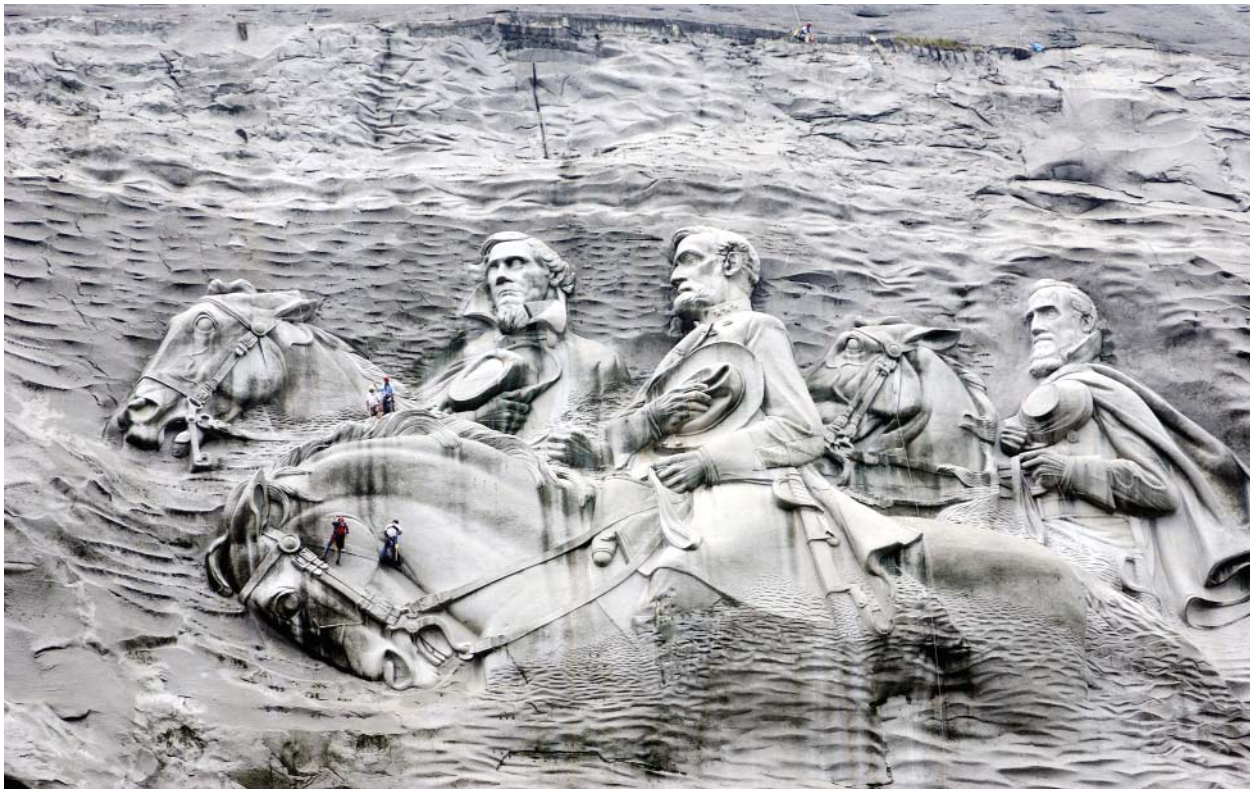


AEG NEWS

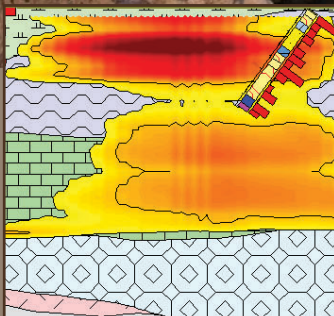
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March 2010

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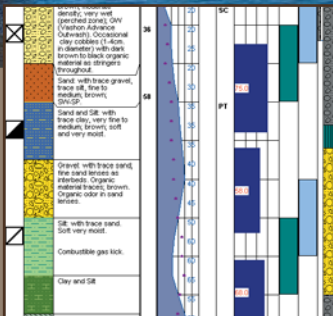
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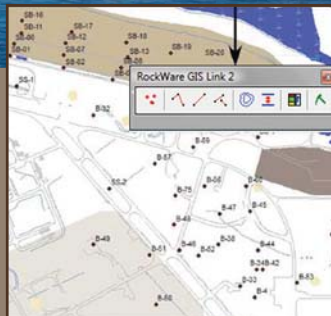
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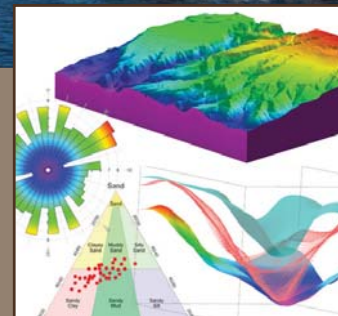
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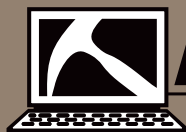
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AEG NEWS

ASSOCIATION OF ENVIRONMENTAL & ENGINEERING GEOLOGISTS

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Submitting Materials to the AEG NEWS

Methods of submission are listed below in order of preference:

1. Send files via email, preferably as attachments, to both email addresses above. Optimum file format is MSWord 2004 or earlier. Users of other software programs should convert their file to ASCII or text only. Short pieces can be embedded within the email text.

2. Images should be sent as separate files in jpeg or tiff format.

Questions? Contact Andrea Ptak at 206-725-9169/aptak5118@aol.com.

3. The policy of AEG NEWS editorial staff is to limit the credentials of an individual to one academic degree and one professional registration/license. For example, if John Smith has a MS, a PhD and a PG plus a CEG and a CGWP, his credentials would be limited to John Smith PhD, PG, the two principal credentials. BS/BA and MS degrees will not be recognized. No effort will be made by the AEG NEWS editorial staff to determine if individuals whose credentials are missing from the submitted copy actually have academic or professional credentials, nor will the staff verify the existence or correctness of the credentials submitted.

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TABLE OF CONTENTS

News of the Association	2
The President's Message	2
Treasurer's Report	3
Headquarters' Report	4
Communications Report	4
AEG Foundation News	5
Committee Reports	6
AEG Photo Contest Winners	7
Focus on AEG Student Members	8
News of the Profession	10
Update of California Geology Board Status	10
Calendar of Events	12
News: Congressional Visit Days, IL Professional Geologist Licensing Act, Call for Papers, Mega Projects of NYC, Book Review, AGI Earth Science Week Contest Winners	13
Professional Contributions	15
Early Update on the Port-au-Prince, Haiti, Earthquake of 1/12/2010	15
LiDAR Analysis of an Urban Alluvial System: Jordan River, UT	20
Issues in Professional Licensure	23
The HomeFront	29
New Members	45
Renewing Members	46
Index to Advertisers	19

ON THE COVER

The winners of the 2009 AEG Photo Contest. See the full story on page 7.

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On the Road

Duane E. Kreuger, 2009–10 President

O start this message with a summary of my travels. In November, I visited the Allegheny-Ohio Section, where 13 of us dined at the Spaghetti Factory in Pittsburgh, where the lasagna is bigger than your head. Thanks to **Nichole Wendlandt** and **Paul Hale** for their assistance. The next day, I presented to over 50 students and professors at Kent State University. Thanks to **Abdul Shakoor** and his graduate students for the campus tour and lunch. In December I visited the Washington Section, where 28 of us, including 3 students, enjoyed the libations at Piccoras Pizza in Seattle as part of the Section’s Annual Holiday Meeting. The next day, I presented to the Oregon Section at Buster’s BBQ in Portland (this was real BBQ). Five students braved the rain to bring the meeting total to 22. For my Northwest trips, I could not have done it without the help of **Mark Molinari**, **John deLaChapelle**, **Tom** and **Dorian Kuper** and **Mike Marshall**.

In mid-January I participated in the Texas Section’s Winter Meeting. I presented to over 60 people including 5 students. My presentation was followed by excellent presentations by Mike Lemonds (see **Paula Jo**) and Marisol Palomares (see **Cynthia**). After that, we went on a five-hour field trip, “Impact of Hurricane Ike on an Engineered Coast,” led by Texas A&M graduate student **Eric Stiffler** and his advisor, AEG Past President **Chris Mathewson**. I realize one of our biggest responsibilities as geo-professionals is to educate the public. For dinner, we re-assembled at Gaidos Seafood Restaurant to enjoy Jahns Lecturer **Dr. Paul Marinos** present on the *Geology of Athens, Greece*. My sincerest thanks go to **Paula Jo Lemonds** and **Kristen Scheller** for coordinating my Texas trip. In late January, the Executive Council convened in Denver for our Annual Winter Meeting. Friday, I presented to 20 members of the Rocky Mountain Section and guests at a catered buffet dinner at AEG headquarters. Then, Strategic Planning Committee Chair **Paul Hale** joined us for the weekend as we conducted Association business, planned for the future, and, of course, we dined at the Buckhorn Exchange.

Now, let’s talk about the AEG. I recently approved the Senior Emeritus Member designations for **Joe DeBeer** (South Africa), **Fred Kulhawy** (New York–Philadelphia), **Richard Moberly** (Kansas City–Omaha) and **Razi Quraishi** (Southern California). I am also pleased to report on the revitalization of the Lower Mississippi Valley Section (**Donna Schmitz**) and the Southeastern Section (**Martha Carr**, **Matt Howe** and **Rick Kolb**). I will be visiting both Sections. As you may be aware, our 2009 Slogan Contest Winner was **Abdul Shakoor**, with *AEG–Geology in Practice*. For his winning entry, Dr. Shakoor receives one year of free Membership. Thank you to all Members who submitted their ideas for a slogan, as the Strategic Planning Committee wanted to know what our Members think the AEG’s role is or should be. Our New Member Campaign Drive resulted in several new Members, and the top two New Member recruiters are **Jenn Bauer** and me, and we will receive one round trip air fare ticket on Alaska Air (courtesy of **Paul Metz**) or Southwest Airlines (courtesy of **Tim Bryan**).

Next, I have several updates related to our communications efforts, and my personal thanks go out to Director **Allen Shaw**. First, we anticipate *Environmental & Engineering Geoscience (EEG)* will be available electronically to our Members and journal



R to L: Duane Kreuger and Members Marie Garsjo and Paula Jo Lemonds along the Gulf Coast on the field trip. Photo courtesy of Cynthia Palomares.

R to L: Duane Kreuger and Member Nichole Wendlandt at the Mount Washington overlook, Pittsburgh, PA. Photo courtesy of Nichole Wendlandt.



subscribers soon. Also, the editors of the journal are always looking for contributions for publication. I encourage you to check out a copy of *Living with Unstable Ground*, an outstanding resource we co-sponsored the publication of with the American Geological Institute. I also ask you to check our website at www.aegweb.org for its new look (coming soon) and tell us what you think. You can also find a link to my blog (<http://aegpres2010.blogspot.com>). My last communication note is related to the demographic survey that we included with the Membership renewals last year. Most of our new Members reported that they first heard of the AEG through a colleague. So let’s keep talking.

Attention Student Members...

...don’t forget you get one year of free membership after graduation, just let AEG HQ know. Also, AEG has numerous materials we developed to help students, and they are all available on our website. I encourage all of you to check out the site the Student and Young Professionals Support Committee created on Facebook (New Geologist).

We are pleased to report that we will join other groups for the GeoCoalition meeting in June, 2010 to discuss issues relating to the geological engineering practice. And, we ask our Members for help as we unveil our new Advertising Campaign.

Mark your calendars for two of the outstanding events we have planned for 2010: the May 13–15 Shlemon Conference on “Modern Subsidence, Sea-Level Rise and the Future of the Gulf Coast” in Galveston, TX (**Cynthia Palomares**), and the September 20–25 Annual Meeting in Charleston, SC (**Briget Doyle**).

