

SPRING 2015

# GEO NEWS

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

## SAVE THE DATE

Spring Section Meeting  
Thursday, April 16, 2015  
Natty Greene's, Raleigh

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**Issue Date: March 21, 2015**  
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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

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

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Vice Chair	Madeline German, <a href="mailto:madeline@smithgardnerinc.com">madeline@smithgardnerinc.com</a>
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Advisor	Rick Kolb, <a href="mailto:rick.kolb1@gmail.com">rick.kolb1@gmail.com</a>
Advisor	Gary Rogers, <a href="mailto:grogers@schnabel-eng.com">grogers@schnabel-eng.com</a>

**AEG Carolinas Section Website** ..... [www.aegcarolinas.org](http://www.aegcarolinas.org)

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**GeoNews Editor** ..... Jennifer B. Thomas, P.G.  
[jen@jennotecllc.com](mailto:jen@jennotecllc.com)

**Cover:** (Phillip and Guillaume Plisson) An aerial view of the Panama Canal, which will be the subject of Eldon Gath's talk at the Spring Section meeting

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**MESSAGE FROM THE CHAIR**

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

The Carolinas Section has been busy the first quarter of 2015 with section meetings, outreach, sponsorship renewals and field trip planning.

A great group of professionals and students gathered for our most recent section meeting at Dave and Busters in Concord, NC on January 21<sup>st</sup>. AEG National President Ken Ferguson delivered an exciting presentation about his experiences performing geotechnical and geological work for the Hoover Dam By-Pass Bridge. We had a dozen student attendees and over 70 total attendees. Additionally, we were honored to have Cindy Woolery, the recipient of the 2014 Outstanding Earth Science Educator award, at the meeting. In 'outstanding educator' form, Cindy had everyone on their feet to review a few of her classroom teaching tools and tricks with us!

After some wild weather in February, the Carolinas Section is gearing up for some stimulating spring events; starting with our annual Spring Field trip. This time we are headed to Reed Goldmine in Midland, NC on April 11. Please register by Monday April 6; details are available on the section website.

Also in April, our second section meeting of the year, which will be a joint meeting with ASCE, will be held at Natty Greene's Pub and Brewing Company in downtown Raleigh on Thursday, April 16<sup>th</sup>. Eldon Gath, the 2014-15 Jahns Distinguished Lecturer in Engineering Geology, will be speaking about his experiences during the construction of the Panama Canal, with his talk titled "*Tectonic Geomorphic and Paleoseismic Investigations for the Panama Canal*". Eldon and his coauthors won the 2012 AEG Holdredge Award for their publication related to this research. The findings influenced the design criteria for the Panama Canal upgrades, which had some interesting political implications in the region. Eldon is an excellent presenter and charismatic individual. I look forward to seeing many AEG and ASCE members and non-members at what will be a lively event.

I will be attending the mid-year board meeting in April and will return with updates on changes to the AEG governance structure, bylaws and constitution. Please email me any questions or concerns you would like addressed regarding these issues by March 31<sup>st</sup>.

Also arriving with the warmer weather will be the brew pub socials, keep tabs on the website and LinkedIn for updates! Our LinkedIn group can be found at <https://www.linkedin.com/groups/AEG-Carolinas-Section-2738851/about>.

If you haven't renewed your membership for 2015 please contact our membership chair, Eric Cross to learn about the benefits of membership. Similarly, if you have not renewed your Carolinas Section sponsorship for 2015, or you would like to become a sponsor, please contact Rick Kolb.

As always, I encourage you to email me or other Board members with your suggestions and/or concerns related to our section. We are here to serve the needs of our membership, so your feedback is vital and welcome.

Sincerely,



Alex Rutledge, PG, PE  
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AEG Carolinas Section Chair

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## AEG CAROLINAS SECTION 4Q TREASURER'S REPORT

*By Susan Kelly, Section Treasurer*

### AEG Carolinas Section Treasurer's Quarterly Report

October 1, 2014 to December 31, 2014

**BALANCE As Of October 1,  
2014**

Checking Account      \$27,000.78

Savings Account      \$16,685.31

**\$43,686.09**

#### INCOME

##### Field Trips

Section Meeting (Asheville  
Greensboro)      \$605.00

##### Member Dues

Dues from AEG  
National      \$10.00

##### Inter- est

Savings Account      \$2.11

**SUBTOTAL - INCOME      \$617.11**

#### EXPENSES

##### Banking Fees

Credit Card Read-  
er Fees      \$2.50

Online Deposit  
Fee      \$3.00

##### Meeting Expenses

Deposit for Janu-  
ary Meeting in  
Charlotte      \$899.63

Section Meeting  
Natty Greene's      \$1,328.74

Jahns Lecturer  
Expenses      \$1,017.98

Name Tags for  
Section Meetings      \$73.65

Section Speaker  
Expenses      \$224.07

#### Donations

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Educator      \$250.00

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Teacher      \$250.00

Donation for Earth Science Kits

\$2,429.00

AEG National Treasurer's

Reserve      \$2,500.00

#### Additional Expenses

AEG Booth Shipping to

National      \$90.12

**SUBTOTAL - EXPENSES      \$9,068.69**

**BALANCE As Of December 31, 2014**

Checking Account      \$18,547.09

Savings Account      \$16,687.42

**TOTAL      \$35,234.51**



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**GEORAMBLINGS***By Charles W. Welby*

With the local snow storm limiting “rambling,” my thoughts have turned for no particular reason to the upcoming concerns that we in the U.S. eventually have to face---the adequacy of the water supply for a growing population. Interestingly enough local newspapers are noting the potential, if not the probable” problem.

The problem or concern is based upon a simple model. Imagine a kettle of soup of perhaps one gallon volume (128 fluid oz.). The question arises at some point about how many people can be served from it if the individual servings must be 8 fluid oz. Add into this thought the effects of drought such as has affected the California Central Valley and continues to be a force in consideration of water usage.

Well, as it has been reported, Mark Twain after he had visited the west near Lake Tahoe and into Nevada, reportedly noted, “Whiskey is for drinking; water is for fighting.” As an aside if ever you are in Hartford, CT, you should visit the Mark Twain home, an interesting place.

Watching from an airliner as it approaches Las Vegas, NV, one can observe the “bathtub ring” on Lake Meade and should consider the evaporation from the aqueduct bringing the water from Nevada into the Los Angeles Basin. Another consideration related to evaporation from aqueducts transporting water is the evaporation loss from the California Aqueduct that was built to move water from the San Francisco Bay delta area to Los Angeles.

