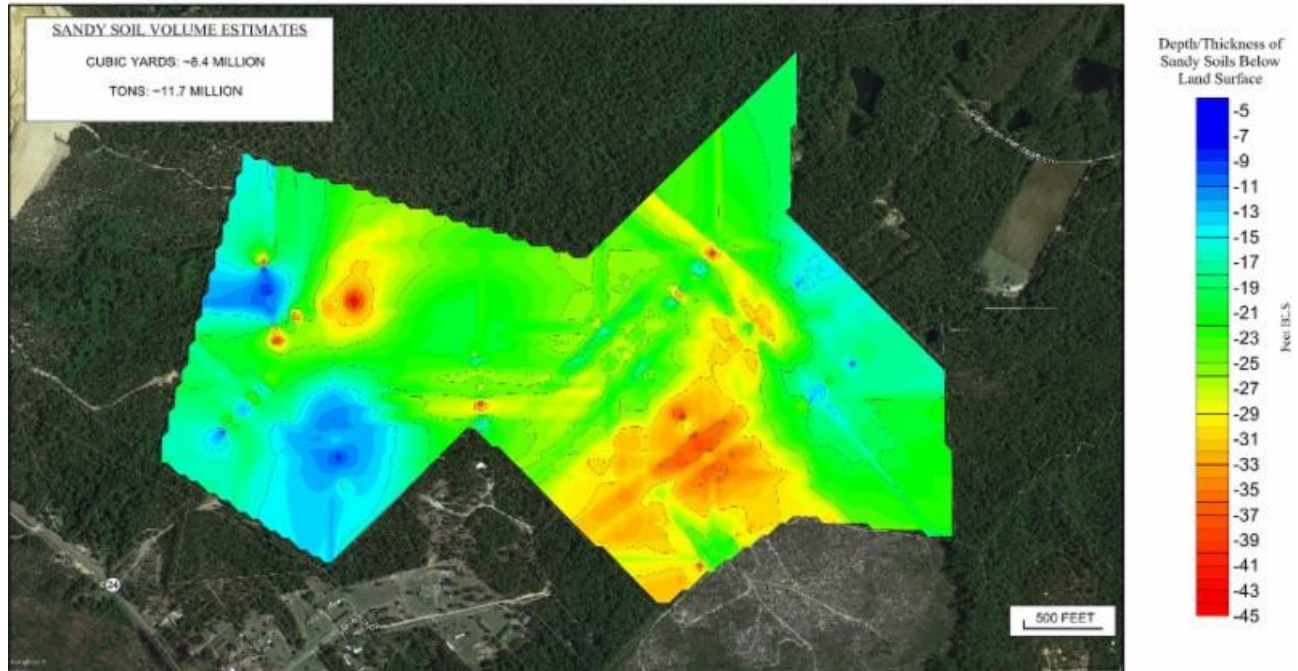
- Stratum 1 - High resistivity (2000+ Ohm-m) dry sandy soils with varying percentages of fines in the upper ~2 to ~50 feet.
- Stratum 2 - Mid-resistivity (500-1000 Ohm-m) dry clayey soils with variable sand content directly underlying the sandy soils
- Stratum 3 - Low resistivity (<1-500 Ohm-m) saturated clayey soils underlying the dry clayey soils
- Stratum 4 - High resistivity materials (sand or rock) below the water table in the lower portion of most profiles.

Stratum 1 was considered to be the soils that could potentially be used for mining purposes. The resistivity data were analyzed, and depths/thicknesses of viable sandy soils were extracted from each transect to generate contour maps of the sandy soils across the property. The contour maps helped to show both the average thickness of the sandy soil unit, as well as specific locations that may provide increased or decreased volumes of sand.

MER Transect 1 - EarthImager Profile



Approximate Depth/Thickness of Sandy Soils Based on Geophysical Survey



(Continued from page 13)

The application of electrical resistivity to this project allowed for a relatively detailed understanding of the geologic conditions at the property that was obtained in a short amount of time. The alternative would be to perform a significant number of additional soil borings, which would have resulted in exponentially higher costs to the client and additional time to realize the results. Furthermore, the continuous profiles of geology that are obtained using the geophysical methods eliminate gaps in the data that would otherwise be present if the boring program was the only approach taken. The project shows the benefit of using geophysics, in conjunction with physical soil samples (ground truth data) to effectively characterize a project site in a short amount of time.

In addition to the application of electrical resistivity mapping described above, other uses for the technology include:

- General geologic mapping
- Void/cave detection
- Identifying subsurface contaminant plumes
- Locating flow pathways, fractures, and porous zones
- Geotechnical investigations
- Aquifer delineation/water quality analyses

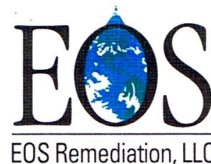


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BOARD OF DIRECTORS MEETING MINUTES: September 16, 2014 By Susan Kelly, Section Secretary

Roll Call 4:35PM – Alex Rutledge (Chair), Madeline German (Vice Chair), Susan Kelly (Secretary), Paul Weaver (Past Chair), Rick Kolb (Past Chair), Jen Thomas (Newsletter), Briget Doyle (Treasurer; joined late)

All 5 members of the Carolinas Section Board of Directors were present – Quorum obtained

Briget provided the Carolinas Section Treasurer's Report

Currently in checking - ~\$25K in checking/savings; does not include ~\$22K from national from VI conference, so ~\$47K total

VI conference profits were ~\$27K, about \$3K less than previously indicated by National

There was great use of pre-payment method for Section meeting in September.