2009 and 2010 Fiscal Years

Jennifer Bauer, 2009–10 Treasurer

2009 Fiscal Year

The Executive Council (EC) held its quarterly meeting in Denver, January 22–24. Much of our time and energy was focused on AEG’s finances. While in Denver, we met with a financial advisor at Fidelity, met with our accountant from Anton Collins Mitchell LLP (ACM) for a review on reading financial statements and other important information about our finances, reviewed draft financials from FY 2009, and we discussed the 2010 and 2011 budgets.

As you recall, early last year AEG’s fiscal year changed to match the calendar year, so our most recent fiscal year ended in December 2009. After a review of the draft FY 2009 financials, it appears that last year’s activities have left us with a healthy surplus, mostly due to conservative spending and a very successful Annual Meeting. Initial membership revenue numbers show that while we are only at 87% of our budgeted goal, membership revenue was up 4% from 2008 actuals.

A review of our Treasurer’s Reserve showed us that the value of our investments has increased 9.9% since January, 2009. In November, 2009, the EC reallocated some of AEG’s investments into funds that better balance our portfolio with our goals. The Fidelity financial advisor introduced a portfolio management tool that will provide guidance in choosing funds and allocating cash accordingly to match our investment growth goals. To formalize our goals and help direct future AEG leaders, the EC, with help from the Finance Committee, is drafting an investment policy for the Board of Directors to review/approve at the mid-year meeting in St. Louis.

Our accounting firm conducted the FY 2009 audit during the week of January 24–29. I will include audited financial numbers in the next issue of the *AEG NEWS*. These numbers will also be reported to the Board at the mid-year meeting.

2010 Fiscal Year

The Board approved budget for 2010 is a balanced, yet ambitious one. It focuses on member programs, and it fully funded committee requests, including the Strategic Planning Committee. To meet the goals outlined by this budget, we will need to ensure our membership revenue remains constant with, if not exceeding, that of 2009. As of January 20 this year, membership revenue is down 8% from January 20, 2009. We need your help in this regard. Begin by taking a co-worker to a Section meeting to introduce them to AEG, sponsor a student membership, or call a lapsed member to remind him/her to renew. It will take action by all members to ensure the health and longevity of the Association.

Our advertising and sponsorship goals in the 2010 budget are quite ambitious, yet achievable, as well. To aid with this effort, the Advertising/Sponsorship/Exhibitor Committee was created at the Annual BOD Meeting. This committee has developed “packages” for our contributors, bundling the variety of ways they can support AEG (see sidebar). This committee needs your help as well. If you have a flair for convincing vendors to show their support for your interests, please consider joining this committee, or at least pass on to them the ways they can contribute to AEG.

The final contributing factor to meeting our 2010 budget is continuing to save on expenses where possible. As you read in the

December 2009 *NEWS*, *Environmental & Engineering Geoscience (EEG)* will be going electronic in 2010, saving AEG printing and shipping charges. We also hope to minimize return shipping postage by asking all members to ensure that the address AEG has on file is up to date. Log on to the website to verify this information, or contact AEG headquarters (aeg@aegweb.org).

I’m looking forward to working toward these goals, but the Board and the Executive Council can’t do it alone. We will need all members to take the necessary small steps individually to make a large impact collectively. Feel free to contact me if you are interested in volunteering, or if you want more details regarding our current financial position.

AEG Sponsorship and Advertising Packages – NEW for 2010

Show Your Support and Spread the Word for AEG

Platinum Plus Exhibit Package **\$5000**

Includes complimentary half page ad in all six issues of the *AEG NEWS*, Website advertisement, and exhibit booth at the Annual Meeting; \$250 is used to help a student attend the Annual Meeting with special recognition for the Donor at the Annual Meeting.

Gold Plus Exhibit Package **\$3380**

Includes complimentary quarter page ad in all six issues of the *AEG NEWS*, Website advertisement and exhibit booth at the Annual Meeting.

Silver Plus Exhibit Package **\$2400**

Includes complimentary eighth page ad in all six issues of the *AEG NEWS*, Website advertisement and exhibit booth at the Annual Meeting.

Platinum Plus **\$3800**

Includes complimentary half page ad in all six issues of the *AEG NEWS*, Website advertisement; \$250 is used to help a student attend the Annual Meeting with special recognition for the Donor at the Annual Meeting.

Gold Plus **\$2180**

Includes complimentary quarter page ad in all six issue of the *AEG NEWS* and Website advertisement.

Silver Plus **\$1200**

Includes complimentary eighth page ad in all six issues of the *AEG NEWS* and Website advertisement.

Platinum **\$1000**

Recognition in all six copies of the *AEG NEWS* and \$250 is used to help a student attend the Annual Meeting with special recognition for the Donor at the Annual meeting.

Gold **\$500**

Recognition in all six copies of the *AEG NEWS*.

Silver **\$250**

Recognition in all six copies of the *AEG NEWS*.

For more information, contact Becky Roland at broland@aegweb.org or one of the members of the AEG Executive Council.

What Makes AEG Unique?

Becky Roland, AEG Chief Operating Officer

Whenever assessing the health of an organization and its strategic initiatives, the question of what one quality an organization has over all others is raised. It is important to know where the organization’s strengths lie, and where there are opportunities to advance. But it is even more important to know what sets the organization apart.

For AEG, I would argue that the personal networking is a unique quality that not many other organizations have. When I talk to members, students, spouses and guests and ask them what they enjoy most about AEG, almost everyone notes how easy it is to meet new people and learn more about the profession.

I have been around a number of organizations, and never have I seen such an open and welcoming atmosphere as I do at AEG meetings. For those students who may be reading this, I can guarantee you that any AEG member you introduce yourself to will be thrilled to hear about your studies and what you would like to specialize in.

I often hear the Annual Meeting being compared to seeing family (that you like). Even on the shuttles from the airport, you

often run into people who are going to the conference and they soon become friends that you keep in touch with. If you have not attended an Annual Meeting yet, this year’s meeting in Charleston, SC, is waiting for you.

I am also intrigued at how many members got involved in AEG because someone they knew and/or respected asked them to attend a meeting and get involved. Word of mouth is the most powerful marketing. I encourage each of you to invite one person to the next Section Meeting or to join the organization. Share AEG with others!

Maybe it’s the passion for the work you do, or maybe it is because AEG members do so many interesting projects, that no one day is the same. All I know is, I love getting to know you.

AEG posts the latest information on the abolishment of the California Board of Geologists and Geophysicists in News of the Profession in this issue and at www.aegweb.org. You can also get more information at capg-inc.com.

Communications Activities

Allen V. Shaw, Communications Director

This issue of *AEG NEWS* has a lot of promise with member profiles of students at three levels (undergraduate, Master’s and PhD candidates) being interviewed. The request for nominees to be interviewed resulted in nearly 50 names submitted for consideration. At this time, the selections for interviews have not been made so I’ll be surprised when I read the layout proofs in a couple of weeks.

We continue to evaluate taking AEG’s journal, *Environmental & Engineering Geoscience (EEG)*, totally electronic. This is not a simple task as we want the electronic files to be available to the members and subscribers through the AEG website and to be searchable. Simply placing a pdf of the final layout proof on the webpage is not sufficient. Since the lead time for *EEG* is a couple of months, we need to follow-through with the typescripts already in the printing process.

It is late January as I write this and at least some members have been surprised to receive their 2009 Annual Report actually in January. At 160 pages, it is nearly four times the normal size of a *NEWS* issue. Thanks to **Becky Roland** and her team for getting the copy out and to **Andie Ptak** for the layout so our deadline could be made. **Jenn Bauer** not only is AEG Treasurer but also the Communications Manager and performed copyediting in a most timely way. This was a team effort all the way!



The webpage update is progressing. Those members who log on to the AEG webpage regularly have seen the updates already. There is a Facebook page as well under the direction of the Student and Young Professionals Committee, co-chaired by **Serin Duplantis** and **Nichole Wendlandt**.

The search for professional papers for publication in *EEG* and for technical news articles for *AEG NEWS* is never ending. Articles on geohazards, a better way of doing fieldwork, or a case history that will interest the membership are welcomed! The Haitian earthquake and the article on LiDAR are not only interesting but timely. Photos for publication in the *NEWS* must be high resolution so they will print well, 300 dots per inch (dpi) is the minimum resolution we can print, so set your camera at the appropriate resolution before you shoot. We are getting many more photos submitted than we used to for the *NEWS*. With *EEG* going electronic, we will publish more color photos than we can now. Take a look at these publications on the webpage and see what full color looks like.

AEG NEWS Disclaimer

Authors alone are responsible for views expressed in signed articles. Advertisers and their agencies are solely responsible for the content of all advertisements printed and also assume responsibility for any claims arising therefrom against the publisher. AEG and *AEG NEWS* reserve the right to reject any advertising copy.

New Board Builds on Success

Patty Bryan, President, AEG Foundation's Board

As the incoming President of the AEG Foundation, I would like to express my personal gratitude for the exemplary efforts of Past President **Greg Hemen**, the Board of Directors and committees. It has been a wonderful privilege to serve on the Foundation Board of Directors with such dedicated, knowledgeable and results oriented professionals.

I am pleased to introduce the current nine member Board of Directors: Treasurer **Jessica Humble**, Secretary **David Fenster**, Directors: **Scott Burns**, **Ed Church**, **Gregory Hemen**, **James May**, **Robert Tepel**, and our newest Director, **William Smith**.

The Foundation had an active and successful year and we continue to increase scholarship awards. Through the generous donation of Mrs. Cathryne Beardsley, the Beardsley-Kuper Field Camp Scholarship was established to fund field camp costs to undergraduates and post baccalaureate students on an annual basis. The first scholarship applications have been received and the first scholarship will be awarded this year. In addition, applications for the Marliave, Stout, Tilford Field Studies and Texas Section Scholarships have also been received and review of the applications by the scholarship committees is underway.

We encourage students to submit an abstract for the 2010 Charleston AEG Annual Meeting. To support student participation we also encourage students to apply for a Lemke Scholarship, which is a grant intended to offset part of the cost of participating in the AEG annual meeting. **The deadline for the Lemke Scholarship application is May 7, 2010.** Recipients will be notified in advance of the meeting and will be included in the meeting program.

Other important Foundation milestones include the successful completion of a full audit of finances by outside accounting firm, Anton Collins Mitchell LLP, and prompt completion our previous fiscal year taxes.

In addition, the GeoScience Internet Library (GIL) took another step forward. The GIL concept was approved by the Foundation and aims to provide online important vintage reports, out-of-print state and federal documents, AEG special reports, and many other works such as biographies, memorials or interviews of respected leaders of their fields.

With the 2010 Charleston AEG Annual Meeting fast approaching, the AEG Silent Auction Committee is hard at work. This year we are seeking donations to the Annual Meeting's Silent Auction to benefit the Lemke Scholarships. Look for more infor-

OUR MISSION: To advance science, scholarship and education in environmental and engineering geology for the benefit of all.

mation from the committee in the near future and help us make the 2010 Charleston AEG Annual Meeting Silent Auction an unprecedented success!

This year promises to be as active and rewarding as previous years. I look forward to continuing the Foundation efforts to improve awards and increase scholarships, and to continue our quest for running a transparent organization.

Other initiatives for this year include improving the website to make scholarship opportunities more evident to students, adding electronic applications for all scholarships for fiscal year 2010–11, and increasing the emphasis on marketing and development of the AEG Foundation within and outside of the AEG community. The AEG Foundation Board of Directors and committees will be hard at work pursuing our mission: *To advance science, scholarship and education in environmental and engineering geology for the benefit of all.*

Funding Opportunities for Students

AEG Foundation will soon be announcing the 2010 Beardsley-Kuper, Marliave, Stout, Texas Section and Tilford Scholars, and is proud to be able to assist several students with much needed funding to complete their studies in environmental and engineering geology. And there is more great news – there is still opportunity available to students for 2010.

The Lemke Scholarships are provided through the Lemke Fund, which was created by a bequest received in 2007 from the estate of Richard W. and June T. Lemke. The fund name honors the memory of Richard W. Lemke (1913–2003) and June T. Lemke (1919–2005) and supports the scholarly and professional development of student members of the Association of Environmental and Engineering Geologists by awarding grants intended to offset part of the cost of attending and

participating in scientific and technical conferences and association meetings. These grants are named “Lemke Scholarships” and may be awarded to students at the undergraduate or graduate levels. Awards will be made by the AEG Foundation to deserving student members who are sole author or first author of a paper or poster that they personally present at the AEG Annual Meeting.