Locally, Lake Jordan near Raleigh was first proposed as a flood control lake. Today it is used as a source of water for areas around it, and the runoff from the developed areas around it contribute pollution to the lake so that algae has developed, and an energy-requiring system of stirring the lake’s waters to reduce the algae blooms.

Then there was the “shoot-out” at the Kern River weir not far from Bakersfield, California. The weir blocked the discharge of the Kern River into its natural ending point, Lake Buena Vista. In May 1937 a group representing farming interests around and in Tulare Lake bottom north of Lake Buena Vista came south to take out the weir as it caused Kern River water to flow by various old river channels and canals to Lake Tulare. The result were that the crops in the Tulare Lake bottom were threatened with flooding. So the Tulare Lake area people came down and took out the weir. There was some shooting with “high powered” weapons, mostly .22 gauge rifles, and some court actions in Bakersfield against the Tulare people were undertaken.

In recognition of the limited supply of water, water supply organizations try to put some limitations on the use of water in various manners. Some do it by a cost of water approach, providing each house hold with a given volume of water at a substantial lower price and then raising the per volume cost of water at some volume point.

A question: How do you get cool water to drink as you drive across a dry, warm area, but in doing so you do not use a container into which you have placed ice water and kept in the car? What might be used if you were driving across the Sahara Desert?

**Is Another Exodus on the Way***By Harry LeGrand*

Moses traveled far to find a well  
He smote the rock in a distant dell  
We treasure water as much today,  
But we find water in a skillful way.

May we face another exodus from semi-arid states  
If water does not come at reasonable rates?  
Drought conditions may be quite severe  
If effects of global warming should soon appear.

Limited aquifer recharge from rain or snow  
May lead to subsequent scarcity of water and woe  
If human use and water associated action  
Don’t balance the recharge and discharge faction.

A water budget program in a semi-arid land  
Needs management that is of a restricted brand  
Irrigation from wells for crops has been a blessing  
But declining ground-water levels breeds lessening.

Well water is desirable because of its useful location  
And the aquifer is pleased to offer modest inspiration.  
The proud pump beckons water from round about  
And the aquifer is recharged after each drought.

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## Dispatches from the AEG Professional Forum on Landslides

By Jennifer Bauer

AEG and the University of Washington Earth & Space Sciences (UW ESS) hosted over 200 geologists, engineers, planners, emergency managers, students, and others from public, private, and academic employers. Twenty-two speakers and 15 poster presenters shared their experiences and knowledge in the UW South Campus Center. Student volunteers helped turn the gears managing everything from registration, A-V, breaks, to clean-up.

Living up to its reputation, Seattle weather was drizzly and 55 degrees on Day 1, but that didn't deter attendees from arriving at AEG's first Professional Forum. The first day focused on landslide mapping programs, impacts, and implementation. Forum co-organizers, Mark Molinari and Kathy Troost kicked off the meeting by reminding attendees the key goal: assessing how we can better protect public health, safety, and infrastructure through better collaboration and communication.

Dr. Joe Wartman of UW was the first keynote speaker, sharing with us the highlights of what the Geotechnical Extreme Events Reconnaissance (GEER) Association team learned about the SR-530/Oso landslide. Their lessons learned included the importance of understanding the pre-development history of landslides when defining zoning areas, clear and consistent communication of risk to the public, monitoring and warning systems, and use of technology to advance what we know about how topography, seismology, and precipitation relate to landslide occurrence.

Our second keynote speaker, Dr. Jeff Keaton of Amec Foster Wheeler, educated us about what would be needed from the landslide mapping community to develop loss models that the insurance industries could use to begin offering landslide insurance. He did this by explaining how earthquake insurance began, and showing us an example of a hypothetical simplified national landslide hazard zone map. He defined "hazard" for us as having units of probability and intensity or size, and "risk" having units of dollars and lives. He encouraged us to collect data on these units when inventorying landslides.

Dr. Jonathan Godt, Program Coordinator for USGS Landslide Hazards, spoke about USGS strategies and tools for landslide hazard assessments and response to crises and events. Two USGS National Hazard Science Strategies he mentioned were to improve communication in landslide science, and (if the President's FY2016 USGS budget increase of \$0.5M passes) expand post wildfire debris flow warning systems, crises response capabilities, and state and private partnerships for data collection and research.

Doug VanDine, President of the Canadian Geotechnical Society, presented the purpose and highlights of the *Canadian Technical Landslide Guidelines and Best Practices related to Landslides: a national initiative for loss reduction*, which he co-edited. The chapters of this Geological Survey of Canada's Open File report are publicly available on <http://geopub.nrcan.gc.ca/>.

Dr. Scott Burns, Professor Emeritus at Portland State University, entertained us with stories of landslides across the world. He discussed the "all hazards" insurance available in New Zealand, and the landslide insurance programs Switzerland and Germany are working on. He reiterated the need for susceptibility maps, good communication between the map makers and planners, landslide insurance, and an increase of awareness about landslide hazards.

Rounding out the Day 1 morning session was Senior Geotech Engineer for the US Army Corps of Engineers, Richard Olsen. Rick reminded us, through examples of landslide events, the importance of communicating our technical findings in a way that can be understood "by our grandparents." He urged us to tell the landslide story through photos, figures, and maps, with concise text accompanying these visual communication methods.

After lunch, sponsored by Cascade Drilling and Shannon & Wilson, the first afternoon session redirected the focus toward examples of state programs. Bill Burns, from the Oregon Department of Geology and Mineral Industries; Jennifer Bauer, with Appalachian Landslide Consultants, PLLC in North Carolina; Matt Crawford, with Kentucky Geological Survey, and Stephen Slaughter, with the Washington Department of Natural Resources each spoke about landslide mapping programs in their respective states, what is working and lessons learned. A key message throughout was the value of LiDAR in developing consistent, high quality landslide inventory maps. During the

(Continued on page 7)



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attendees got a chance to chat and view posters before the next session began.