Alex discusses Eventbrite and Paypal:

Eventbrite cost is 2.5% plus \$0.99 per sale/ticket, so for a Section meeting (\$25), profit to Section via Eventbrite would be \$23.39

Paypal cost is 2.9% plus \$0.30 per sale/ticket, so for a Section meeting (\$25), profit to Section via Paypal would be \$23.98.

Can set up Paypal on Section website.

Paul asks if the Section sells anything that could be sold via Paypal.

Alex indicates that we don't sell anything, so using Eventbrite might be more advantageous.

Susan will look into Eventbrite further.

Alex indicates the Jahns Lecturer expenses are ~\$1,000.

Paul made a motion to reimburse the full amount of the Jahns lecturer expenses.

Briget seconded the motion and it was passed by the board with zero dissenting votes or abstentions.

Greensboro Section meeting in October

Paul has been appointed to be the meeting organizer.

There is not a speaker yet, but several options.

Paul indicates he has information about Charles Livingston as a speaker.

Alex indicates that the Jahns Lecturer typically presents at Charlotte/Raleigh meetings.

Paul indicates that Ken Taylor (NCGS) can speak at other meetings, so consider others.

Paul indicates Charles is from Atlanta and Morgan Eddy is from Washington DC.

Alex indicates Fred Snider is in Greensboro, but doesn't know if people will be familiar with him; otherwise, he is a good speaker/entertainer.

Paul will contact Natty Greene's regarding reservation.

Alex will contact potential speakers.

2014 -2015 Jahns Lecturer Tour

Eldon Gath has been named the Jahns Distinguished Lecturer.

Alex will speak with him at Annual meeting.

Social Committee

Rick indicated that Adam (not on call) had not provided information regarding any upcoming social events.

Sponsorship Drive 2014 – 2015

Rick indicated that he has had a visit with Tersus to discuss sponsorship.

Jen asked if AEI Consultants (presenters at the recent Section meeting and field trip) were sponsors.

Alex indicated that AEI Consultants was a large company, but not currently a sponsor.

Alex indicated that Appalachian Land Consultants



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(Continued from page 17)

(also presenters at the recent Section meeting/field trip) are aware they could be sponsors.

Section Field Trip

Alex indicated two field trips are planned for 2015: Yadkin Valley wine and geology tour and Reid gold mine/Martin Marietta quarry.

Alex indicated the Asheville meeting/weekend was a success with a net loss of \$27 and that camping was not well attended.

Alex indicated that good feedback was received regarding the field trip.

Alex indicated that Sue is doing a great job in the role of Field Trip Chair.

Paul indicated the field trip was very well organized, and Alex commented that the Raleigh field trip was also well organized.

2014 – 2015 Membership Drive

Alex indicated that Eric will be sending out a membership renewal email blast.

Eric has suggested that students supply their non-school email address with membership information.

Newsletter

Jen indicates the newsletter is almost complete and is waiting on the Calendar of Events and the Vapor Intrusion SE conference information from vendor/host.

Jen indicated Pyramid has requested a large advertisement space.

The teaching position advertisement will be removed from the newsletter.

Fall Board Elections

11 ballots received and all were in favor for those listed.

New Secretary (Joanna Harbison) and Treasurer (Susan Kelly).

Upcoming Association meeting and BOD meeting in Scottsdale, AZ

Alex, Maddie, and Briget are attending. Also, Jane Gill-Shaler and Jenn Bauer are attending.

Alex described proposed regional boundaries:

Alex is in favor of 10 regional representatives, as with less than 10 regions, the South region becomes very large

Establishment of the regions does not affect Sections, just who represents the Regions at the national level.

Communication and Social Media

Alex indicates that Joanna will spearhead managing LinkedIn.

Maddie asks if Jason set up LinkedIn, do we have to go through him to modify content. Alex indicates that his understanding is that he has rights, but so does the Section BOD.

Treasurer's Reserve Donation

Alex indicates that the profit from the VI conference was a little more than \$3,000 less than originally reported by National.

Alex summarizes that we originally voted to donate \$5,000 to the Treasurer's Reserve, but that was before realizing the profit from the VI conference was \$3,000 less than originally reported, so Alex asks what the BOD would like to do.

Maddie and Paul suggest that we reduce the amount we donate.

Briget indicates that the person who caused this mistake is no longer with AEG.

Paul indicates he sees it as our budget is just \$3,000 less, so there doesn't need to be a "penalty."

Alex indicates that there are good points on both sides and suggest we reduce the amount by \$1,500.

Briget suggests we donate \$2,500.

Paul indicates that we did not tell National we were going to donate \$5,000 as the BOD previously voted.

Alex made a motion that we reduce the amount donated to the Treasurer's Reserve from \$5,000 to \$2,500. Paul seconded the motion and it was passed by the board with zero dissenting votes or abstentions.

(Continued on page 19)



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(Continued from page 18)

Carolina Section (Carolinas Chapter)

Scholarship

Briget indicates there we need to decide the type of scholarship: research, general, field camp, etc.

Alex questions what the scholarship should be based on (e.g., academic).

Paul indicates that he thinks it should be academic-based, but doesn't like the idea of having an essay requirement, because the essays would have to be read/reviewed.

Alex asks if letters of recommendation should be required and all agree they should be.

Alex asks if AEG involvement by the student should be required and all agreed it should be.

Briget asks if the scholarship should be for undergraduate or graduate students, or both.

Paul indicated that he preferred undergraduate students.

Alex indicated that there is less funding for undergraduate students.

Jenn indicated she preferred research, but understands that there are other sources of funding for research.

Alex indicated that he preferred the general option.

Briget indicated the AEG Foundation is aware of the Section's intent to create a scholarship fund. The next meeting is next Tuesday, and she will draft a letter after that.

Briget indicates that the Section BOD appoints the Scholarship Committee and Alex indicates that this is a good procedure, as the Scholarship Committee will change as the Section BOD changes.