AEG Foundation encourages students to present at the 2010 AEG Annual Meeting in Charleston, SC, this September, and apply for one of the Lemke Scholarships.

Lemke Scholarship deadline is earlier this year—**May 7, 2010**—for the 2010 Annual Meeting in Charleston.

Go to www.aegfoundation.org for an application or to learn more about AEG Foundation. You can also donate online at www.aegfoundation.org to any of the AEG Foundation Funds.

Call for Book Reviews for Environmental & Engineering Geoscience

Richard Jackson, Associate Editor, Book Reviews EEG

For those interested in reviewing newly-published reports and books for our journal *Environmental & Engineering Geoscience (EEG)*, I am now looking for reviewers for the following:

- *Continental Intraplate Earthquakes: Science, Hazard and Policy Issues*, GSA Special Paper 425;
- *Stratigraphic Analyses Using GPR*; GSA Special Paper 432;
- *Management and Restoration of Fluvial Systems with Broad Historical Changes and Human Impacts*, GSA Special Paper 451;
- *Earth Science and the Urban Ocean: The Southern California Continental Borderland*, GSA Special Paper 454;
- *Geological Monitoring, GSA Manual developed with the Geologic Resources Division of the US National Park Service*;

COMMITTEE REPORTS

Licensure Committee Available to Assist with Licensing Issues

Ken Neal, Chair

The AEG's statement on geologist licensing/registration posted on our website reads as follows: "The Engineering Geologist, Environmental Geologist and/or Hydrogeologist, in partnership with other involved professions and disciplines, must bear a share of the responsibility where the works of man interact with the geologic environment insofar that geologic principles are used in the investigation, evaluation and prediction of surface and sub-surface water and contaminants, waste management, aggregate production, and geologic hazards; and in the evaluation, planning, design, construction, operation, and maintenance of fixed engineering projects. The Association of Environmental & Engineering Geologists promotes the licensing of Geologists, Engineering Geologists and Hydrogeologists in each state by appropriate registration laws that rely on experience and examination. Uniformity in registration or licensure throughout the United States is to be strived for, in order to promote reciprocity based on equitable education, experience and examination, similar to that recognized between most states for the engineering profession." (Modified from the AEG Policy Statement on Registration for Engineering Geologists, adopted by the BOD October 13, 1987)

In September, the Licensure Committee was established as an operating committee. Our Charter Statement/Purpose reads as follows: "The Licensure Committee's primary function is to provide the Association with guidance and support in its implementation of the AEG Policy on Licensure." We are now available to help implement this policy by providing assistance to local sections in dealing with licensure/registration issues. Some of the services we can offer include, but are not limited to, the following:

- *Field Geology Education*, GSA Special Paper 461;
 - *The Rock Physics Handbook: Tools for Seismic Analysis of Porous Media*, by Mavko, Mukerji and Dvorkin, 2nd Edition, Cambridge University Press;
 - *The Cambridge Handbook of Earth Science Data*, by Henderson and Henderson, Cambridge University Press;
 - *Applied Geostatistics with SGeMS: A User's Guide*, by Remy, Boucher and Wu, Cambridge University Press; and
 - *Engineering Geology for Tomorrow's Cities*, Geological Society of London Engineering Geology Special Publication 22.
- Let me know if you are interested (rjackson@intera.ca).

Call for Papers...

Environmental & Engineering Geoscience encourages the submission of papers, including case histories, review papers, short technical notes and results of original research, for publication. Authors should go to <http://eeg.allentrack.net> to submit a manuscript and to the www.aegweb.org for "Instructions for Authors."

- providing consultation to help sections understand the legislative process;
- helping sections to avoid pitfalls previously experienced by past efforts;
- locating existing reference articles, model bills, and other documents that may assist with bill preparation;
- assisting in development of legislative content and language needed to have an effective registration/licensing law;
- providing help in understanding how to negotiate the local political environment and how to fit effective language into local political or agency legislative formats;
- providing guidance on how to set up and monitor a fund-raising effort to cover lobbying and other expenses; and,
- for those states where licensing laws currently exist, providing suggestions on how to deal with sunset laws and other issues.

We currently can provide assistance in the form of telephone and e-mail discussions, providing reviews of existing or proposed legislation, providing examples of effective legislation, and developing checklists and other aids for use by local sections. AEG has not yet developed a budget for travel for face-to-face meetings, which will likely be needed under some circumstances. If you have any questions, comments, or need assistance, please feel free to contact me at kengneal@aol.com.

Committee Members:

Ken Neal, Chair – Washington

Kevin Coleman – Texas

Duane Eversoll – Kansas City-Omaha

Bill Godwin – San Francisco

Raymond Knox – Carolinas

Steve Mogilnicki – Baltimore-Washington-Harrisburg

Charles Nestle – Southern California

Ralph Weeks – Arizona

Mark Lassiter Submits Winning Photo for AEG's 1st Annual Photo Contest

The Advocacy Committee is pleased to announce that **Mark Lassiter** of A.E. Drilling Services, Inc. of Greenville, SC, is the 1st place prize winner in AEG's first Annual Photo Contest. Mark and his co-workers were on the Confederate Memorial at Stone Mountain, GA, inspecting the condition of the grouted seams on the dutchmen prior to installing new rock bolts for these dutchmen. Mark's prize is a free year of membership in AEG. Mark's photo, along with the second and third-place winning entries can be seen on the cover of this edition of the *NEWS*.

The Second Place winner was **Scott Bourcy**, who submitted a photo of a helicopter-supported drilling operation at the Colorado River Bypass near Hoover Dam from the Arizona approach. Scott's prize is his choice of a Special Publication from AEG. The Third Place winner was **Duane Kreuger**, who submitted a photo of a truck-mounted drilling rig working at the location of the new Mississippi River Bridge in St. Louis. Duane's prize is a \$20 gift card to the AEG Bookstore.

Over the past year we had asked members to submit photos representing AEG and the geologic profession. The Advocacy Committee reviewed 20 photographs submitted by six members from across the country, and the photos showed a similar geographic distribution. We developed criteria over the course of 2009 to judge each photo and determine the winners. The Advocacy Committee had quite a few submissions of good photos with no captions, which we couldn't judge because we didn't know what the photos were depicting.

Do you have some good photos from the field?

Announcing AEG's 2nd Annual Photo Contest

The Advocacy Committee announces that we are now accepting submittals for our 2010 Photo Contest. The winners will be announced at the 2010 Annual Meeting in Charleston. We plan to show the top three photographs from both the 2009 and 2010 contests at a location near the registration desk at this meeting, where everyone can see them. We have tentative plans to show the remaining submittals in the Hospitality Area at the meeting so that you can see all the entries and judge for yourself. As many of you know, our website is being overhauled. The new website will have many opportunities for posting photographs, and one of the reasons we instituted a photo contest was to collect photos for the website.

We invite you to submit your photographs for our 2010 contest prior to the August 15, 2010 deadline.

Until we have developed capabilities for submittals directly to our website, please email your photos to **Becky Roland** at broland@aegweb.org. In the email accompanying your photo, please include a few sentences or a paragraph that describe the photo. Pertinent information includes what the photo shows

(e.g., what engineering/environmental/geologic feature is depicted), orientation of photo (north, south, east or west), location where photo was taken (city/state, geomorphic feature such as a creek or mountain, or road), and the approximate date of the photo (at least the season and year if you don't know the date). Photos must be original material and suitable for web posting. Please note AEG's standard requirements for publishable photos: Photos must be high-resolution (300 dpi at a width of 7") so that they will print clearly. Please set your camera at the highest resolution and check the photo resolution before submitting it to AEG. AEG will credit the submitters. There is no limit to the number of photographs you can submit.

Prizes will be the same as last year: first prize, a year's membership in AEG; second prize, a Special Publication from AEG; and third prize, a \$20 gift certificate to the AEG bookstore.

Photo Ops for the *NEWS*

Do you have landslides, slope failures, sinkholes, mudflows, or other geohazards where you practice? If so, and you have the occasion to make a planned or unplanned visit to such a feature, please take your camera, set on high resolution, and take pictures. Send those photos with captions to Communications Director **Allen Shaw** at avshaw@bechtel.com and copy **Martha Kopper**, *AEG NEWS* Editor at kopper@sbcglobal.net. We will say thank you in print. If you send in text copy as well, you will receive our gratitude, print recognition, and a personal letter. Mudflows in California, landslides in Washington, sinkholes in Maryland and Texas are items we want to report in the *NEWS*.

Plate Technics #38

Rex Upp

Member **Dana Willis** is a traveling man! After his 3rd layoff from gold mining, he became an ex-gold geologist—hence the XAUGEO on his California Plate. He got a job with Exponent in the San Francisco area, but was transferred to their Washington office (the WA plate). In 2003 Dana went to work for Newmont Mining at their Midas Mine in northern Nevada (the NV plate). In 2008 he was transferred to their Colorado headquarters (and the CO plate) where he worked as a geostatistician on a large gold mining project in the Canadian Arctic. Since rejoining the mining industry, Dana is no longer exploring for gold, his first love, hence the license plates. (Dana also owns Plate Technics Plate #3 in the June 2001 issue.)



EDITOR'S NOTE: AEG's Student Members are as varied a group as our professional members. Beginning with this issue, we feature three members (undergrad, MS candidate and PhD candidate) and what AEG membership means to them.

Focus on AEG Student Members

Andrea Leigh Ptak

Undergrad, University of Alaska–Fairbanks Kyle Obermiller



Originally from Spokane, WA, Kyle Obermiller was looking for a student club at UAF related to his field of study. He found what he was looking for in his second semester, when he saw a flyer posted in the Geological Engineering Department for an AEG Student Chapter meeting. There was to be a presentation, officer elections for the following year, and a discussion about the trip to Boston for the 2006 AEG Annual Meeting. "During my first meeting there was a sign-up sheet to go to Boston, so I signed up and filled out the AEG membership application," said Kyle.

Kyle had been a member for less than a year when he took the trip to Boston with about 20 students and professors from the Chapter. It was his first trip to the East Coast. The Chapter covered all travel and expenses, including a per diem thanks to a fund specifically for that purpose. Students are strongly encouraged to present at the meeting in exchange for the sponsorship. Since then Kyle has made it to the meetings in Los Angeles and Tahoe, and hopes to present his senior design in Charleston.



Because the AEG Alaska Section is not very active, Kyle's involvement with the general group has been limited to the Annual Meeting. He makes up for it with his participation in the Student Chapter. "Over the time I have been involved with the Chapter I have held various positions such as Treasurer, Vice President, and President," notes Kyle. I have also helped set up a field trip to a permafrost tunnel and been an annual volunteer at Engineers Week—an open house to increase awareness and interest in engineering among grade school students and within the community." And, just to make sure the Chapter was not all about business, Kyle helped bring back the Chapter's annual pig roast successfully for three consecutive years now.

The number of students in the Chapter fluctuates between 10 and 20. Most are undergrads, with a few graduate students. The group tries to meet every other week, and usually invites professors or industry professionals to speak. In the Fall, Student Members present about their summer internships. The Chapter advisor, Margaret Darrow, is always there as well as a few other professors.

Kyle appreciates the networking benefits of AEG membership. "Each year at the Annual Meeting I meet new students and professionals that I might someday get the chance to work with as a practicing engineer. It's always exciting to get to see the various engineering projects being taken on by the professional members and how they overcame their engineering challenges. When I first joined I didn't even know what exactly a geological engineer did, but now I look forward to when I will someday be a professional working on my own projects.

Kyle also found his mentors through AEG. "The Geological Engineering Department here at UAF has four professors (Scott

Huang, Margaret Darrow, Debu Misra, and Paul Metz) and all are members of AEG. Because our department is relatively small you really get to know your professors and vice versa. They always wanted to know if I understood the concepts being taught and were always willing to help if I didn't. They encouraged me to join AEG, to do undergraduate research, and to present at conferences. Without their mentorship I wouldn't be where I am today."