The second afternoon session focused on landslide risk, prediction, and local implementation. Tom Badger with the Washington Department of Transportation spoke about the proactive strategy that they now use to prioritize sites for mitigation, and the challenges of managing risk. Rex Baum, with the USGS, discussed predictability, tools, and assessments of landslides as part of the USGS programs. John Bethel discussed types of landslides in King County, WA, and their ongoing efforts to create an inventory for the county by 2016. The final speaker of the day, Charles Nestle, gave the County of Los Angeles, CA Department of Public Works perspective. He gave the audience some entertaining case histories, where he explained the County's role in requiring suitable engineering geologic reports before issuing building permits in areas of questionable slope stability.

Following a day full of informative talks, the attendees relaxed during the evening Icebreaker (sponsored by the AEG Washington Section). Scott Burns brought wines from different terroirs for everyone to try. Many attendees connected with old friends, met new contacts, and discussed their involvement with landslides over a beer, non-alcoholic beverage or glass of wine.

The second day's weather was just as gray and dull, but energy was running high at the South Campus Center. After an introduction by forum co-organizer Jeff Keaton, keynote speaker Richard Roth, a Consulting Insurance Actuary, told us about the history of hazard models in the insurance industry, and the questions that need to be answered about landslides in order for insurance companies to develop landslide insurance:

1. When and where will landslides occur?
2. How big will they be?
3. How fast and how far will they move?
4. What areas will the landslides affect or damage?
5. How frequently do landslides occur in a given locality?

Mark Molinari, with AECOM in Seattle, presented examples of planning and zoning ordinances from selected cit-

ies and counties in several western states, land use strategies in landslide prone areas, and landslide information aimed at the public. David Sherrard, a Planning Consultant in Washington, explained what geologic hazard information planners need and what they do with it.

Mike Chard, Director of the Office of Emergency Management for Boulder County, CO, really caught the audiences' attention with his high energy presentation. He educated us about the EM side of landslide crises based on his recent experience with the extensive 2013 landslides, and the geologic information they need to make their jobs easier. Abigail Seadler, with the American Geosciences Institute, rounded out the morning session by giving us tips on connecting with our Congresspeople. She outlined the steps it takes to pass a bill in congress, and the steps we need to take to have our "Ask" heard. She discussed the current landslide related "Asks" AGI has made and that we can support.

Over lunch, sponsored by Geobruigg North America, attendees talked with poster presenters about their various projects, case studies, and ideas for moving forward.

After lunch, Dr. Joe Wartman gave us a summary of the National Academy of Sciences workshop "Partnerships for Reducing Landslide Risk," which took place on February 24, 2015, two days before this Forum. He first told us about innovations in New Zealand in response to the 2011 Christchurch Earthquake. Keep an eye out for notes from the workshop from the NAS.

To get Forum participants ready for the afternoon small-groups workshop, the final keynote speaker, Dr. Dave Montgomery with UW asked and answered "Saving Lives and Property, Is Science the Easy Part?" He finished by outlining lessons learned and recommendations by the Washington State SR530 Landslide Commission.

During the course of the Forum, the co-organizers pulled out themes that continued surfacing during the talks and questions. Forum co-organizers Kathy Troost of UW and Jennifer Bauer explained the five different topics for attendees to divide up among to discuss and define some strategies and priorities for next steps. These topics were:

(Continued on page 8)

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(Continued from page 7)

Creation of a "Loss Model;" defining unique landslide characteristics for inclusion.

Communication between science, policy, and the public – how can we better speak the same language?

Public outreach – steps toward creating a public awareness program

Regulation/Planning – what steps are required for landslide map integration into zoning

Landslide community next steps: How do we keep this conversation going?

Workshop attendees formed groups that had an hour and a half to answer their questions and prepare a 5 minute report. At the end of the workshop time, everyone got back together and shared their discussions. The groups collectively identified many achievable strategies that we can begin working on immediately.

The final day of the Forum was a field trip to view the devastating SR530/Oso landslide and a nearby similar sized pre-historic landslide and a landslide that has damaged several houses in Everett. Both destinations are in Snohomish County, WA. Unfortunately the attendees were exposed to a perfectly clear and sunny day and did not get the experience of a day in the field in typical Pacific Northwest rain.

This first AEG Professional Forum on landslides achieved its goal of bringing together individuals in the landslide community to talk about the current state of things and

how to improve communication to those affected by landslides. The goal is to generate an AEG Special Publication or E&EG journal special issue including the results of the presentations and workshop. The extended abstracts, graciously assembled by Anne Weeks, are available on the AEG website (<http://www.aegweb.org/docs/default-source/events/aeg-ls-forum-program-abstracts.pdf?sfvrsn=2>) many of which include the detail of the presentations. Look for the presentations to be posted online, as well as the video of the speakers.

This Forum is just one step on the continued journey of this conversation. The AEG Landslides Technical Working Group is already in discussions about the next Forum. If you are interested in joining the effort, please contact Kevin McCoy ([kemccoy@mines.edu](mailto:kemccoy@mines.edu)) or Casey Dowling ([CDowling@bgcengineering.ca](mailto:CDowling@bgcengineering.ca)) for more info.

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(Continued from page 7)

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## Donations Requested to Provide Clean Drinking Water in Haiti

The Carolinas Section donated funds and collected donations from AEG members in 2011 and 2014 to pay for transportation of well supplies donated by section sponsor Geologic Exploration for water-supply wells. We also paid for import duties levied by Haiti on these supplies. Former Dunklee & Dunham consultant Doug Rakoczy and his wife Susan of Lifewater have been our contacts for this effort. Our efforts were highlighted in past issues of our section's newsletter and summarized in the cover article of the Fall 2014 edition of *AEG News*. Doug and Susan have contacted Dave Dunklee again and asked if we could donate more well supplies. Doug provided the following update since our last donation:

The Lifewater Haiti team is continuing to work very hard despite all of the challenges. Lifewater Canada did recently purchase property for a compound to contain an office and to store the drill rigs and containers with the drilling supplies and other equipment. The Lifewater guys built the concrete block wall to surround the property (standard practice in Haiti) and provide security, and completed the foundation for the building that will serve as an office and residence for visiting teams. We had previously been renting property that served as a compound; it contained a small house to use as an office, but we had to move. It was a long process trying purchase the new property as several previous properties fell through at the last minute, either because the person that the property was being purchased from didn't actually own the property (a common problem in Haiti) or the property owner decided to significantly raise the cost of the property right before closing.