Briget asks what we are going to name the scholarship. Alex indicates that because changes at the National level are imminent, we should name it "Carolinas Chapter" scholarship.

Briget asks what type of major should we say it is for (e.g., "geoscience").

Alex indicates that if they are AEG members, they might be in another type of major; Paul agrees.

Briget indicates she will try to prepare the draft and have Jill Smith review it.

(Not on Agenda: Sponsorship of Annual Meeting)

Rick sent the group a list of sponsorship opportunities for annual meeting. There are a lot of opportunities remaining to sponsor.

Alex indicates the special event is typically expensive. He will get prices.

Paul indicates that the last few years we have sponsored about \$1,000.

Alex suggests we vote on whether to approve use of \$1,000 for sponsorship, then we can decide on what to sponsor.

Maddie made a motion to use \$1,000 to sponsor opportunity(ies) at annual meeting. Briget seconded the motion and it was passed by the board with zero dissenting votes or abstentions.

Update on 2019 Annual meeting in Asheville.

Paul indicates the venue has been finalized (Renaissance Hotel).

Cost is \$189/night.

Paul has sent out a list of Committee Chairs.

Alex indicated that being a Committee Chair is a lot of work, but is rewarding.

Section Conferences/Symposia in 2015

Rick indicates the next "Redox Tech" conference will be in 2016; Redox Tech sold management of the conference to another company.

Maddie discusses a "State-of-the-State" conference, which would probably not be as large as the "Redox Tech" conference and could be a one-day conference. The meeting could include topics such as fracking, coal ask, USTs, DOT, unregulated landfills, etc.

Alex indicates that this is a good idea; topics regarding changing regulations are well received.

Maddie will discuss this idea with Rick.

Departure of Phoenix AMC

Alex indicates Phoenix AMC is no longer the management firm.

At the national meeting, Alex will look for main point of contact(s) at the new firm.

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Ken Ferguson, AEG President to Speak at Upcoming Meeting



Ken Ferguson's Resume

Ken is the current President of the Association of Environment & Engineering Geologists and is involved in many professional groups such as the Arizona Hydrological Society (AHS), The Arizona Land Subsidence group, The

Arizona Geological Society Earth Fissure Advisory Group and the Geotechnical Extreme Events Reconnaissance (GEER).

Ken is a Senior Geologist with AMEC Environment & Infrastructure Inc. (AMEC) in Phoenix Arizona. He graduated in 1998 with a BS in Engineering Geology from Texas A&M University and in 2001 with a MS in Geology from Arizona State University. He has been with AMEC since November 2000 and since that time has been utilized as a project manager, technical lead, project geologist, task manager and a field geologist performing geologic, geotechnical and geologic hazard investigations for dams, levees, channels, basins, buildings, roadways, bridges power plants, transmission lines, mining projects, pipeline and other structures.

Ken has experience in investigating geologic hazards such as land subsidence, earth fissuring, landslides and seismic hazards as well as receiving special training in the use of LiDAR and high resolution DEMs for landslides and slope stability. He is also involved in projects that utilize remote sensing technologies such as interferometric synthetic aperture radar (InSAR) as they apply to geologic and geotechnical characterization including ground subsidence, earth fissuring, landslides and slope stability issues, and has been extensively involved in the characterization of land subsidence and subsidence related hazards such as earth fissures and associated impacts for planning, design and remediation of significant infrastructure.

Ken has utilized mountaineering techniques to map the geology, fracture patterns and other concerns on canyon walls specifically applied to geotechnical characterization for bridge foundations and slope stability. He has been given

the opportunity to work internationally in places such as Canada, Mexico, Germany, Romania, the Czech Republic and has supported other projects worldwide.

Someone is Paying Me to do This!

The Geologic, Geohazard, and Geotechnical Field Investigation for the Hoover Dam Bypass Bridge

This presentation is a retrospective discussion of the field investigation for the geohazard investigation and geotechnical design of the Hoover Dam Bypass Bridge that spans the border of Arizona and Nevada, crossing the Colorado River immediately downstream of the Hoover Dam. Or to put it another way, a collection of 'war stories' from a young field geologist who, on his first year on the job, had the opportunity to work on a career-defining project.

The river bridge structure — the Mike O'Callaghan-Pat Tillman Memorial Bridge — is as grand as its safety, security and economic impact. The 1,900-foot-long Colorado River crossing is the centerpiece of the project, which included 3.5 miles of new approach roadway on both sides of the river and seven other bridges. It is the highest and longest arched concrete bridge in the Western Hemisphere and features the world's tallest precast concrete columns. The innovative hybrid structure is designed to complement the dam with the high-performance concrete arch while limiting the load demands with a modern steel superstructure. It is the first steel-concrete hybrid arch bridge in the United States.

The spectacular setting provides a backdrop for one of America's most significant modern civil engineering projects but also proved to be the greatest challenge. The Black Canyon below the dam is an 800-foot-gorge with dramatic rock cliffs, steep to vertical canyon walls and a vast geological palette. Working in such a setting required rock cuts and fills exceeding 100 feet in height, accounting for winds up to 70 miles per hour and setting concrete at night to avoid desert heat reaching more than 120 degrees.