After Kyle finishes his undergraduate degree, he plans to continue at UAF for his masters. "After my masters I would like to get a job here in Alaska as a practicing professional engineer," says Kyle. When that day comes, we hope Kyle will continue his efforts as a member of the AEG Alaska Section.

MS Candidate, Geology, California State University–Fresno Anna Glen Brody

As an undergrad at the University of Rochester in New York, Anna Brody did not have much contact with industry. "That changed completely when I arrived at California State University, Fresno," says Anna. "I originally heard about AEG from John Wakabayashi during my first semester. However, I did not join until a year later while enrolled in Engineering Geology with Christopher Pluhar, who would later become my advisor."

"I didn't have a clear idea of a MS project when I first arrived at Fresno State. I initially thought I would concentrate on a petrologic analysis of hotspots. In Spring 2007, the Geology Department was searching to fill three faculty positions and allowed students to interview the visiting candidates. I talked to Chris. He was intense and engaging, and mentioned the idea of teaching an Engineering Geology class. It caught my interest and would later evolve into a MS project. At Chris' suggestion, I signed up for AEG. In January 2009, when the idea of establishing a chapter began to circulate, I became one of the pioneer student members in the San Joaquin Valley Chapter."

"What initially caught my attention about AEG was the diversity of the membership, which was favorable for someone



just learning about industry. Students at Fresno State can take a 10-minute drive to attend Chapter meetings and get the opportunity to meet with local professionals. This networking would not have been possible had the San Joaquin Valley Chapter not been started. The Chapter now has between 10 and 15 Student Members attending the meetings."

“My primary role in the Chapter is composing and editing the monthly newsletter for distribution. This involves continual dialogue with the Chair and often hours of editing. However, I enjoy the ‘challenge’ and the reward of communicating with the Chapter. Recently, I have been working with our Faculty Advisor to get the AEG Student Chapter at Fresno State more active.”

Anna has found the scholarship opportunities as an AEG member to be most beneficial. “Completion of field work for my thesis would not have been possible without the financial support of AEG. I received a Graduate Scholarship from the Sacramento Section in April 2009 and the Norman R. Tilford Scholarship this past October. In addition, the networking opportunities within AEG are excellent—the 2010 Directory is always well within reach!”

Anna notes that her “...best experience of being an AEG member has yet to occur! This upcoming May, I have been asked by Yosemite National Park Geologist **Greg Stock** (who is on her thesis committee) to present my research in Curry Village for a Sacramento Section field trip. It is a tremendous opportunity to be able to share my thesis work with members of AEG, as it will bring my work to the attention of people outside Fresno State community.”

“I am very interested in mass-wasting, particularly in the analysis and mitigation of rock-fall and landslide events. My current thesis research involves quantifying post-glacial talus deposition in Yosemite Valley. To assess the accuracy of the GIS analysis, we used shallow surface geophysical methods to evaluate the depth of the bedrock-talus interface—seismic refraction, 2D-resistivity, and ground penetrating radar. The combined geophysical information will allow for an assessment of the GIS techniques, and, ultimately, a more detailed understanding of post-glacial rock fall frequency and magnitude in Yosemite Valley.”

AEG has also been a source for mentors for Anna. “I have found several: **Jerome V. DeGraff**, **Greg Stock**, and **Chris Pluhar**. Each has been an integral part throughout the completion of my thesis work from the start.” Anna hopes to be a mentor one day herself, especially to young women who want to excel in the field.

Anna expects to complete her degree by the Summer of 2010. “I plan on obtaining a job that will utilize the skills gained from my thesis work. I am very interested in the application of geophysical techniques in an industry setting.” Industry recruiters take note.

PhD Candidate, University of Nevada, Reno Stephanie Watts

Stephanie Watts might be considered an AEG legacy member as her father, **Skip Watts**, is a long-time member of the BWH Section. She didn’t join, however, until she went to the University of Nevada, Reno (UNR) to get a masters degree in geological engineering. “It seemed like the time,” says Stephanie, “especially since there was a student chapter and an active local section.”

Since Stephanie is able to attend both Student Chapter and Section meetings, she sees the benefits of both. “The student meetings are usually field trips or when a speaker comes. The Section meeting has a lot more socializing, specifically at the meeting. Members of the Student Chapter see each other all the time.

“Recently I’ve been a co-President of the UNR Student Chapter. I’ve attended meetings held by the Great Basin Section, and they’ve been really great in helping us organize fun and fantastic field trips.”

As to whether or not she recommends a student attend both groups’ events, Stephanie says, “Definitely. If you’re interested in



Stephanie and “John Mackay,” one of the kings of the Comstock and the namesake of the Mackay School of Mines.

working in the area where the meetings are, it’s good for networking and getting yourself on the radar. You also get a nice cross section of seeing how people apply what you’re learning.”

Stephanie applied for about a dozen scholarships last spring and “...got a pretty refined product by the last few. So the process helped me make each applica-

tion better.” She was rewarded for her efforts with a number of wins, including two from the AEG Foundation: the Lemke Scholarship that offset her costs to attend the AEG Annual Meeting in Tahoe, and the Norman R. Tilford Field Study Scholarship. The Tilford Scholarship assisted her work on her PhD dissertation that focuses on slope stability and looks at large scale, seismically-induced lateral spreads, comparing failures that occurred through cohesive material to those through noncohesive material.

In addition to the scholarship benefits of AEG membership, Stephanie says, “I’ve really appreciated the opportunities to present my research to a supportive and constructively critical audience at both Section and Annual Meetings.”

But it’s the sense of community brought by the AEG members that most impresses Stephanie. “At school we take a lot of classes with civil and mining engineers and geologists, but it’s clear that the geological engineers share a special knowledge base. At the Section meetings, the students get to see real people applying geology and engineering. They [the members] are always excited to see students, more than happy to give career advice or tell us about a project they’ve been working on, and check in on how the students are coming along.

“Annual meetings are the best reunion ever! It’s like having an extra set of uncles and aunts. And now that a lot of my closest friends from UNR have graduated and moved on to the ‘real’ world, it’s also a highlight to catch up with them in person.”

Stephanie can trace her interest in slope stability back to her first Annual Meeting. “That first one was a wonderful eye-opening experience—seeing all of the slope stability projects. It was exciting to see how many people were doing it professionally.”

As for finding a mentor at AEG, Stephanie looks to her father and relies on advice from her advisor and AEG member **Bob Watters**, noting, “When things get tough or confusing my first go-tos are Bob and my dad.”

Upon completion of her formal schooling, Stephanie will begin an internship with ExxonMobil, secured through an on-campus interview. After that, the world—especially those unstable slopes—is her oyster. “We’ll see what happens,” says Stephanie.

If you know an outstanding student member of AEG, please send their name, student status, Section or Chapter, and contact information to AEG NEWS Production Manager, Andrea Ptak at aptak5118@aol.com.

Update of California Geology Board Status

Peter Thams, Chairman, Southern California Section

The influence of the elimination of the California Geology Board and inclusion within the Board of Professional Engineers and Land Surveyors (BPELS) has national significance to all practicing geologists in the US. Some states have no licensure, others are seeking licensure, 28 states have licensure with combined geology/engineering Boards, and many have independent Boards, as was the case in California until late 2009. AEG recognizes the significance of this process and has supported the development of CAPG, a newly formed California Association of Professional Geologists that has been so instrumental in “steering” the reformulation of the Board combining engineers and geologists while maintaining representation, authority, and historical data through the transition. While AEG must maintain legal separation to follow non-profit organization protocol, we promote the further development of licensure in the US by policy and are supporting CAPG all we can by providing local resources, communication forums through AEG, and the declared support of AEG to further their success.

We ask two things of all members. First, get involved in your state whether it is to improve licensure in your resident state or seeking the best possible representation and authority in the newly merged California Board. Second, contact CAPG and provide your financial support for legal fees so that they can effectively assist us in seeking the best possible representation in the merged Board of engineers and geologists through legal action as our lever to success. The outcome of this process will in many ways define the model of future geology licensure Boards and possibly the reformulation of existing Boards throughout the US. Everyone should be aware that this issue is not confined to California. We are already seeing assaults on Boards of licensure in other states. Oregon Governor Theodore Kulongoski recently submitted a list of Boards to be merged and/or eliminated to the state legislature that included both geologists and engineers. If mergers and eliminations are in fact necessary or prudent it must be a transparent and well thought out process, not a last-minute deal to get a budget passed as it was in California and may be happening in Oregon. We need our members to be informed and involved in what appears to be a national trend to consolidate government functions!

For more information, go to the California Professional Geologists blog, a related website, at californiapg.ning.com or contact by email: **Peter Thams**, thams.peter@gmail.com; **Charles Nestle**, CNESTLE@dpw.lacounty.gov; **John Pfeifer**, jpfeif@sbcglobal.net; or **Jared Pratt**, jpratt@rghgeo.com. Be certain to let them know also how much you appreciate their involvement in the past months in seeking the best possible outcome of the CA Board merger!

California Geology Board Status Summary

There has been a good deal of activity regarding the transfer of responsibility for the Geologists and Geophysicists Act (Act) to the Board for Professional Engineers and Land Surveyors (BPELS) addressed as follows.

Professional Engineers in California Government (PECG) Assembly Bill 1431

The employee union PECG, who represents geologists working for the state, has sponsored a bill to put one additional member on BPELS, requiring that person to be licensed under the Act, and change the name of the Board to include geologists and geophysicists. This bill was carried through the Assembly by Member Hill from the Bay area, and passed by a vote of 68 to 0 on the Assembly floor on January 27, 2010. The bill now must clear the Senate and be signed by the Governor to become effective. AEG representatives, **John Pfeifer** from the Sacramento Section, **Erik Olsberg** from the San Francisco Section, and I, met with Assembly Member Hill’s staff along with PECG’s lobbyist in December to discuss amending the bill to include at least two persons licensed under the Act, a geologist and a geophysicist. We were told at that meeting that no amendments would be considered until the bill passed the Assembly, but once that happened they would work with us to amend it as Senate bill, and so we’ll see if that can be accomplished. Getting an amended bill through the Senate may be doable, but getting the Governor to sign it is another story. According to Steve Baker, PECG’s lobbyist, the Governor is opposed to adding public members to the Board, which would be a necessary component of the amended bill, since current law requires an equal or greater number of public members to be professional members. This could go a couple of ways: we could get the bill amended and the Governor could refuse to sign it (quite possible), or we could just let the PECG bill go through Senate as written, in which case the Governor will likely sign it, but it will be inadequate for our needs.

We needed to think a bit about how to approach the necessary amendments to AB 1431, and came up with a few options. We’ve included those options below. The option we’ve chosen to pursue maintains the size of the Board at thirteen members (the unamended PECG bill increases the size of the Board to fourteen—opposition to it on this basis was discussed by BPELS), and this is accomplished, of course, by replacing two positions currently held by engineers with a geologist and geophysicist. As with everything we have pursued throughout this process, this option has its critics, but curiously enough only from the geologic community thus far. There appears to be concern that requesting this would cause outrage from the engineering community and derail all efforts to reform the Board to accommodate geologists. I have not seen any evidence that this is likely to occur, in fact, at the January 27, 2010 BPELS meeting, Geotechnical Board Member Jim Foley, offered that since he will be termed out in July, his seat might be a good one to be reallocated for geologists. I think we should give the engineering community a little credit and assume that given sound justification and a logical explanation we can count on their support.