One other problem has been that they are very low on Afridev pumps. As you know, these are the hand pumps we install in the wells we drill. The guys also periodically replace worn-out hand pumps on previously drilled wells (some not drilled by Lifewater) because the old pumps are just worn out and have already been pieced back together with any available parts many times. Some of these pumps are older pumps that you can't get parts for or they are very expensive. Unfortunately, even the Afridev pumps are showing the wear and tear to the cylinders and bottom valves or suction valves that is caused by fine sediments getting into the well. This is why continuing to get more factory-cut screen is so important and is one of the most important factors in well quality and pump longevity. A number of older wells were constructed using screens that were hand-cut in the PVC using a hacksaw. Because the slots are too wide (and other issues getting a filter pack around the screen), it's really difficult to keep the fine sediment out of the wells.

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## Eldon Gath, 2015 Distinguished Jahns Lecturer, comes to the Carolinas and will speak at the section meeting in Raleigh

### Eldon's Abstract

#### Tectonic Geomorphic and Paleoseismic Investigations for the Panama Canal:

This talk summarizes five years of geological exploration in Panama to quantify the fault hazards to the Panama Canal and the Canal Expansion Project, using tectonic geomorphic mapping and analysis, paleoseismic trenching, and seismic hazard analysis. Faults that were investigated include the Gatún, Limón, Azota, Pedro Miguel, Miraflores, and Agua Blanca. The talk will illustrate techniques of field reconnaissance, trench-site selection, 3-D trenching of strike slip faults, and how to assemble data into a seismic hazard model. If time is available, an overview of the Panama Canal and the Canal Expansion Project will also be presented.

### Eldon's Résumé

Eldon, a consulting engineering geologist, has more than 30 years of experience in the identification, investigation, and remediation of geologic hazards, involving land use planning, environmental assessments, field exploration programs, and presentation of findings. He has particular experience with the evaluation of active faults for construction site planning, the development of seismic safety programs and policies, and is currently engaged in efforts to modernize California's 40-year old active fault zoning act (Alquist-Priolo Earthquake Fault Zoning Act).

Eldon is the President of Earth Consultants International, a geological consulting firm [*helping our clients solve complex earth-science problems around the world*] that he co-founded in 1997, following 12 years with Leighton Consulting in southern California. He has considerable international experience including field projects in Turkey, Panama, Mexico, Costa Rica and Papua New Guinea, as well as project involvement in many others.

Eldon is a graduate of the University of Minnesota, Institute of Technology, with a BS degree in Geology in 1978. He has been in graduate school ever since; MS program at Cal State LA (1982-1990), PhD program at UC Riverside (1993-1996), PhD program at UC Irvine (1998-2008), but despite getting very close, he has never managed to complete the degree due to his busy consulting responsibilities, professional organization involvement, and travel schedules; or conflicted priorities, if you ask his advisors.

Eldon has received several research grants from the U.S. Geological Survey's National Earthquake Hazard Research Program, the Southern California Earthquake Center, and the National Science Foundation for earthquake geology research in California, including paleoseismology of the Whittier fault, tectonic development of the San Joaquin Hills, tectonic geomorphology of the Eastern Los Angeles Basin, and the seismic hazards of the Santa Ana Mountains. He served as the geosciences member on a National Research Council panel to develop the research agenda for the NEES program, he served on the LA County Land Development Technical Advisory Committee for a decade, served on the California Board for Engineering, Land Surveyors and Geologists' Technical Advisory Committee for two years, and has participated multiple times as an Occupational Expert for the US Department of Labor.

Eldon is a frequently invited speaker to local southern California colleges. Since his first professional presentation on the Whittier fault at AGU in 1987, he has given over one hundred presentations before professional, academic, and public groups, and has published dozens of papers on a wide range of geological and professional practice topics, several of which have received awards for outstanding presentations and papers.

In 1995 he was awarded the Aki Award for Outstanding Paper Presentation at the California Academy of Sciences Annual Meeting for *Active tectonic structures in the eastern Los Angeles basin*, then in 2007 received the Outstanding Presentation Award at the AAPG Annual Meeting for *Quaternary geomorphic development and seismic*

#### SPRING SECTION MEETING DETAILS:

Place: Natty Greene's, Raleigh, North Carolina

Date: Thursday, April 16, 2015

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

Program: Eldon Gath, 2015 Distinguished Jahns Lecturer

Cost: AEG members \$25, non-members \$30, students FREE with college ID; Teachers are \$10.

Reservations: Please make reservations with Madeline German

Email: [madeline@smithgardnerinc.com](mailto:madeline@smithgardnerinc.com)



(Continued from page 10)

hazards of Orange County, California. Along with coauthors, he has received the 2010 GSA E.B. Burwell Outstanding Paper Award for *The Geology of Los Angeles*, and the 2012 AEG Claire P. Holdredge Outstanding Paper Award for *Paleoseismology of the Pedro Miguel fault, Panama Canal*. He served as South Coast Geological Society (SCGS) President in 1987, AEG Southern California Section Chair from 1990-1992, AEG Treasurer, Vice President, and President from 1993-1997, received the AEG Floyd T. Johnston Service Award in 2008, was elected a Fellow by GSA in 2011, and was made an Honorary Member of the SCGS in 2012. He is a member of AEG, GSA, AIPG, AAPG, EERI, IAEG, IAPG, AAAS, AGU, SSA, PDAC, and all local geological societies.

Our section has hosted the Jahns Lecturer since 2007 and will continue our tradition of trying to wear out the lecturer as much as possible. His schedule of nine presentations in four days will break the section record of seven, held by 2010-11 Jahns Lecturer Bill Haneberg.

The objective of the Jahns Lecturer is to promote student awareness of applied geology by presenting talks to geology departments and professional groups. Eldon is a consulting engineering geologist with more than 30 years' experience in the identification, investigation, and remediation of geologic hazards, involving land-use planning, environmental assessments, field-exploration programs, and presentation of findings.



Eldon will present at our section meeting in Raleigh on Thursday, April 16. Feel free to attend one of his lectures at a university near you if you can't make it to the section meeting.