Major challenges faced by the geotechnical investigation included

- Extreme heat (on site temperatures in excess of 130°F in the shade were measured — there was very little shade),
- Extreme access — mountaineering rope work techniques were required, drill rigs were mobilized via helicopter, crane, track, and 'spyder',
- High voltage overhead electrical transmission lines constraining helicopter access were present in many locations,
- Security — initial field work began the week after September 11, 2001, and

(Continued on page 22)

Meet Our Members: Joanna Harbison, Section Secretary

I was born in Denver, Colorado and moved to North Carolina at the age of 10. I have always enjoyed being outside and somehow knew I was going to be a geologist at young age, that might have been because by the time I was 6 I had quite the rock and mineral collection. I am a die-hard Broncos fan and the occasional Panthers fan, when I'm not working I'm either spending time with my two adorable trouble making dogs Aspen and Hazel, lab mix sisters that I ended up adopting from a local shelter 6 months apart and the two are now inseparable, working on my photography skills or perfecting my cake decorating techniques. Come January my hobbies will change due to becoming a first time mom to a wonderful little girl.

I was accepted into the University of North Carolina at Charlotte in 2004 and despite still being at a school so close to home I was excited for this new adventure. I had always wanted to become a teacher so I started on the track towards Elementary Education. I had always known I wanted to be an Earth Science teacher but it wasn't until I received a letter of outstanding excellence in my Intro to Geology class that I decided to change majors and focus more on Geology/ Earth Science and then get my teaching degree. Even though UNCC was not my first choice I ended up enjoying every bit of my experience there. I was able to establish a new Geology/ Earth Science club which I was proud to be president of my last 2 years before graduation as well as having the club become a Student Chapter of the AEG Carolinas Section. The club gave me opportunities to volunteer work such as stream and street clean ups, helping AEG with the rock bags for the Science Teachers conference as well as being able to have kids come to UNCC or travel to after school programs to show kids firsthand how much fun science especially Earth Science really is, allowed to have professionals, many of them UNCC Alumni to come talk to the undergraduates about different aspects of consulting.

During my time at UNCC, I interned for two summers with the North Carolina Department of Environment and Natural Resources (NCDENR). That was an amazing experience. The first summer I was in the Little Washington office and after 20 years of living in North Carolina I had never heard of Little Washington so I was intrigued. My task while there was to create a power point module for mine safety and training. I learned so much that summer about different types of mines and different techniques used in mining. I was able to travel most of the coast of North Carolina, again not something I saw much of even after living here for so many years. At the end of the summer I had gained a whole new perspective on the coast, learned a lot about all the different mines, and had

made some pretty great friends as well.

The following summer I got to stay a little closer to home and intern at the Mooresville office. I got to work alongside the Geodetic group and travel with them looking for monuments in neighboring counties. That was an adventure and at times very interesting due to the names and locations of some of these monuments. That summer I was able to hone in and perfect my skills with a metal detector. The best part about that summer is that I now have a geodetic monument in my name, one of these days I will go locate it.

In 2012 I was hired with Shield Engineering as a Staff Scientist and was overjoyed to no longer have a part-time job in a grocery store but to be able to start my career using the degree I worked so hard for. Until recently I was outside every day in the mostly beautiful, sometimes excruciatingly hot or exceptionally cold conditions, doing soil and groundwater sampling and I'm looking forward to the day when I can finally go back out in the field. Since being hired I'm intrigued every time I go a gas station, looking for the monitoring wells or going to a gas station I've been to multiple times and finally realizing what those concrete squares in the pavement are for. The best part about being in the field is that it is always an adventure and never the same thing twice.

Being involved in the Carolinas Section of AEG has helped me meet people in my similar field of interest. AEG has allowed me to put a face with the name of someone I have only had the opportunity to talk to on the phone or through email. It has helped me enhance the lives of undergraduate students that continue to come to the meetings, since I remember what it was like to be the nervous student in a room full of professionals. It has not only helped professionally but has allowed me to become our Section's current secretary. I look forward to seeing what this new adventure has for me.



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(Continued from page 20)

Accelerated project schedule due to security concerns.

The project consisted of several investigative phases – 1) Geologic mapping and seismic hazard investigation, 2) Canyon wall mapping, 3) Preliminary drilling investigation at river bridge foundation locations and potential tunnel location, 4) Arizona approach drilling, 5) Colorado River bridge foundation drilling, and 6) Nevada approach drilling. Total time in the field was a little over 6 months over a 1-year period with up to 4 drill rigs on site at a time. Several thousand feet of corehole sampling with optical borehole surveys were drilled. Additional characterization included early adoption of LiDAR scanning to map the canyon walls, pushing the technology at the time, and other techniques such as Goodman Jack testing, surface refraction and downhole seismic surveys, helicopter reconnaissance, and fixed-wing aerial search for any previously unknown area faults.

ANNOUNCEMENTS

WINTER SECTION MEETING DETAILS:

Place: Dave & Busters, Concord, North Carolina

Date: January 21, 2015

Time: 5:30 socializing begins/ cash bar;
7:00 dinner; 8:00 talk

Program: Ken Ferguson, AEG President

Cost: AEG members \$25, non-members \$30,
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are \$10.

Reservations: Please make reservations with
Madeline German

Email: madeline@smithgardnerinc.com

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EDUCATION SECTION

EDUCATION NEWS FROM THE NORTH CAROLINA GEOLOGICAL SURVEY

*By Randy Bechtel, North Carolina
Geological Survey*

North Carolina Science Teachers Association Professional Development Institute (NCSTA-PDI)

November 6-7, 2014 at the Benton Convention Center in Winston-Salem.

Geosciences were prominent including:

AEG sponsored “Rocking Your Classroom” and exhibit booth

NC Aggregates Association (NCAA) Rock Giveaway

Keynote speaker Andres Ruzo, a Geoscientist, National Geographic Young Explorer and Southern Methodist University PhD candidate.

2014 North Carolina OEST and OESE Award Winners

“Rocking your Classroom”

Attendance at the Professional Development Institute (PDI)

N.C. Geological Survey education website is being updated and reorganized.

The 2014 PDI was held Nov. 6-7, 2014 at the Benton Convention Center in Winston-Salem.