Options:

BPELS is currently made up of five engineers, one land surveyor, and seven public members. Of the engineering disciplines, the three practice acts are represented and two

represent title acts from other branches of engineering. If we were to request parity on this basis, we would ask for four members to represent our two practice acts and two title acts. This would, in turn, require at least three additional public members and four if you want to have an uneven number on the Board. This option has zero chance of even finding an author to carry the legislation and the Governor would veto it if it passed. So to achieve parity, the obvious thing to do is to replace the two title acts currently on the Board with representatives of the two practice acts from the Geologists and Geophysicists Act. Engineers still maintain a majority of technical members on the Board and all practice acts regulated by the Board, including the land surveyors, would then have a representative on the Board. There is really no logical argument to oppose this, although some have questioned the need to have a geophysicist on the Board due to the relatively small number of licensees. In my mind, the relatively small size of the regulated community is justification in itself to have a member on the Board where they would otherwise be insignificant. Furthermore, the Boards are required to have more public members than professional members so that the professions can't dominate the Boards and override the interests of the public in favor of the profession; the concept of limiting the influence of any particular profession is already in play. Anyone concerned that the engineering community will suffer by losing two seats on the Board should consider a few things 1) the budget allocated to administration of the Engineer's Act is roughly ten times that of the geologist's act, 2) geologists have lost their entire Board and 80% of its staff, and 3) it gives BPELS a stronger footing in sunset review hearings coming up in 2011.

The replacement option is attractive on all levels. It is fair, it achieves the Governor's desire to consolidate regulatory functions, and it does not increase the size of the Board. Putting all these things together it should be relatively easier to get support for this in the senate and ultimately the Governor's signature.

Preliminary Injunction/Writ of Mandate/Declaratory Relief

Legal action to overturn Assembly Bill AB 1431 continues. The hearing on injunctive relief was rescheduled to March 15, 2010, to see if an agreement could be reached that would address concerns with regard to representation on the Board and operations/representation at the staff level within BPELS. So far no agreement has been reached and a recent proposal was rejected because it required legislative remedies. In the meantime, the Attorney General's office has filed a demurrer, which was scheduled to be heard on February 9, 2010. The demurrer is basically a request to have our case dismissed and its filing is pretty much automatic in cases against the state. In responding to the demurrer, we will have

the opportunity to have our basic arguments heard in court, and if we prevail through this process we will know that we have a case and will be in a much stronger position going forward. On the flip side, the process could result in our case being dismissed by the court. At least then we will know where we stand. We have exercised our right to amend our complaint, which will take the February 9th meeting off of the calendar and will be rescheduled. The petition for the Preliminary Injunction will be abandoned, since the Board and staff are already gone (at the time of this writing), and a request for Writ of Mandate to re-establish the Board will take its place.

Potential Settlement Agreement

An amended settlement agreement was sent to membership that details our demands of BPELS in terms of administering the Geologists and Geophysicists Act. After the January 27, 2010, BPELS meeting, **John Pfeiffer**, **Bruce Hilton**, and I met with BPELS Executive Officer, Dave Brown and Counsel, Gary Duke, to discuss the settlement agreement. It was a good meeting and we were able to reach agreement on most issues. If the Work Force Study (currently underway and anticipated to be complete this week) recommends additional staff and includes licensed professionals, we will have the basis for settlement agreement. Given reasonable assurances that the recommendations of the Work Force Study will be included in a Budget Change Proposal and approved, we should be able to settle the lawsuit and revisit the issue of reestablishing an independent Board through legislation, sometime down the road and, hopefully, under a more friendly administration.



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Upcoming Events for 2010

APRIL

Thurs., April 8
Micropiles Seminar: Industry Trends & Developments
Toronto, Ontario Canada
www.dfi.org

Thurs., April 8
Second Virginia Geology Symposium
Charlottesville, VA
David.Spears@dmme.virginia.gov

Sun., April 11–Tues., April 13
GSA Joint Section Meeting
Branson, MO
www.geosociety.org/sectdiv/Northc/2010mtg/

Mon., April 12–Fri., April 16
Princeton Groundwater's Remediation Course
Las Vegas, NV
info@princeton-groundwater.com

Tues., April 13–Wed., April 14
Soil Engineering for Non-Soils Engineers and Technicians
Madison, WI
C. Allen Wortley, PE
wortley@engr.wisc.edu

Thurs., April 15–Fri., April 16
Slope Stability and Landslides
Madison, WI
C. Allen Wortley, PE
wortley@engr.wisc.edu

Wed., April 21–Fri., April 23
GSA Rocky Mountain Section Meeting
Rapid City, SD
www.geosociety.org

Wed., April 28–Thurs., April 29
Science Engineering Technology Congressional Visits Day
Washington, DC
elandau@agu.org

MAY

Wed., May 5–Thurs., May 6
Marcellus Shale Hydraulic Fracturing Conference
Pittsburgh, PA
www.aipg.org/Seminars/HFMS/Call_for_Abstracts_PA.pdf

Thurs., May 13–Sat., May 15
Roy J. Shlemon Specialty Conference: Modern Subsidence, Sea-Level Rise, and the Future of the Golf Coast
Galveston Island, TX
<http://aegweb.org/files/public/Call-for-Abstracts-01-20-10.pdf>

Tues., May 18–Wed., May 19
AEG North Central Section Presents: New World in Geophysics
Lisle, IL
Kevin Richards
kevinlaurie@sbcglobal.net
http://aegweb.org/files/public/NC_SEC_Geophysics_Workshop_brochure2.pdf

Thurs., May 27–Sat., May 29
GSA Joint Section Meeting Cordilleran Section GSA and Pacific Section AAPG
Anaheim, CA
www.geosociety.org

JUNE

Mon., June 7–Fri., June 11
Grouting Fundamentals and Current Practice
Colorado School of Mines Golden, CO
www.mines.edu/outreach/cont_ed

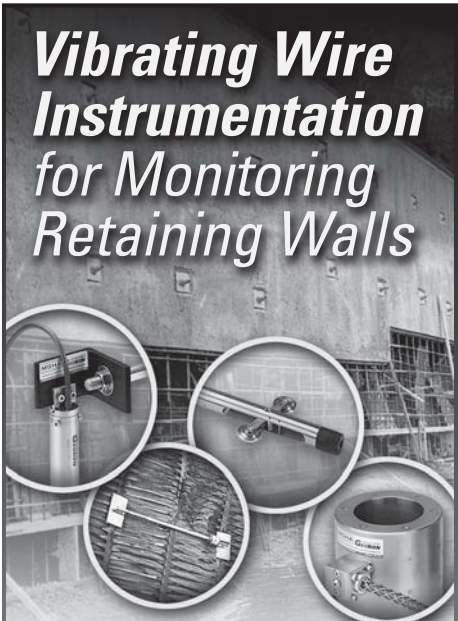
Tues., June 8–Wed., June 9
2010 ASDSO Training–Emergency Action Planning
Nebraska City, NE
www.damsafety.org

Thurs., June 10–Fri., June 11
DFI Presents: SuperPile 2010
New Orleans, LA
www.dfi.org

Tues., June 22–Thurs., June 24
2010 ASDSO Training–Advanced: Structural Behavior Monitoring
Charlotte, NC
www.damsafety.org

SEPTEMBER

Mon., Sept. 20–Sun., Sept. 26
AEG's 53rd Annual Meeting
Charleston, SC
http://aegweb.org/files/calendar/2010_Annual_Meeting_Brochure.pdf



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- **Inclinometers** } for monitoring ground stability
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For the latest information on upcoming events, go to www.aegweb.org.

Congressional Visits Need Citizen Geoscientists

Please come to Washington DC in April and/or September, 2010 for organized group visits with policymakers in the U.S. Congress.

Decision makers need to hear from geoscientists. Become a citizen geoscientist and join many of your colleagues for a workshop at the American Geophysical Union (AGU) headquarters followed by a day conducting visits with Members of Congress or congressional staff on Capitol Hill.

The visits will focus on the importance of geoscience research and development and geoscience education. Geoscientists will speak for these shared concerns with a unified message and can enhance the message by using examples from their professional work and experiences.

Science-Engineering-Technology Congressional Visits Day

April 28–29, 2010

Geosciences Congressional Visits Day

September 21–22, 2010

AGU and the American Geological Institute (AGI) support Congressional Visits Days in partnership with many other science and engineering societies.

For more information or to sign up, please contact: Elizabeth Landau, AGU Public Affairs, elandau@agu.org, or Linda Rowan, AGI Government Affairs, rowan@agiweb.org.

Call for Papers

Mega Projects of New York City – Geotechnical Aspects

Thursday, May 13, 2010

Hotel Pennsylvania – Manhattan, New York

Abstracts should be related to the geotechnical aspects of the investigation, design and construction of New York City construction projects worth in excess of \$1 Billion, for example: World Trade Center, Second Avenue Subway, No 7 Line, East Side Access, Fulton Street Transit Center, etc. The intent for each paper is to start with a project overview and then have follow-on presentations that focus on several of the more important geotechnical aspects of design and construction such as foundations, excavation support, underpinning or ground improvement methods specific to the project. Abstracts should not be longer than 500 words and related to the seminar topic. Authors whose abstract are accepted must submit a final paper and are required to attend and make their presentations in person.

More information about the seminar program and full instructions for the paper submission and format will be forwarded to the selected authors and will posted on the ASCE Met Section website <http://www.ascemetsection.org>.

Illinois Professional Geologist Licensing Act

A bill to amend the Illinois Professional Geologist Licensing Act is pending. The draft language is in the hands of sponsors (1/27/2010), and it is anticipated that it will be introduced soon. The amendment is written so as to allow recent graduates and/or students in the final semester leading to a degree in geology to take the fundamentals portion of the licensing exam (currently the ASBOG FG Examination). The language is written broadly enough that the ASBOG FG Exam could be used as an exit exam for graduating seniors if universities and colleges in Illinois would want to do that.

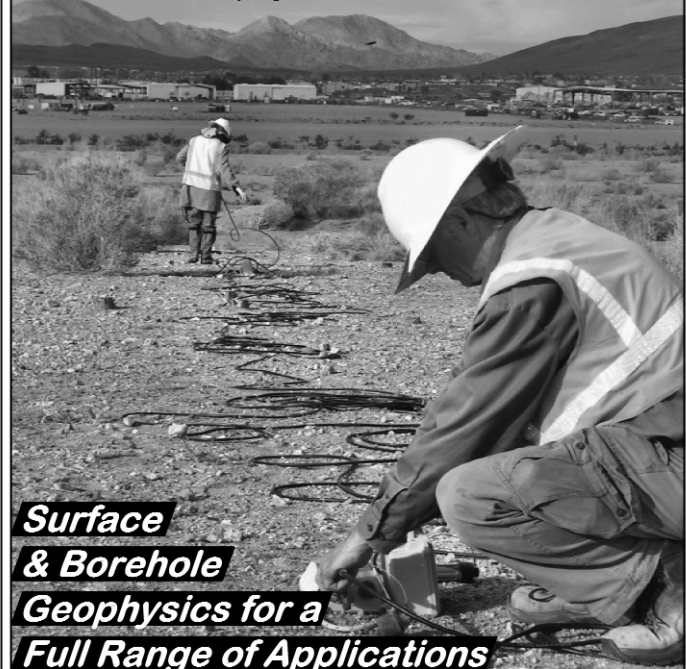
Last year, a similar bill was opposed by the regulating agency due to a lack of understanding, and the language was amended to provide for student interns, but the exam part was deleted. The reason for the change and the simplicity of operation of enrollment has been better explained to the agency, and they no longer oppose this bill. Candidates who pass the FG Exam will be enrolled as Geologist Interns for up to a maximum of ten years with renewal every two years up to that point or until they become licensed whichever comes first. Fee schedules will be established by rule after the Act is amended. Contact William Dixon at dixon@pec-inc.com.

Belong to other industry groups?

Send items for the News of the Profession section to *AEG NEWS* editor Martha Kopper at kopper@sbcglobal.net.

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Book Review

Geo-Strata: the ASCE Geo-Institute's Bimonthly

Reviewed by Richard Jackson, Associate Editor, Book Reviews EEG Intera Engineering Ltd., Heidelberg, Ontario, Canada

The professional home of our colleagues in the geotechnical engineering profession is the Geo-Institute of the American Society of Civil Engineers. While we might differ on occasion over professional territory or the state of geological training of geotechnical engineers, we share projects with them and the same principles of professional integrity. So it is that a window into the geotechnical engineering community is one that we should value. With this in mind, I undertook a brief review of *Geo-Strata*, the bimonthly publication of the Geo-Institute.