### *Eldon's Schedule*

Date	Time/Location	School/Event	Topic
Tuesday, April 14	Noon/Plyler Hall	Furman University	Natural Hazard Identification
	4:00/McEniry Hall 125	UNC-Charlotte	Quantitative Kinematic Investigation
Wednesday, April 15	11:30/Rhoades Robinson Hall 138	UNC-Asheville	Natural Hazard Identification
	5:00/Ross Hall Conf. Room 201	East Tennessee State University	Natural Hazard Identification
Thursday, April 16	11:30/Frank Science Center 205	Guilford College	Engineering Geology
	3:30/Jordan Hall 1132	NC State University	Natural Hazard Identification
	5:30/Natty Greene's	Section Meeting, Raleigh	Panama Canal
Friday, April 17	9:00/Pucher-LeMay Hall 241	Wake Tech	Natural Hazard Identification
	12:00/Martin Lounge of Mitchell Hall	UNC-Chapel Hill	Santa Ana Mountains



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**[Haynes Campbell - \(919\) 210-5148; hcampbell@esclabsciences.com](mailto:hcampbell@esclabsciences.com)**



## Coal Ash Jobs in North Carolina

The state's coal ash cleanup efforts might soon have a new spokesperson, the latest in a series of government hiring's specifically tied to the environmental issue. The Department of Environment and Natural Resources on Monday closed out a 10-day application period for a communications specialist who would keep the legislature and the public apprised of the state's work on coal ash cleanup and disposal, the focus of a law passed in 2014 after as much as 39,000 tons of the stuff spilled from a pipe into the Dan River that February. The Coal Ash Management Act called for 25 new jobs at DENR and elsewhere with an allocation of \$1.75 million covered by fees on Duke Energy, the utility responsible for the spill. A Senate bill the House will debate on Tuesday would give DENR some flexibility on hiring within that budget -- seen as tight, a spokesman said -- by instead requiring "up to" 25 jobs. They would be long-term positions, as actions directed by the management act -- like closing coal ash impoundments -- extend into the late 2020s.

Currently, 20 coal ash-dedicated jobs worth nearly \$1.5 million are programmed at DENR, including the communications specialist. The job listing noted a salary range of \$44,347 to \$72,346 annually. DENR says it has budgeted \$65,000 for it. Other, new coal ash-response positions already staffed there include hydrogeologists, environmental specialists and engineers, while others with similar titles are pending or have yet to be filled. "These are far from the only positions in DENR that are working on coal ash," said Communications Director Drew Elliot, estimating about 100 other staffers there have been so obligated at least part of the time. "We don't expect that number to shift downward at all once these new positions are all hired." Elliot is among workers whose everyday duties expanded after the nationally spotlighted spill. While he still expects the aftermath to remain a steady part of his broad job, the new communications hire will take the lead on all coal ash messaging -- advising leadership, educating the public, serving as a liaison to other departments and governments and interacting with reporters. "This position will entail a significant amount of media relations work,"

the job description noted.

The management act also required the Department of Public Safety to establish five new positions to assist the recently established Coal Ash Management Commission, which is supposed to prioritize coal ash sites to close. Those jobs, too, would be covered by utility fee receipts. DPS Communications Officer Julia Jarema said Monday that three of those positions are filled. They brought on an executive director in December -- Natalie Birdwell, making \$85,000 a year -- in addition to an administrative assistant last month and a legal policy advisor who is starting this week. The policy advisor is a part-time position at \$3,333 a month; rounding out the slot is another contract legal counselor making \$5,000 a month. The agency is working to recruit the remaining two positions the law prescribes: an engineer and an analyst, the latter of whom will come in the form of a community relations official, said Jarema. They're looking to fill those spots "as soon as practicable," she said. (Benjamin Brown, THE INSIDER, 02/24/15).



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## BOARD OF DIRECTORS MEETING MINUTES: January 22, 2015 By Susan Kelly, Section Secretary

Roll Call: Alex Rutledge (Chair), Madeline German (Vice Chair), Susan Kelly (Treasurer), Joanna Harbison (Secretary), Paul Weaver (Past Chair), Sue Buchannan (Field Trip Chair), Bridget Doyle, Adam Phillips (Social Committee Chair), Jennifer Bauer (Advisor), Jennifer Thomas (Newsletter Editor), Rick Kolb (Student Liaison and Advisor)

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

### Annual Carolina Section Treasurer's Report

AEG Carolina's section is doing well. Sponsor money is still coming in.

Options for section meeting sign up and payment-continuing evaluation of Eventbrite for larger events like conferences, and using Paypal for smaller events like meetings and field trips. Currently using a card reader for onsite, worked well and people were pleased with being able to pay with a credit card instead of cash or check only.

### January 21 Meeting at Dave & Buster's in Concord

Had over 60 attendees, about a dozen of which were students

Meeting financials not available as of board conference call

Cindy Woolery, the recipient of the OEST Award, attended the meeting

### Raleigh Section Meeting

April 16, 2015 at Natty Greenes in Raleigh

Meeting announcement should be ready by March 1<sup>st</sup>.

Speaker will be Eldon Gath, Earth Consultants International, Santa Ana, CA and is the 2014-2015 Jahns Lecturer

2014-2015 Jahns Lecturer

Everyone should have received the draft schedule prepared by Rick Kolb. Due to conflicts he will not be visiting Applachain State or Western Carolina. Will now be visiting UNC Charlotte.

Need driver volunteers especially to Tennessee and back to North Carolina.

AEG Carolinas will cover his travel expenses.

### Social Committee

Looking for ideas for a spring social event. Suggestions are another brewpub social, or sporting events such as the Charlotte Knights, Charlotte Checkers, or Greensboro Grasshoppers baseball.

Looking for events that might be in a central location for most members.

Best days for an event would be Tuesday, Wednesday or Thursday. Have to consider the time of event as well.

### Sponsorship Drive

Potential sponsor Red Dog Driller. Was talking to Alex about scholarship opportunities.

Possibly having sponsors support a student, possibly set something up where a student can shadow a sponsor.

We received several sponsor checks at Concord Meeting

### Membership Drive

Currently have 107 active members

Eric Cross preprinted tags for Concord event (Member and Guest tags) so that we can easily identify non-members and discuss the benefits of membership with them.

Now using Constant Contact to email members for renewal.

### Newsletter

GeoNews - Spring edition

Meet our Members section have bios for Adam and Sue Buchannan

Ken Taylor may have a possible story about the new

(Continued on page 15)



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(Continued from page 14)

coal ash rules, good topic due to coal ash spill.

#### Social media

LinkedIn account, in the process of getting edit rights to get this account going.

#### Carolina's Section Scholarship

**A motion was made to accept and implement the draft Carolinas Scholarship Fund Charter, and the motion was passed by the board with zero dissenting votes or abstentions.**

The Charter will be amended in the future to add a history of Carolinas Section; Charles Welby will be contacted for update.