Geosciences played a prominent role at this year’s event through sponsorship, exhibits and presentations. The Carolinas Section of AEG has been growing its participation in the PDI over the past several years, including support of both teacher awards (more below) and the distribution of hundreds of Earth Science Week Kits. This year, for the first time, AEG sponsored a room devoted to

geoscience presentations, many of which were taught by award-winning teachers (see “Rocking Your

Classroom”). Because of this sponsorship, the conference decided to include an AEG booth in the exhibit hall for distribution of the Earth Science Week kits.

This year also saw the return of the ever popular Rock Giveaway organized by the N.C. Aggregates Association with 14 different rock samples. They were able to give away 864 kit-bags during the event.

The keynote speaker on Friday morning was Andres Ruzo, who is a geoscientist, National Geographic Young Explorer, and Southern Methodist University PhD candidate. Ruzo is studying geothermal energy including the boiling river of the Amazon (in the Peruvian Volcanic gap). He was a great speaker who clearly cares about science communication. His presentation was fluid and his inspiring message was crafted around the PDI theme “Picture This.” Ruzo spoke of his experience being guided away from science but eventually finding his geothermal calling in college (he grew up with a volcano in his backyard). He is now researching geothermal energy. To learn more about Andres Ruzo, see the following:

www.nationalgeographic.com/explorers/bios/andres-ruzo/

www.smu.edu/dedman/academics/programs/geothermallab

www.youtube.com/watch?v=DS7nBnKaUYM

www.youtube.com/playlist?list=PLwDYgc65Zhn4sv--3wLjLjzuECfaOiztN

Outstanding Earth Science Education Awards.

The 2014 North Carolina Outstanding Earth Science Teacher (OEST) winner is Mr. Mark Townley of Holly Springs High School in Wake County.

The 2014 North Carolina Outstanding Earth Science pro-

(Continued on page 24)



Chris Schappell
Branch Manager

P.O. Box 5621
Aiken, South Carolina 29804
Phone: 803.230.7992

Email: jcs@terrasonicinternational.com
www.terrasonicinternational.com

EDUCATION SECTION

(Continued from page 23)

gram. In addition to the plaque, each winner received \$750 from multiple co-sponsors including the Carolinas Section of AEG, which is the only sponsor to fund both awards. The winners also received a \$100 gift certificate to the N.C. Geological Survey Store.

Educator (OESE) winner is Ms. Cynthia Woolery of Elizabeth Traditional Elementary School in Mecklenburg County.

The awards were presented during the NCSTA-PDI award ceremony by the N.C. Geological Survey's Randy Bechtel, who coordinates the state's OEST and OESE



L-R: Randy Bechtel and 2014 N.C. OEST winner Mark Townley



L-R: 2014 N.C. OESE winner Cynthia Woolery and Randy Bechtel

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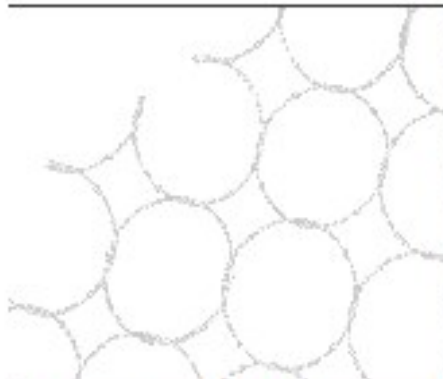
SAEDACCO is using its Roto-Sonic drill to conduct Groundwater Interval Profile Sampling. This in-situ sampling system is used in sedimentary aquifers with a two inch stainless steel screen, inflatable packer and a Grundfos Redi-Flo pump to collect discrete formation samples at a rapid pace during the drilling process. This system assists the client in determining the vertical extent of contamination in aquifers without having to install multiple monitoring wells. Cost savings, innovative ideas! Let us know how we can help you on your next project.

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EDUCATION SECTION**“Rocking your Classroom”**

The Carolinas Section of AEG sponsored a room devoted to geoscience presentations called “Rocking Your Classroom.” This dedicated room allowed scheduling of sessions in a coherent line-up and avoided conflicts of multiple geoscience sessions being scheduled at once. Also, having a single purpose room provided a home base to draw participants. I am awaiting final attendance numbers from all of the presenters but, thus far, I have estimated an average of 23 teachers per session that equates to 207 participants that came to “Rocking Your Classroom” sessions (see pictures below). Each presentation was an hour long, and over the two-day conference, there were nine presentations, six of which were taught by OEST winning teachers. Below is a list of the presentations with an asterisk beside those that were taught by OEST winning teachers.

*How can we improve Earth Science Education in North Carolina?

*What to do with your Rocks?!

*How To Do A Rock Identification Lab Using Simple Dichotomous Keys

*North Carolina Rocks!

*Geoscience Education in a Digital World

*More than Mud! From the Arctic to Backyard Ponds, the Climate Story of Sediment

Energy Resources in NC: Pros, Cons, Issues, and Realities

*Rockin Around the (Geologic) Clock Share-a-thon

Incorporating Remote Sensing Technology into Earth and Environmental Instruction

As always, the teachers attending the PDI were eager for information and materials, and they appreciated all the efforts of those involved. Unfortunately, attendance was lower than expected. In general, there has been a downward trend in attendance since the recession hit

(Continued on page 27)

Teachers in the AEG sponsored “Rocking Your Classroom” exploring activities for the classroom. There were nine one-hour sessions over the two-day event. Many of the sessions were taught by OEST winning teachers.



EDUCATION SECTION

(Continued from page 26)

and school systems began slashing professional development funds for teachers and materials. That trend continued this year. There may have been other factors that influenced turnout, including unfavorable scheduling of regional science teachers meetings that siphoned away teachers and exhibitors. The NCSTA Board is discussing the circumstances affecting this year's PDI and how to address those issues for 2015.