Each issue of *Geo-Strata* has a theme and approximately six short articles addressing topics related to that theme with an introductory Commentary on the theme. The January–February issue of 2009 addressed the Impacts of Mine Subsidence on Infrastructure. Several of these articles concerned problems of highway subsidence in areas of Pennsylvania that have been undermined. One was by AEG member **John Szturo** of Kansas City, MO, on the construction of an interchange over undermined areas in the Joplin, MO, lead-zinc region. All articles are short and well illustrated.

The March–April issue focused on Engineering Geology and contained articles by a number of AEG engineering geologists

such as **Jeff Keaton** (terrestrial photogrammetry), **Bill Haneberg** (modeling of discontinuous rock masses) and **Abdul Shakoor** (slaking of clay-bearing rocks). Lynn Yuhr's article on Site Characterization in Karst Using Surface Geophysics is an excellent review of the issues facing engineering geologists and hydrogeologists in karstic terrain. The Commentary to this issue was written by **Edmund Medley**, CEG, decrying the loss of use of the term Applied Earth Sciences, the former name of a splendid department at Stanford University, and the fission of AES into a half-dozen separate specialties from civil engineering through soil/foundation/rock engineering eventually to engineering geology. Dr. Medley also provides an insight into the state of geological training of geotechnical engineers: "How many recent Geotechnical Engineering graduates have even had a college course in Engineering Geology? By the way, saying 'I know enough geology to get by' does not count as an education in Engineering Geology, but is more likely an assured ticket to eventual ground failures." This is pretty seditious stuff for a publication of the ASCE!

Other issues of *Geo-Strata* this past year had themes addressing regional geotechnical properties of soils, pavement geotechnics, grouting and finally rock mechanics—all topics of interest to our profession. You can obtain a complimentary copy of this interesting magazine by contacting Linda Bayer, the Manager at the Geo-Institute [geo-strata@asce.org]. The cost of the Geo-Institute membership, including *Geo-Strata* magazine, is \$105/year. For information on Geo-Institute membership, refer to: <http://content.geoinstitute.org/members/membership.html>.

AGI Announces 2009 Earth Science Week And IYPE-ESW Contest Winners

The American Geological Institute is pleased to announce the winners of the 2009 Earth Science Week (ESW) competitions and the International Year of Planet Earth-ESW (IYPE-ESW) photo competition.

The ESW visual arts contest invited students in grade K–5 students to create two-dimensional artworks illustrating the theme "The Climate Where I Live." Taylor Joe Scott of Portsmouth, NH, won first place in the visual arts contest with a collage comparing landscapes, average sea levels, and wildlife in his area today and 100,000 years ago.

Grade 6–9 students participating in the essay contest wrote up to 300 words addressing the theme "Climate Connections." Shreyas Havaldar of Dix Hills, NY, won first place in the essay contest by writing about climate and changing seasons on Long Island.

Participants in the ESW photo contest submitted photos illustrating the theme "How Climate Shapes My World." Michael Badding of East Amherst, NY, won first place with his photo of melting ice. For all ESW contests, each first-place winner receives \$300 and a "Faces of Earth" DVD set.

This year, the separate IYPE-ESW photo contest asked participants to submit photographs illustrating the theme "Exploring Earth Science around the World." **Amy Spaziani**, a graduate student in Baton Rouge, LA, won first place in the contest for a photo featuring geology students examining soft sediment deformation during a field trip near the Guadalupe Mountains in west Texas. Spaziani wins a prize of \$500 and a Faces of Earth DVD set.

The second place winner, Cassidy Williams of Westland, MI, received \$300, while the third place winner Daniel McGrath of Boulder, CO, won \$100.

To view the winning and finalist entries in all ESW 2009 contests, visit <http://www.earthsciweek.org/contests/2009index.html>

Earth Science Week is an annual event held the second week of October to promote an understanding and appreciation of the earth sciences. It is organized annually by AGI with support from a number of other geoscience organizations, including the U.S. Geological Survey, NASA, National Park Service, and the American Association of Petroleum Geologists Foundation. To learn more about this event, please visit <http://www.earthsciweek.org/>.

The American Geological Institute is a nonprofit federation of 46 geoscientific and professional associations that represents more than 120,000 geologists, geophysicists and other earth scientists. Founded in 1948, AGI provides information services to geoscientists, serves as a voice of shared interests in the profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources, resiliency to natural hazards, and interaction with the environment.

NEWS wants News...

Send news from other organizations or sources that might be of interest to our members to **NEWS** Editor **Martha Kopper** at kopper@sbcglobal.net.

REPORT NOW AVAILABLE FROM USGS/EERI RECONNAISSANCE TEAM: The report from the USGS/EERI team that traveled to Haiti in late January is now available on the EERI website—this 50+-page report summarizes observations from a five-member team with expertise in seismology and earthquake engineering. The field study was conducted January 26 - February 3, 2010, and included investigations in Port-au-Prince and the heavily damaged communities to the west, including Léogâne, Grand Goâve, Petite Goâve, and Oliver. The report can be downloaded from the EERI Haiti Clearinghouse website: http://www.eqclearinghouse.org/20100112-haiti/wp-content/uploads/2010/02/USGS_EERI_HAITI_V1.pdf

Early Update on the Port-au-Prince, Haiti Earthquake of January 12, 2010

Robert Anderson¹, Alessandra Jerolleman² and Reginald DesRoches³

Background

This update was prepared on January 30, 2010, two-and-one-half weeks after the moment magnitude (Mw) 7.0 earthquake occurred 10 miles southwest of Port-au-Prince, Haiti (see Figure 1). The emergency response and rescue operations have been concluded and recovery operations are coming on line and being planned. Field teams so far have focused on the city of Port-au-Prince (estimated population of 2 million before the earthquake) and adjacent communities, as well as the cities Carrefour, Leogane and Jacmel.

Estimated Losses

As of February 15, 2010, the government of Haiti had estimated that there have been in excess of 112,000 fatalities and 196,000 are estimated to have been injured (Pan American Health Organization/World Health Organization, 2010), with one million persons displaced or made homeless as reported by the government of Haiti as of January 27. This is the largest natural catastrophe in terms of lives lost in the Western hemisphere outside of a pandemic. The current estimate of fatalities makes the January 12, 2010, Haiti earthquake the sixth most deadly earthquake known. It is expected that the total fatalities are higher, but the dead have not been recovered and accounted for in Port-au-Prince much less the rest of the area affected by the earthquake. The number of fatalities is greater than the 2008 Mw 7.9 Wenchuan, China earthquake and is on par with the loss of 130,000 persons in Sumatra from the 2004 Mw 9.3 Banda Aceh, Indonesia earthquake.

The total loss from the earthquake is not known yet, and the cost and length of the recovery period is also unknown, but is expected to take several billions of dollars and take many years for recovery/reconstruction. An early damage estimate by the Haitian Minister for Tourism, in charge of determining the extent of the damage, is \$3 billion, but may be much higher. This would mean that the total direct and indirect losses and recovery cost may be a significant percentage of the Haitian GDP, which in 2008 dollars was estimated to be \$6 billion.

Aerial and Satellite Imagery Activities

Aerial and satellite image analysis has been conducted on a preliminary level. Several satellites that were redirected over the area were used to gather a first-order estimate of the regions affected by the earthquake in accordance with international treaties on the use of satellites in times of disasters. Early aerial and satellite products including interferograms and coulomb stress models are available at the UNAVCO supersite: <http://supersites.unavco.org/haiti.php>.

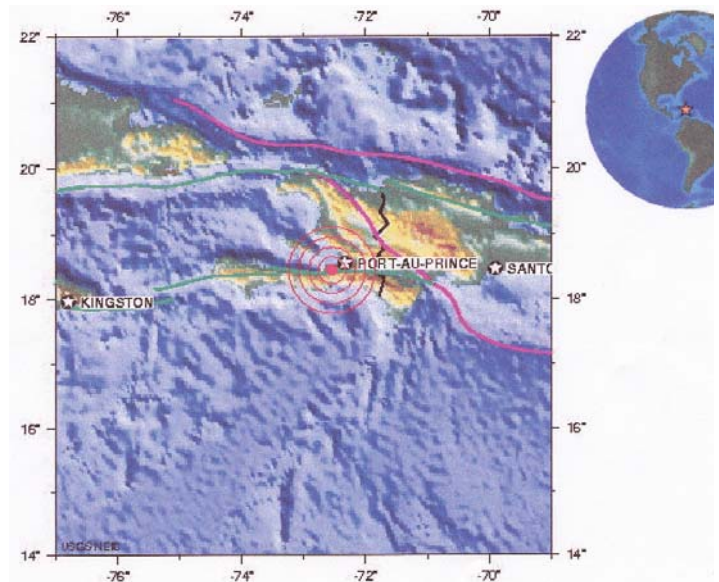


FIGURE 1. Map showing epicenter of earthquake with respect to Port-au-Prince, Haiti. Source: United States Geological Survey

The building damage assessment activities are in part assisted by volunteers who have been using GoogleEarth's GeoEye to view pre- and post earthquake aerial imagery scenes of Haiti. The use of volunteers through the Earthquake Engineering Research Institute (EERI) working with the World Bank and the Global Facility for Disaster Reduction and Recovery helped the World Bank Disaster Management Team conduct an early estimate of where buildings may have been destroyed or heavily damaged during the earthquake.

Complex Catastrophe

The Port-au-Prince earthquake is considered to be a complex catastrophe. A complex catastrophe is a national disaster that exceeds a country's resources to cope with on its own while the country is experiencing a political situation where the government is in this case is not stable without outside support in this case from organizations such as from the United Nations. The emergency response activities were managed by the government of Haiti, even though the country does not have a standing military, and only has a limited police force and emergency services capability. The government of Haiti was seriously disrupted by the earthquake with 13 of 15 major national government buildings heavily damaged or destroyed. Those buildings destroyed included the Presidential Palace, the Parliament building and the Ministry for Justice.

PROFESSIONAL CONTRIBUTIONS



FIGURE 2. Post earthquake picture of the Presidential Palace courtesy of Dr. Reginald DesRoches

Pre-earthquake medical emergency response capabilities were limited. During the earthquake an unknown number of police and emergency services and medical staff or their families were killed or injured. In addition, a number of police stations and hospitals and clinic were heavily damaged or destroyed (Figure 2). After the earthquake the government of Haiti transferred its emergency response and governing functions to a local police station. With the exception of local construction contractor's equipment, there was almost no heavy construction equipment that could be marshaled for use in emergency response and debris removal.

At the time of the earthquake, Haiti was still recovering from one tropical storm and three hurricanes that struck the country in 2008 and produced significant repeated damage and economic loss. The on-going recovery activities meant that many Non-Governmental Organizations (NGOs) had resources in country at the time of the earthquake, but that none of the NGOs had much extra capacity to respond to post earthquake emergencies.

Emergency response activities were complemented by search and rescue teams from many countries; however, many rescue and response activities are carried out by untrained civilian on a case-by-case basis. This will likely happen after a major earthquake in a major urban area.

Out-of-country resources for the emergency response period were supplied by the United States, the United Nations and as well as many countries, non-governmental organizations, businesses and individuals. As of today, aid is still making its way to cities and villages in the areas affected by the earthquake. Field reconnaissance of the health and welfare of Haitians in the areas affected by the earthquake including those areas who have accepted refugees is underway. As of January 30, 2010, there is no accurate assessment of the total number of buildings heavily damaged or destroyed due to the earthquake.

Recovery

Recovery operations including removal of disaster debris are underway. At present both governmental and NGO entities are laying out plans for the rebuilding of southern Haiti. It is critical that rebuilding be done in such a fashion as to minimize future damages from all natural hazards. These recovery planning activities are expected to take some time. The recovery period of the

country is not known, but has been suggested that it may take ten years or longer.