#### 2019 Annual Meeting in Asheville

Venue has been reserved.

Gary Rogers will coordinate with other groups to increase attendance.

Bridget will hold a half day planning session.

Will send out an email for people who want to join the volunteer committee.

#### Carolinas-Sponsored Symposia Ideas for 2015

The Carolinas Section would like to have a conference/symposia every year or every other year

Contest labs to hold symposia about the coal ash regulations.

Geochemistry groundwater short course.

Bill Deutsch can offer half day courses in Charleston if the cost is reasonable.

Bill Deutsch to offer two course on groundwater geochemistry in Raleigh.

Look into remediation courses offered.

Start up a funding foundation to have funding for more conferences.

Need to consider the guidelines, which are currently under revision at a national level, for distribution of conference surpluses.

Another VI Conference - section will do majority of the work involved.

Some charter money is available for specialty conferences, with the surpluses of those conferences to be split between the section, the foundation, and the association.

#### The Potential for an Extra Section Meeting each Year

Time frame would be in August in Raleigh where majority of the members are located.

September is busy for the section: association meetings and one of our section meetings are in September.

We would need to find an additional speaker.

Would likely use a different venue and to incur less cost.

Possibly a lunch meeting, would cost less but how many professionals outside of Raleigh would be

able to make it.?

Have to take into account the number of student attendees based on when school starts back in session.

This would result in two Raleigh meetings being back to back.

Discussed doing this one year and evaluate success and possible future implementation on a regular basis.

#### Sponsor Articles for Newsletter

Some articles drafted by Section sponsors could be construed as marketing for the sponsor instead of quality professional content.

The Board does not want GeoNews to turn into one large advertisement. Need to establish guidelines on sponsor article submission and open this opportunity up to all sponsors or none at all.

Decided that the Board should have final approval on which articles get accepted for the newsletter. Articles, regardless of originator, should have quality informational or professional content to be accepted for inclusion in GeoNews. Articles deemed to be primarily for marketing purposes will not be included in GeoNews.



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## ANNOUNCEMENTS

### Changes to EPA Rules

On February 19, 2015, the US EPA released the proposed 2015 Method Update Rule (MUR) for 40 CFR Part 136 in the Federal Register. Comments are due to the US EPA on the proposed rule by April 20, 2015. 40 CFR Part 136 identifies acceptable analysis methods for industries and municipalities that are required by regulations promulgated under the Clean Water Act to analyze the chemical, physical, and biological components of wastewater and other environmental samples.

Included in the proposed 2015 MUR are:

- Revisions to Methods 608 (Organochlorine Pesticides and PCBs by GC/HSD), 624 (Purgeables by GC/MS), and 625 (Base/Neutrals and Acids by GC/MS),
- Minor corrections to several microbiological methods,
- New versions of many Standard Methods and ASTM Methods,
- A handful of new methods, and,
- Changes to the procedure for determining the method detection limit (MDL).

These changes will affect much of the regulated community and we recommend contacting your preferred lab for details on what specific impacts this could have for your environmental work.

### Groundwater Professionals of North Carolina Meeting and Annual Golf Tournament June 18-19, 2015

Social - Thursday, June 18<sup>th</sup>; 5:30 – 6 PM

- Speaker to be determined -

Hampton Inn & Suites - Southern Pines / Pinehurst  
200 Columbus Drive, Aberdeen, North Carolina (910) 693-4330

Golf – Friday, June 19<sup>th</sup>, 2015

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- ❖ Archaeological – Graves, Foundations, Artifacts
- ❖ Non-Destructive Evaluation – Concrete / Rebar Mapping, Void Detection
- ❖ Unexploded Ordnance Detection – Digital Geophysical Mapping



## ANNOUNCEMENTS

### Carolinas Section to Offer Two Short Courses on Groundwater Geochemistry

The Carolinas Section plans to offer one-day short courses, *Introduction to Groundwater Geochemistry* and *Intermediate Groundwater Geochemistry*. Bill Deutsch of Geochemistry Services in Port Townsend, Washington will be the instructor. He presented these two classes at the annual meeting our section hosted in Charleston in 2010, and the section feels there is sufficient demand to offer the courses again. We will hold these classes at The Frontier in Research Triangle Park on Monday and Tuesday, October 5 and 6. The introduction class will be on Monday and the intermediate class will be on Tuesday. At press time, we had not yet established a cost for the courses, but will do our best to make it affordable (e.g., by using The Frontier, which is free, and convenient to I-40), with a discount if you sign up for both courses and a discount for public-sector employees. Tuition will include lunch each day and a social on Monday evening after the class ends at 5:30 or so. Our courses will provide CEUs. We will finalize details in a future announcement and in the summer and fall newsletters.

(continued from page 9)

We greatly appreciate all the help and support that has allowed more casing and screen to be sent into Haiti. I know all of the Lifewater Haiti staff on the ground in Cap Haitien are also very grateful for the support and so are the Haitian people. These are remarkable, inspiring people who do wonderful things under difficult circumstances to try and provide clean water to the people in Northern Haiti. Thanks again for your help, it really does make a difference.

Geologic Exploration and another section sponsor, SAEDACCO of Ft. Mill, will donate well supplies for our new effort, primarily well screen based on Doug's and Susan's appeal, and the Carolinas Section will again pay for transportation and import duties to support Lifewater's efforts. During our shipment in 2014, we were surprised to discover that the Haitian import duties alone exceeded over \$1,000. Therefore, we are making a request of section members to donate to a special fund to pay for the transportation and duties to ship the well supplies to Haiti. Would you like to help us in this effort? If so, send a check payable to AEG Carolinas to Dave Dunclee at Dunclee & Dunham, P.O. Box 639 in Cary, NC 27512. Dave will kick off our section's effort with a short presentation at the spring section meeting in Raleigh, where you can also donate at the door.