I point out the low attendance only to remind everyone of the issues facing our science teachers at every level. If you have the opportunity in your area to voice support for science education, and the geosciences in particular, please take the time to do so. It is more important than ever to have dedicated sponsors to assist science teachers in any way possible.

I would like to thank the Board of AEG, Alex Rutledge, Rick Kolb and many others who have grown the support of AEG for the benefit of earth science education. I would also like to thank the continued support of the N.C. Aggregates Association, Society of Mining, Metallurgy, and Exploration, and the N.C. Division of Energy, Mineral, and Land Resources.

The N.C. Geological Survey education website is being updated and reorganized: portal.ncdenr.org/web/lr/earth-science-outreach. It features information on the teacher awards and education activities and resources.

New education materials and resources are now available for download for use by teachers and others in education. The latest items to be added includes material from this fall's Earthquakes in North Carolina workshop series and elementary activities from the NCSTA-PDI. We'll have more materials to share soon, so check back often.



Mark Lassiter, P.G.
President

Two United Way
Greenville, South Carolina 29607

Phone: (864) 288-1986
Fax: (864) 288-2272
E-mail: mlassiter@aedrilling.com

Some Notes of Thanks

Mr. Rutledge,

I wanted to send a quick thank you for your efforts with the North Carolina Outstanding Earth Science Teacher Award. This award has special meaning for me. As a lateral entry teacher with a geology degree starting in the middle of the year I was given a box of worksheets and videos by the teacher I replaced. She told me that this box had everything I needed to teach this class. Fortunately for me, I was given an opportunity to work with some former OEST winners the summer after that first semester teaching. Those teachers took me under their wing and mentored me, giving me the confidence and the materials I really needed to create my own teaching philosophy. Winning the OEST award this year allows me the opportunity to pay homage to those teachers that helped me out so very much. Thank you for helping to make this a reality for me! I will use the award to help my fellow Earth Science Teachers to create personal and relevant curriculum for our students.

Sincerely,

Mark Townley-NBCT, Kenan Fellow
AP Environmental/Earth Science Teacher
School Improvement Team Chair
Holly Springs High School

Alex,

I wanted to drop you a quick note to once again express my appreciation for AEG sponsoring the Geoscience room at NCSTA.

Having many similar presentations in the same physical location facilitated networking and interacting with other like minded teachers. It also provided a bit of continuity for this conference.... in the past it has been a bit disorganized.

Thanks for what you have done for Earth Science education in NC.

Tim Martin M.S.
2011 North Carolina Outstanding Earth Science Teacher
2009 PolarTREC Teacher
Greensboro Day School

CALENDAR OF EVENTS - 2015

Geological Events in the Carolinas

Courtesy of AEG Carolinas Section – www.aegcarolinas.org. Last updated September 21, 2014

Send updates/corrections to Rick Kolb, Duncklee & Dunham, rick.kolb1@gmail.com

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

Date: Tuesday, January 6, 2015 (meetings are held on the first Tuesday of the month)

Event: Engineers Without Borders monthly meeting, Research Triangle Park Professional Chapter

Location: 6:30-8:00 PM at the offices of Camp Dresser & McKee; 5400 Glenwood Avenue, Suite 300; Raleigh

Details: www.meetup.com/EWB-USA-RTP-Professional-Chapter/

Date: Tuesday, January 8, 2015

Event: Quarterly meeting of the North Carolina Board for the Licensing of Geologists

Location: Starts at 9:00 AM; Upton Associates, 3733 Benson Drive, Raleigh; morning session open to the public

Contact: www.ncblg.org/meetings/

Date: Thursday, January 15, 2015 (meetings are held on the third Thursday of the month)

Event: Meeting of South Carolina Association of Environmental Professionals

Cost: Annual fee of \$25 includes pizza, beer and soft drinks at all meetings

Location: 6:30-8:00 at Edens Real Estate, 1221 Main Street, Suite 1000 in Columbia, South Carolina

Contact: Chuck Clymer at (803) 212-0054 or cclymer@terracon.com

Date: Wednesday, January 21, 2015

Event: Winter Meeting of the Carolinas Section of AEG

Speaker: Ken Ferguson, AMEC Environment & Infrastructure, Phoenix, and President of AEG
Location: 5:30-9:00, Dave and Buster's; Concord, NC; Members \$25, non-members \$30, students with ID **free**

Contact and RSVP: Joanna Harbison, Shield Engineering, jharbison@shieldengineering.com

Date: Tuesday, February 3, 2015 (meetings are held on the first Tuesday of the month)

Event: Engineers Without Borders monthly meeting, Research Triangle Park Professional Chapter

Location: 6:30-8:00 PM at the offices of Camp Dresser & McKee; 5400 Glenwood Avenue,

Suite 300; Raleigh

Details: www.meetup.com/EWB-USA-RTP-Professional-Chapter/

Date: Thursday, February 19, 2015 (meetings are held on the third Thursday of the month)

Event: Meeting of South Carolina Association of Environmental Professionals

Cost: Annual fee of \$25 includes pizza, beer and soft drinks at all meetings

Location: 6:30-8:00 at Edens Real Estate, 1221 Main Street, Suite 1000 in Columbia, South Carolina

Contact: Chuck Clymer at (803) 212-0054 or cclymer@terracon.com

Date: February 26-28, 2015

Event: 2015 AEG Shlemon Specialty Conference

Topic: Time to Face the Landslide Hazard Dilemma: Bridging Science, Policy, Public Safety and Potential Loss