Building Codes and Enforcement

Haiti used the Caribbean Uniform Building Code prior to the earthquake; however, most buildings were not built to code or designed by engineers. Although several cities have engineers and building officials on their staff, code application and enforcement is thought to have been inconsistent. In addition, most residential and commercial buildings are built without code enforcement or quality control of essential building products, such as cement and concrete. It is also important to bear in mind the substandard living conditions of the very poor for whose housing stock building codes are largely irrelevant due to the lack of resources.

The intensity of the earthquake is shown on the SHAKE map from the USGS (Figure 3). The SHAKE map indicates that poorly built buildings would have been subjected to damage in the areas depicted in yellow-orange and well-built building in areas depicted in red would have been heavily damaged or destroyed. The PAGER Map by the USGS indicates that approximately 2 million experienced a modified Mercalli intensity (MMI) level of seven (MMI VII) or greater during the mainshock while CNN has indicated that up to 3 million Haitians were affected by the earthquake. An MMI of VII indicates that this intensity of shaking helped to enhance the severity of damage, fatalities and injuries.

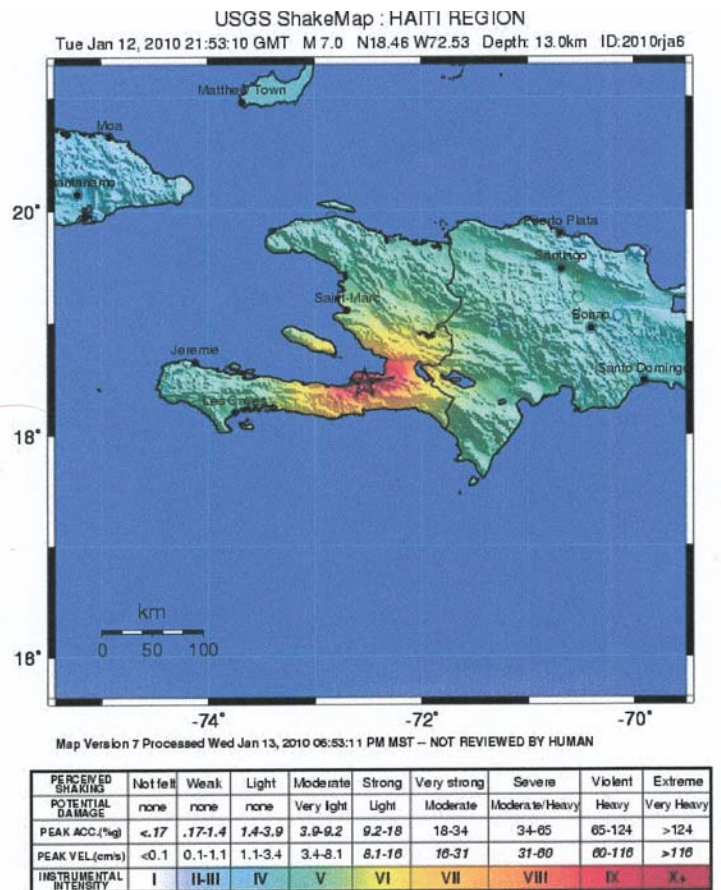


FIGURE 3. SHAKE Map for mainshock. The mainshock is denoted by the star on the map. Port-au-Prince is located to the right side of the tip of the star. Source: United States Geological Survey

At the time of this writing a field team comprised of members from the EERI, the Geo-engineering in Extreme Events Reconnaissance (GEER) team, Multidisciplinary Center for Earthquake Engineering Research (MCEER), the Network for Earthquake Engineering Simulation (NEES), the Applied Technology Council (ATC), and the U.S. Geological Survey (USGS) are in the country conducting a field reconnaissance of building damage and installing accelerometers while other engineers from Haiti and other countries are conducting building inspections and tagging buildings in accordance with the Applied Technology Council ATC-20 manual for buildings and structures.

Building Code Performance Milestone?

One example of building code performance is the case of the 12-story Digicel headquarters building in Port-au-Prince (Figure 4). The Digicel building was the tallest building in Port-au-Prince before the earthquake and should have had a different response to the motion experienced in down town Port-au-Prince perhaps from three causes:

- 1). the building was taller and had a different period of vibration than other much shorter buildings;
- 2). the building was built out of materials not used in the majority of low-rise buildings in Port-au-Prince (that may have used poor quality cement and concrete with a non-ductile concrete frame); and,
- 3). the Digicel building was built to unnamed U.S. Building Code practices, while buildings in Port-au-Prince that are built to any code are generally built to the Caribbean Uniform Building Code.

It is understood that the Caribbean Uniform Building Code is not as evolved in mitigating the effects of earthquakes as most commonly used building codes for new buildings in the United States or the International Building Code.

FIGURE 4.
Digicel
head-
quarters
01/27/10
Port-au-
Prince, Haiti
Photo by Dr.
Reginald
DesRoches



Initial information on the Digicel building indicates that this building is standing and may be in service while many other buildings in Port-au-Prince collapsed or suffered heavy damage. This highlights the importance of building to a higher standard which can mitigate the effects of earthquakes and the various other hazards, such as hurricanes, to which Haiti is routinely exposed.

At the time of this writing, it is unknown, and considered doubtful, that the Digicel building was instrumented to monitor motion loads induced into the building. In addition, no free field strong ground motion station is known to have been in place before the earthquake. At present no strong ground recordings are known to exist from within the city of Port-au-Prince.

Schools Performance/ Opportunities and the Development of Community Emergency Response Teams

An estimated 500 schools were destroyed during the earthquake. Schools are not identified as or built to be emergency refugee centers in Haiti.

Reconstructing these schools to a higher standard, and including the incorporation of a low cost, all hazards mitigation approach into their design and construction, may be an investment to help out communities that have no fixed refugee center with potable water, showers and cooking facilities large enough to handle large crowds. By mandating the use of public schools as refugee centers, and stockpiling emergency supplies and equipment, as well as training school staff to be team leaders for community emergency response teams (teams of community members given basic first aid and medical training and equipped with basic medical non-perishable supplies) emergency services at a basic level can be introduced to Haiti on a significant scale.

Fault Associated the Mainshock and Larger Aftershocks

The fault system associated with the main fault and the larger aftershocks as of January 25, 2010 appears to be the Enriquillo-Plantain Garden fault zone in the Ouest province of Haiti, approximately 10 miles southwest of the capital city of Port-au-Prince (see Figure 1). This fault extends from Hispaniola to Jamaica. The Enriquillo-Plantain Garden fault is a left-lateral strike slip fault that is suspected to have been the source of several large magnitude earthquakes since the mid 1700s.

Haiti is located southeast of the island of Cuba on the western side of the island of Hispaniola. This is the largest earthquake to occur in Haiti and one of the largest in the Caribbean since the founding of the Country in 1804. The main-shock was similar in magnitude to the 1989 Loma Prieta Earthquake in California, but the Haiti earthquake was located over 75 kilometers closer to a major population center.

Paleoseismological evidence of specific major earthquakes prior to the arrival of Christopher Columbus in the late 15th century is not known to the writers. The Enriquillo-Plantain Garden fault zone forms part of the northern boundary between the Caribbean plate and the Gonave microplate, which is located between the North American plate and the Caribbean plate. The majority of the land area of Haiti is located on the Gonave Microplate. The northern boundary of the Gonave microplate is the Septentrional-Oriente fault zone, which is a transform fault boundary with the North American plate. This fault, located in

PROFESSIONAL CONTRIBUTIONS

northern Haiti extends westward towards southern Cuba and Central America and eastward into the Dominican Republic. There are a number of other faults between the two faults including several unnamed thrust faults. The Enriquillo-Plantain Garden fault zone and the Septentrional-Oriente fault merge together near the Mid-Cayman spreading center (Mann 2010). The low lands of Port-au-Prince and the lake area to the south east appears to be associated with a compressional basin that is down dropped between the northern mountains and the southern peninsula area south of the lakes.

Large Historical Earthquakes

There have been 13 large (Mw 7+) earthquakes that are thought to have occurred in or near Hispaniola since the 16th century prior to the January 12th earthquake (Ali et al. 2008) (Figure 5). The last destructive earthquake to affect Port-au-Prince was in 1770. At this point in time, no known paleoseismic trench investigations were conducted on the Enriquillo-Plantain Garden fault zone before the January 12, 2010, earthquake. This means that recurrence intervals for magnitude 7 to 7.5 earthquakes on the Enriquillo-Plantain Garden fault zone are not well understood.

A study conducted by Manaker, et al. 2008 indicated that the Enriquillo-Plantain Garden fault zone had last produced a major earthquake in 1770 and that the fault was slipping at approximately 2 cm per year. The authors concluded that since the mainshock of the 1770 earthquake enough stress had been built up on the fault to generate a Mw 7.2 earthquake. The largest credible earthquake on the Enriquillo-Plantain Garden fault zone is considered to be a Mw 7.5 earthquake.

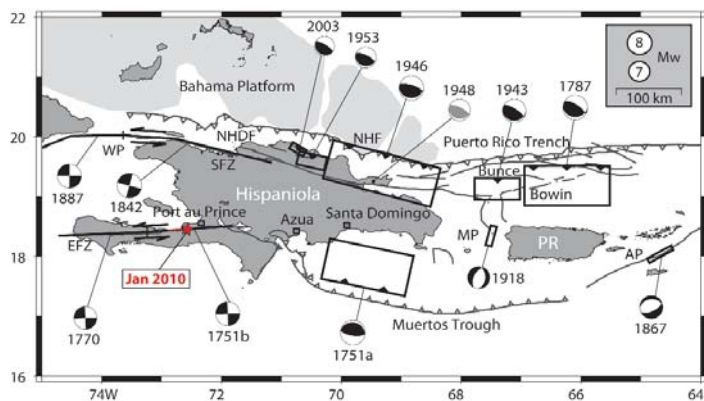


FIGURE 5. Map depicting estimated locations and focal mechanisms of major earthquakes near Hispaniola from 1751 to 2008 from Ali, et al. 2008

Stress Transfer and Aftershocks

Lin and others, 2010, modeled stress transferred to adjacent areas of the Enriquillo-Plantain Garden fault zone of rupture for the mainshock and has tentatively concluded that the area of highest concern is the area of the fault immediately adjacent to Port-au-Prince and east of the mainshock epicenter.

The preliminary stress change along this region of the fault varies from of 2 to 5 bars. This indicates that due to the mainshock of the January 12th earthquake, this region has been stressed towards failure more than other regions along the fault. This, however, does not mean that this portion of the fault is the closest segment to failure. The next highest increase in stress is tentatively located west of the mainshock epicenter and had an

increase in stress of 1 bar. This area is near the epicenter of the January 20, 2010, Mw 5.9 aftershock. There are a number of thrust faults in the vicinity of southern Haiti including the Gulf of Gonave, along the west coast of Haiti. None of the thrust faults that were modeled indicated a significant increase (an increase in stress of 1 bar or greater) towards failure.

As of January 28, 2010, no primary surface rupture has been discovered by field teams. (This is somewhat analogous to what happened during the Loma Prieta earthquake in California in 1989.) Secondary deformation has been measured in the Enriquillo Valley along Highway 200. Notes and an analysis of the secondary ground deformation may be made available by the field workers in the near future (Figure 6).