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## CALENDAR OF EVENTS - 2015

### *Geological Events in the Carolinas*

Courtesy of AEG Carolinas Section – [www.aegcarolinas.org](http://www.aegcarolinas.org). Last updated December 21, 2014

Send updates/corrections to Rick Kolb, Duncklee & Dunham, [rick.kolb1@gmail.com](mailto:rick.kolb1@gmail.com)

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

**Date: Tuesday, April 7, 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 CDM; 5400 Glenwood Avenue, Suite 300; Raleigh

Details: [www.rtpewb.com](http://www.rtpewb.com)

**Date: Tuesday, April 14, 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/](http://www.ncblg.org/meetings/)

**Date: Tuesday, April 14, 2015**

Event: Presentation at Furman University, Greenville, SC

Speaker: Eldon Gath, Jahns Lecturer

Topic: Natural Hazard Identification, Impact Analysis, and Risk Assessment for Community Disaster Mitigation Planning

Location: 12:00 noon, Plyer Hall, free

**Date: Tuesday, April 14, 2015**

Event: Presentation at UNC-Charlotte

Speaker: Eldon Gath, Jahns Lecturer

Topic: Quantitative Kinematic Investigation of the AD 1621 Pedro Miguel Fault Rupture for Design of the Panama Canal's Borinquen Dam

Location: 4:00-5:30 PM, McEniry Hall 125,

UNC Charlotte, free

**Date: Wednesday, April 15, 2015**

Event: Presentation at UNC-Asheville

Speaker: Eldon Gath, Jahns Lecturer

Topic: Natural Hazard Identification Impact Analysis, and Risk Assessment for Community Disaster Mitigation Planning

Location: 11:30 AM, Robinson Hall 138, free

**Date: Wednesday, April 15, 2015**

Event: Presentation at East Tennessee State University

Speaker: Eldon Gath, Jahns Lecturer

Topic: Natural Hazard Identification Impact Analysis, and Risk Assessment for Community Disaster Mitigation Planning

Location: Room 210, Ross Hall Conference Room, 5:00-6:30, free

**Date: Thursday, April 16, 2015**

Event: Presentation at Guilford College

Speaker: Eldon Gath, Jahns Lecturer

Topic: Engineering Geology: An Overview of the Profession

Location: 11:30, Frank Science Center 205, free

**Date: Thursday, April 16, 2015**

Event: Presentation at NC State University

Speaker: Eldon Gath, Jahns Lecturer

Topic: Natural Hazard Identification Impact Analysis, and Risk Assessment for Community Disaster Mitigation Planning

Location: 3:30 PM, Jordan Hall 1132, free

(Continued on page 20)



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(Continued from page 19)

**Date: Thursday, April 16, 2015**

Event: Spring Meeting of the Carolinas Section of AEG

Speaker: Eldon Gath, Jahns Lecturer

Topic: Quantitative Kinematic Investigation of the AD 1621 Pedro Miguel Fault Rupture for Design of the Panama Canal's Borinquen Dam

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

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

**Date: Thursday, April 16, 2015 (meetings are held on the third Thursday of the month)**

Event: Meeting of South Carolina Association of Environmental Professionals

Topic: In situ remediation through injection

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

Location: Pine Island Club, Lake Murray, 150 State Road S-32/754, Columbia

Contact: Pete Byer, pbyer@saedacco.com

**Date: Friday, April 17, 2015**

Event: Presentation at Wake Technical Community College

Speaker: Eldon Gath, Jahns Lecturer

Topic: Natural Hazard Identification Impact Analysis, and Risk Assessment for Community Disaster Mitigation Planning

Location: 9:00, Pucher-LeMay Hall 241, free

**Date: Friday, April 17, 2015**

Event: Presentation at UNC Chapel Hill

Speaker: Eldon Gath, Jahns Lecturer



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Topic: The Santa Ana Mountains: Indenter Tectonics and the Earthquake Hazards of "The OC"

Location: 12:00 noon, Martin Lounge of Mitchell Hall, free

**Date: Tuesday, May 5, 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 CDM; 5400 Glenwood Avenue, Suite 300; Raleigh

Details: www.rtpewb.com

**Date: Thursday, May 21, 2015 (meetings are held on the third Thursday of the month)**

Event: Meeting of South Carolina Association of Environmental Professionals

Speaker: TBA

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

Location: 6:30-8:00, Owens Airport, 1400 Jim Hamilton Road, Columbia

Contact: pyber@saedacco.com

**Date: Tuesday, June 2, 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 CDM; 5400 Glenwood Avenue, Suite 300; Raleigh

Details: www.rtpewb.com

**Date: Thursday, June 18, 2015 (meetings are held on the third Thursday of the month)**

Event: Meeting of South Carolina Association of Environmental Professionals

Speaker: TBA

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

Location: 6:30-8:00, Owens Airport, 1400 Jim Hamilton Road, Columbia

Contact: pbyer@saedacco.com

**Date: Thursday, June 18, 2015**

Event: Summer Meeting, Ground Water Professionals of North Carolina

Speaker: TBA

Cost: Cost \$25, includes appetizers and two drink tickets

Location: Hampton Inn & Suites, 200 Columbus Drive, Aberdeen

Details: 5:30 social, 7:00 dinner, 8:00 presentation

Contact/RSVP: hcampbell@esclabsciences.com

**Date: Friday, June 19, 2015**

Event: Ground Water Professionals of North Carolina Annual Golf Tournament

Cost: Cost \$50, includes golf and lunch

Location: Legacy Golf Club, 12615 U.S. 15, Aberdeen

Details: Shotgun start, time TBD

Contact/RSVP: Haynes Campbell, hcampbell@esclabsciences.com

**Date: Tuesday, August 11, 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: September 19-26, 2015**

Event: AEG Annual Meeting

Location: The Wyndham Grand Hotel, Pittsburgh, Pennsylvania

**Date: Friday, October 2, 2015**

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

Location: McKimmon Center, NC State University, Raleigh

Details: www.ncblg.org/examination/

**Date: Tuesday, November 17, 2015**

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

Location: Starts at 9:00 AM; Guilford College, Greensboro; morning session open to the public