Location: University of Washington, Seattle, WA

Details: www.aegweb.org/about-aeg/aeg-meetings/2015-shlemon-conference

Date: Tuesday, March 3, 2015 (meetings are held on the first Tuesday of the month)

Event: Engineers Without Borders monthly meeting, Research Triangle Park Professional Chapter

Location: 6:30-8:00 PM at the offices of Camp Dresser & McKee; 5400 Glenwood Avenue, Suite 300; Raleigh

Details: www.meetup.com/EWB-USA-RTP-Professional-Chapter/

Date: Friday, March 6, 2015

Event: ASBOG geology exam, Part I: 8 AM-noon, Part II: 1:00-5:00 PM

Location: McKimmon Center, NC State University, Raleigh

Details: www.ncblg.org/examination/

Date: March 2015 – date to be determined

Event: Spring Meeting and elections, Ground Water Professionals of North Carolina

Speaker: To be announced at www.gwpnc.org

Location: 6:00 social, 7:00 dinner, 8:00 presenta-

(Continued on page 29)

(Continued from page 28)
tion

Date: Thursday, March 19, 2015 (meetings are held on the third Thursday of the month)

Event: Meeting of South Carolina Association of Environmental Professionals

Cost: Annual fee of \$25 includes pizza, beer and soft drinks at all meetings

Location: 6:30-8:00 at Edens Real Estate, 1221 Main Street, Suite 1000 in Columbia, South Carolina

Contact: Chuck Clymer at (803) 212-0054 or cclymer@terracon.com

Date: Thursday, April 16, 2015

Event: Spring Meeting of the Carolinas Section of AEG

Speaker: Eldon Gath, Earth Consultants International, Santa Ana, CA and 2014-15 Jahns Lecturer

Location: 5:30-9:00, Natty Greene's, Raleigh, NC; Members \$25, non-members \$30, students with ID free

Contact and RSVP: Maddie German, Smith Gardner, maddie@smithgardnerinc.com

Date: March 19-20, 2015

Event: Southeastern Section, GSA 64th Annual Meeting

Location: The Chattanooga Hotel; Chattanooga, Tennessee

Details: <http://www.geosociety.org/sections/sc/2015mtg/>

Date: September 19-26, 2015

Event: AEG Annual Meeting

Location: The Wyndham Grand Hotel, Pittsburgh, Pennsylvania

Date: September 18-24, 2016

Event: AEG Annual Meeting

Location: Kona, Hawaii

Date: September 2017 (dates to be determined)

Event: AEG Annual Meeting

Location: Denver, Colorado

Date: September 2019 (dates to be determined)

Event: AEG Annual Meeting I

Location: Renaissance Hotel; Asheville, North Carolina



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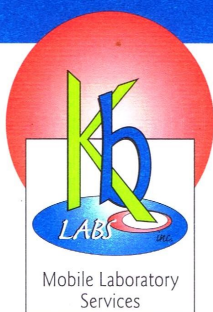
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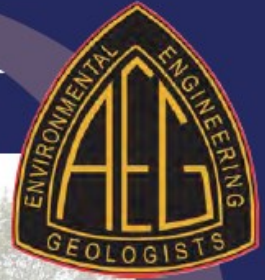
Details at AEGweb.org beginning October 2014



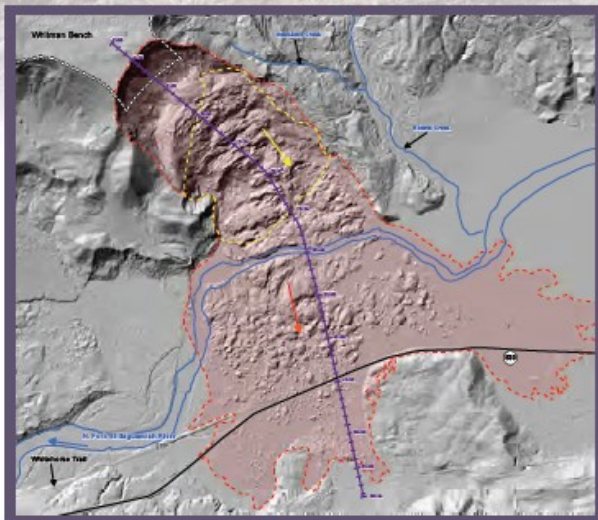
#AEG2015

AEG Shlemon Specialty Conference

FEBRUARY 26th-28th, 2015 ■ University of Washington, Seattle, WA



Time to Face the Landslide Hazard Dilemma: Bridging Science, Policy, Public Safety, and Potential Loss



The conference will consist of 2 days (Th-Fri) of technical and other presentations by invited speakers, posters, discussion sessions and workshops regarding: landslide hazard assessment and risk methodology, current state and local programs and how these can be integrated into current and potential future national programs, what's working and where do we need to improve, can we develop consensus recommendations and guidance for agencies responsible for land use, and more. There will also be an optional field trip to the Oso landslide and another recent landslide impacting several houses in Everett, WA on Saturday.

Recent prominent landslides in the U.S., such as the tragic March 2014 Oso Landslide in Snohomish County, Washington, have resulted in significant loss of life and damage/cost to both private and public infrastructure and illustrate the current disconnect between landslide hazard assessment and the interests of the public. This AEG Shlemon Specialty Conference will bring together technical experts in landslide hazards, state geologists, public officials and regulators, insurance and realty representatives, media, and researchers to discuss the next steps in communicating landslide hazards to the public. The main objective of the conference is to develop strategies for bridging the gap between science, land use, and public interests so that the potential for future tragedies can be avoided or mitigated.



Co-Sponsor:

University of Washington Department of Earth & Space Sciences

Supporting Organizations (Preliminary):

Washington State Geological Survey, AEG WA Section and UW Student Chapter, King County

Image Credits:

GEER Oso Investigation Team and Kathy Troost, UW ESS Dept.