Contact: www.ncblg.org/meetings/

**Date: September 18-24, 2016**

Event: AEG Annual Meeting

Location: Kona, Hawaii

**Date: September 9-18, 2017**

Event: AEG Annual Meeting

Location: Denver, Colorado

**Date: September 15-25, 2018**

Event: AEG Annual Meeting

Location: San Francisco, California

**Date: September 15-22, 2019**

Event: AEG Annual Meeting

Location: Renaissance Hotel; Asheville, North Carolina



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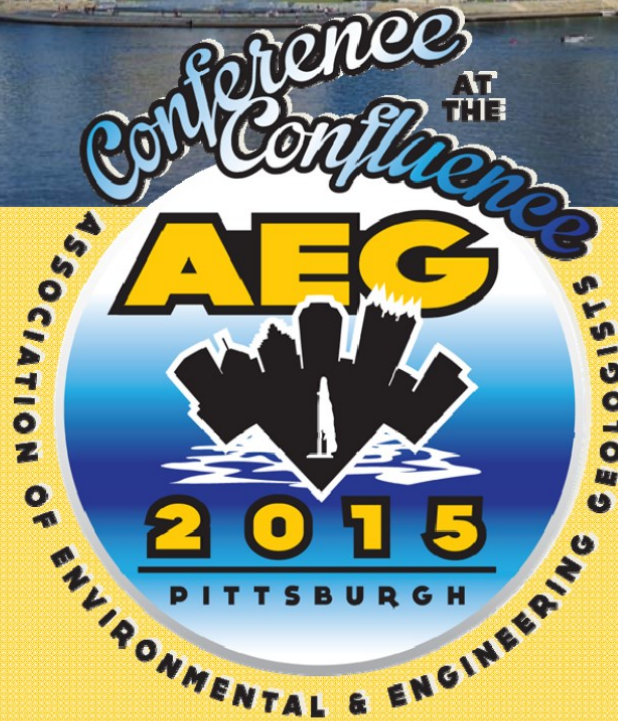
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# Join us at AEG's 58th Annual Meeting

September 19 - 26, 2015

HOSTED BY THE ALLEGHENY-OHIO SECTION



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-Carolinas Section



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**Spring Field Trip**  
**Reed Gold Mine, Midland, North Carolina**  
**Saturday, April 11, 2015, 9:45am to 3:00pm**

**Where:** Meet at Reed Gold Mine: 9621 Reed Mine Road, Midland, NC

**Cost:** \$20 for members and non-members, FREE for students and children (8 years and older)

**Field Trip Registration Deadline:** Monday, April 6, 2015

**Field Trip Waiver:** Please sign/date and return field trip waiver

**South Carolina Continuing Education Credits:** 4 credits for field trip participation

**Field Trip Leaders**

Reed Gold Mine Staff will guide the group tour through the underground mine and historical structures on the site.

Phil Bradley is the Senior Piedmont Geologist for the North Carolina Geological Survey. He has 17 years of experience in project management and technical oversight in geological sciences including groundwater and soil investigations, geoscience education, and geologic mapping. His main duties involve geologic mapping in the Piedmont of North Carolina.

Heather Hanna is a Geologist for the North Carolina Geological Survey. Her responsibilities include Piedmont geology and bedrock mapping. When not in the field Heather Hanna and Phil Bradley are involved in creating geologic maps as part of the STATEMAP Project, public outreach in the geosciences, and forensic geology.

Phil Bradley and Heather Hanna will be hosting a geology tour of the Reed Gold Mine site and explaining the history of the local geology.

**Field Trip Summary**

The Reed Gold Mine is a historic underground and above ground gold mining site that dates back to 1799 when the initial discovery of a 17lb gold nugget at Little Meadow Creek was found by a twelve-year old boy named Conrad Reed (son of John Reed). Later in 1803, John Reed and three partners supplied a few slaves to work in that area and a slave named Peter found a 28lb nugget in the same creek. By the 1830s, the above ground mining process on the Reed property advanced to work underground focusing efforts along quartz-rich veins that host gold. The stamp mill at the Reed Gold Mine represents the machinery used in the 1890s on mining site. By 1912, underground mining ended at the Reed Gold Mine and this site was later donated to the state of North Carolina in 1971 and became a historic site by 1976.

The Reed Gold Mine visitor center features exhibits of gold, the geology of gold, mining technology, and equipment. There is also a library that features materials on gold mining and Reed family genealogy.



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Association of Environmental & Engineering Geologists – AEG



Hiking trails, monuments and outdoor exhibits are also features of this historic site. Trails cross load and placer above ground mining areas and archaeological sites. The Lower Hill Trail features “Talking Rocks” that describe the mining activities at Reed Gold Mine and the local geology. Historic mining machinery and an area on Upper Hill has the chimney and restored foundations of the 1854 mill house.

Any of you have gold fever? Well here is your chance to pan for gold. A panning area will be open to the group during this trip. The Reed Gold Mine staff will teach the group on how to pan for gold flakes that have been found in the sediment dug out from nearby Little Meadow Creek.

After the Reed Gold Mine activities, Phil Bradley and Heather Hanna plan on taking the group on a short 45 min to hour walk along the above ground workings, looking at rock types and discussing the structural geology.

### Field Trip Logistics

The field trip will begin at 10:00am on Saturday, April 11, 2015, at the Reed Gold Mine (9621 Reed Mine Road, Midland, NC). Parking is available at the Reed Gold Mine. AEG will not be supplying bus transportation for this field trip. Attendees are expected to be ready for the tour by **9:45am** so the Reed Gold Mine staff can give a brief summary of the tour's features.

From 10:00am to 12:30pm, the group will be guided through the underground and above ground mining trails and features. Lunch is scheduled for 12:30pm at the Reed Gold Mine. Box lunches will be provided. After lunch, the group will be guided along a forest hiking trail for approximately 1 mile, to stop at the local rock outcrops. Snakes, ticks and chiggers will be alive and well, and wearing a good set of field boots is recommended. Be prepared for the weather, as most of this field trip and the lunch picnic tables are outside. The field trip is expected to end by **3:00pm**.

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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](http://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.

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

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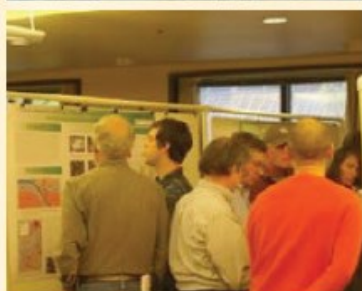
My signature attests that, to the best of my knowledge, I meet the academic and practice requirements for the membership class I have requested and that all entries on this application are true and correct. I also authorize AEG to charge my credit card for the dues payment, if I selected the credit card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

Connecting Professionals, Practice and the Public



## Student and New Graduate Member Application

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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!**
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### Application Form

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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:

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Email: [contact@aegweb.org](mailto:contact@aegweb.org); Website: [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.

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Web Page: Acknowledgement on the AEG Carolinas Section Web Page, [www.aegcarolinas.org](http://www.aegcarolinas.org), with a link to your site.

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

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(Continued on page 29)

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