Note: Details are preliminary and subject to change. Final details and registration information will be posted to www.aegweb.org and presented in future AEG News and AEG Insider publications

MEMBERSHIP APPLICATION



ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS

MEMBER:

- ☐ **New Member Dues – \$95.00** First year of membership only.
☐ **Full Member Dues – \$140.00***

Applicants for Member Class, including Full and New Members, 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, the applicant shall be practicing in the field of Engineering Geology, Environmental Geology or Hydrogeology.

**Section Dues - Section dues are charged to all Full Members, invoiced separately. More information regarding Section dues can be found at www.aegweb.org.*

AFFILIATE:

- ☐ **Affiliate Dues – \$100.00**

Applicants for Affiliate Member Class shall be scientists or engineers who work with engineering geologists, or persons interested in environmental and engineering geology.

TEACHER:

- ☐ **Teacher Dues – \$35.00**

Applicants for Teacher Member Class shall be engaged in full-time teaching at the Primary, Secondary or post-secondary level in the area of Earth Science education or a related subject.

STUDENT:

- ☐ **Annual Dues - FREE**

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.

INTERNATIONAL:

- ☐ **International Member Dues – \$35**

Applicants shall hold the same requirements as for Member Class. International Members receive (online ONLY) the E&EG Journal, Annual Directory, Annual Meeting Program with Abstracts and the AEG NEWS.

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

Date of Birth:

Required to authorize payment

Preferred Address:

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Preferred Phone:

☐ Home ☐ Work ☐ School ☐ Mobile

Preferred E-mail:

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Alternate Address:

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Alternate Phone:

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Alternate E-mail:

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Desired Class of Membership:

Annual Dues Amount*:

**Section Dues not included. A separate invoice will be mailed to you.*

Payment Method:

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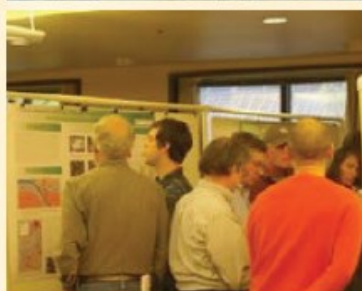
My signature attests that, to the best of my knowledge, I meet the academic and practice requirements for the membership class I have requested and that all entries on this application are true and correct. I also authorize AEG to charge my credit card for the dues payment, if I selected the credit card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

SUBMISSION: Send this form with your check or credit card authorization to: Association of Environmental & Engineering Geologists • PO Box 460518, Denver, CO 80246
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Benefits of Student Membership Include:

- Eligibility for **Scholarships** that provide funding for field camp, field studies, academic studies and travel to present at national meetings.
- **Discounts** for attending AEG's Annual and local Section Meetings, field trips, and short courses (sometimes you can attend for **FREE**).
- **Networking** opportunities to potentially **meet YOUR future employer!** One member noted, "Every job I have had was a result of shaking hands at an AEG event!"
- **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 when you renew as a Full Member will be reduced by \$45.00.

Application Form

Name : _____

Preferred Address: _____

Phone: _____

E-mail (Current Institutional Provider): _____

E-mail (Non-Institutional Provider): _____

Institution (College/University): _____

Anticipated Graduation Year: _____

Please check one: ☐ Student (free) ☐ New Graduate
*(1st year, only \$95.00)

**Note: AEG will contact New Graduates upon receiving the application for payment and to complete the application process.*

Submission Send this form to:

Association of Environmental & Engineering Geologists,
1100 Brandywine Blvd Suite H, Zanesville, Ohio 43701
Phone: 1-844-331-7867 (toll free); Fax: 740-452-2552
Email: contact@aegweb.org; Website: 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.

Meetings: Listing on a Sponsor Poster, located at sign-in table. Verbal acknowledgement by name in Chairman's introductory comments.

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

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

Web Page: Acknowledgement on the AEG Carolinas Section Web Page, www.aegcarolinas.org, with a link to your site.

Gold Sponsor (\$375):

GeoNews Newsletter: Quarter-Page ad (4-1/2" high x 3-1/2" wide), four times per year.

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Platinum Sponsor (\$500):

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

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Web Page: Acknowledgement on the AEG Carolinas Section Web Page, www.aegcarolinas.org, with a link to your site.

Titanium Sponsor (\$600):

Same as Platinum, but with a FULL PAGE ad in GeoNews. Limited to 2 Sponsors per year.

GeoNews Newsletter Sponsorship Only

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

Business Card	\$ 40.00
Quarter Page	\$ 60.00
Half Page	\$ 100.00
Full Page	\$ 200.00

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).

AEG Carolinas Section Sponsorship Form

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

- _____ Platinum PLUS Section Sponsorship, \$600/year
 _____ Platinum Section Sponsorship, \$500/year
 _____ Gold Section Sponsorship, \$375/year
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Something about your company (use back of page for more room) _____

Please enclose a business card or email ad in jpg, pdf, or doc to Rick Kolb at rick.kolb1@gmail.com.

MAKE CHECK OUT TO AEG CAROLINAS

Snail mail form and payment to:

Rick Kolb, Duncklee & Dunham, 511 Keisler Drive, Suite 102, Cary, North Carolina 27518

(Modified 7/11/13)

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Thank You, AEG Carolinas Sponsors!!

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www.saedacco.com
 Peter Byer, 803-548-2180, pbyer@saedacco.com 803-548-2180; South Atlantic Environmental Drilling and Construction Co, Inc., (SAEDACCO), founded in 1993, is a southeast regional environmental services company. SAEDACCO is located in Fort Mill, SC and specializes in providing Direct Push, Drilling Construction, and Remediation services for the environmental industry.

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