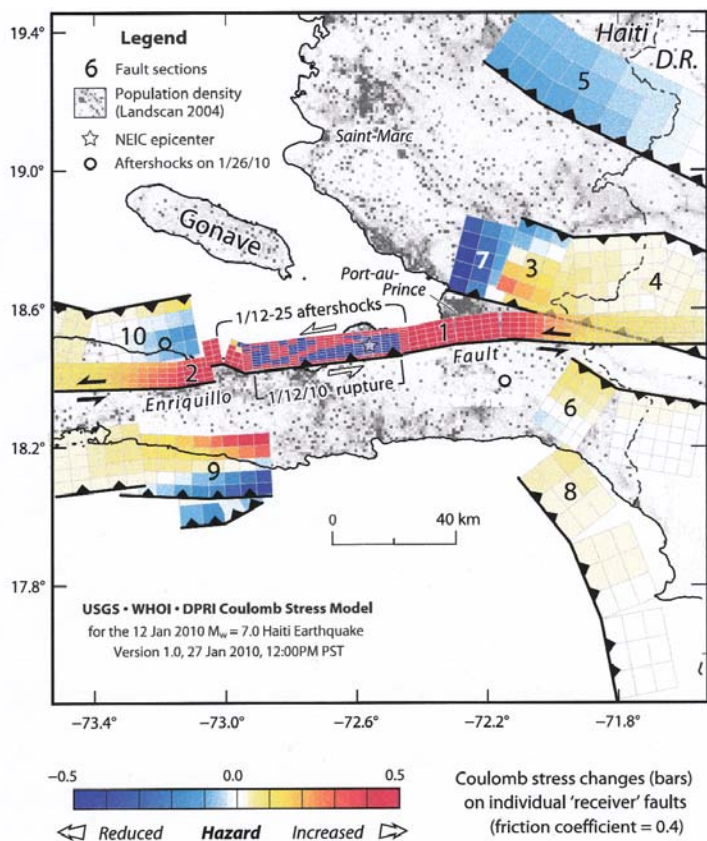


FIGURE 6. Depicting modeled coulomb stress changes after mainshock source: USGS Open File Report 2010-1019

Geology of Area Affected by the Earthquake Including Port-au-Prince

A 1:250,000 scale map and explanation of the Port-au-Prince south eastern part of Haiti can be found in French at the regional geological map of Port-au-Prince, Haiti Scale: 1:250,000 (Source: Bureau of Mines and Energy, Republic of Haiti, August 2005). The city of Port-au-Prince lies in an alluvial valley next to the Gulf of Gonave. The alluvium is unconsolidated and is a factor in the amplification of strong motion that entered the valley from the southwest. The unconsolidated alluvium is also susceptible to dynamic compaction, and where the water table is high, it is prone to liquefaction. Unconsolidated alluvium, fluvial deposits and some fill are susceptible to lateral spreading, especially along stream channels, and along the Gulf of Gonave and the harbor area of Port-au-Prince.

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Notes:

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Index of Advertisers

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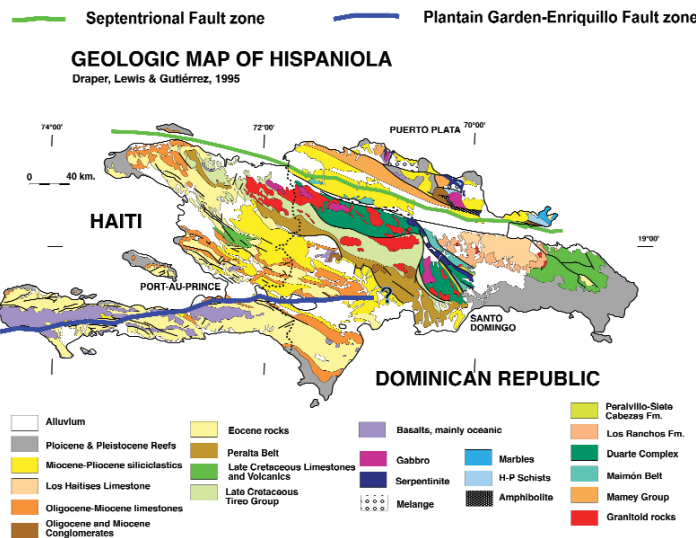


FIGURE 7. General Geologic Map of Hispaniola courtesy of Dr. Grenville Draper, Florida International University.

The hills to the southeast of Port-au-Prince have a thin layer of colluvium overlaying conglomerate or marl and are locally highly faulted (Figure 7).

Field assessments of damage due to primary and secondary seismic hazards are under assessment by others.

Landslides

The Haitian earthquake resulted in a number of landslides. Prior to the earthquake the most readily identified secondary hazard with respect to a large earthquake on the Enriquillo-Plantain Garden fault zone was from earthquake induced landslides in areas of high population density.

The damage caused by the landslides, their number, location and extent are still being recorded and studied by others at the time of this writing.

Tsunami

The earthquake's epicenter location occurred on shore. However, a tsunami was reported in Petit Paradis, Haiti, and several other locations along the coast of Haiti as well as in Santo Domingo in the Dominican Republic. The source of the tsunami is suspected to have been landslide induced. The beach area of Petit Paradis also subsided which resulted in the landward migration of the high water tide line. The extent of the tsunami inundation along the coast line of parts of Hispaniola as well as damage and number of fatalities, injuries and missing persons resulting from the tsunami is under assessment by others.

Acknowledgements

The authors wish to thank Dr. Grenville Draper of Florida International University for his review and corrections to our news article. We also wish to thank Dr. Paul Mann from the University of Texas at Austin for his postings of geological information about Haiti and the January 12, 2010, Haiti earthquake on his website. Finally we thank Dr. Dennis A. Quan, from James Lee Witt and Associates for his review of the article.

LiDAR Analysis of an Urban Alluvial System: Jordan River, Utah

*Paul W. Jewell, University of Utah; Krysia W. Skorko, University of Utah;
and Juan C. Fernandez, University of Florida*

Introduction

In recent years, an exciting new technology, “Light Detection and Ranging”—LiDAR—has been effectively applied to earth science and engineering as well as fields as diverse as art history and transportation analysis. LiDAR is capable of producing remarkably fine-scale topographic maps and 3-dimensional images and can be used to detect subtle surface features on a wide variety of scales. The method relies on sending and receiving 1000s of coherent laser pulses per second to the object being surveyed. The resulting “point cloud” of x-y-z-intensity data is processed to produce extraordinarily detailed 3-dimensional renderings. LiDAR instruments can be mounted on airborne or ground-based platforms. For airborne LiDAR, typical horizontal resolution is 1–2 m while vertical resolution is on the order of a few centimeters. One of the crowning achievements of airborne LiDAR has been its ability to “see through” forest canopies based on last return of the laser pulses. In effect, post-processing of LiDAR data can filter out returns from trees and vegetative cover to reveal features of the underlying land surface. As a result “bare-earth” images of previously unknown fault scarps and landslide features have been discovered and mapped (e.g., Harding and Berghoff, 2000). While ground-based LiDAR is typically not used to produce similar bare-earth features, it does have the advantage of capturing complex 3-dimensional images at extraordinarily fine scales.

LiDAR Applications

This note demonstrates airborne and ground-based LiDAR applications in three different settings of an urban watershed, one particular environment where the use of this technology is rapidly expanding (Lane and Chandler, 2007). The first two examples take advantage a publicly available airborne LiDAR data set covering a large portion of the central Wasatch Front of Utah that was flown in 2006–07. The data shown here have a horizontal resolution of 1.25 m, a vertical resolution of ~20 cm, and can be downloaded from the State of Utah’s Automated Geographic Reference Center (<http://agrc.its.state.ut.us/>). The ground-based survey was completed by the authors, and is restricted to a small area where the Jordan River enters the Great Salt Lake, but has millimeter scale precision in both the horizontal and vertical.

Fluvial geomorphology. The Jordan River flows northward and connects freshwater Utah Lake with the Great Salt Lake west of the Wasatch Front in north-central Utah. The river is largely a Holocene feature that formed following the regression of Pleistocene Lake Bonneville. Jordan River discharge is currently controlled by regulating outflow from Utah Lake. Despite intense urbanization and vegetative cover of the river corridor, bare-earth LiDAR analysis reveals of a number of previously recognized features. For instance, possible meander cutoffs and secondary channels as narrow as a couple of meters width are visible with LiDAR despite being covered by trees and having very subtle expression on the ground (Figure 1). The river

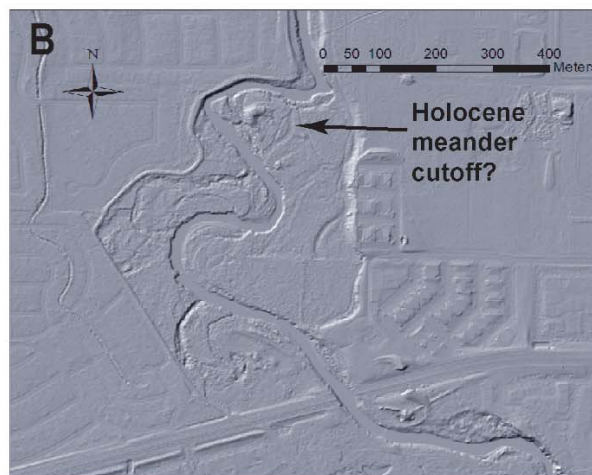


FIGURE 1. (A) Aerial photo of a section of the Jordan River in the central part of the Salt Lake Valley, Utah. (B) Bare-earth LiDAR hillshade of the same area as (A). (C) Ground level view of the meander cutoff shown in (B). Data in (A) and (B) courtesy of the State of Utah Automated Geographic Reference Center.

channel is undergoing active restoration efforts using funding from Salt Lake County and the EPA; the recent LiDAR survey may play a major role in this effort.

Tectonic geomorphology. The Wasatch fault of northern Utah constitutes a major geologic hazard for ~2 million people of the Wasatch Front. Most of our understanding of the fault comes from trenching selected localities of the fault trace near the mountain front. Overall assessment of the kinematics of the fault block is constrained by lack of 3-dimensional representations away from the surface fault trace. In addition, the fault consists of several segments, each 40–50 km long, whose rupture behavior may or may not be related. LiDAR imaging promises to fill these gaps in knowledge by relating ages and tilting of Jordan River floodplains and Lake Bonneville shorelines to the overall expression of the fault block. For instance, the Wasatch Front LiDAR survey reveals eastward tilting of 0.035° in a flood plain of the Jordan River (Figure 2). While the age of this floodplain has not been firmly established, it is probably related to the base level of the Gilbert shoreline in the waning stages of Lake Bonneville 10,000–11,000 years ago. The nearest surface expression of the Wasatch fault is ~7 km away. Assuming that the valley fault block is rotational, a net displacement of ~4 m of the fault at the surface location of the fault over this period of time is implied. Studies and analysis such as this should allow fully 3-dimensional representations of the Wasatch fault block as well as determining the net displacement on time scales much longer than traditional trenching methods.

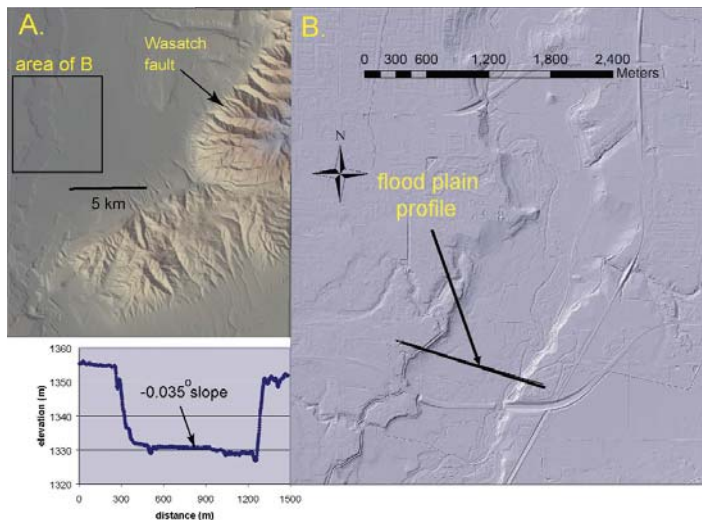


FIGURE 2. (A) DEM hillshade of the southern portion of the Salt Lake Valley and Wasatch Mountains, UT. (B) LiDAR hillshade of the channel and flood plain of the Jordan River with cross sectional profile of the flood plain shown in the lower left corner.

Stream channel evolution. Understanding the mechanics and evolution of urban streams is critical for scientists, engineers, and planners. The morphology and avulsion history of a distributary channel of the Jordan River that enters the Great Salt Lake are being analyzed with two ground-based LiDAR surveys (Figure 3a). In contrast to the airborne survey, these surveys were completed by the authors using an OpTech IIRIS-3D scanner operated by the University of Florida. Multiple scans were conducted on both sides of the channel and merged to yield ~20 million geo-

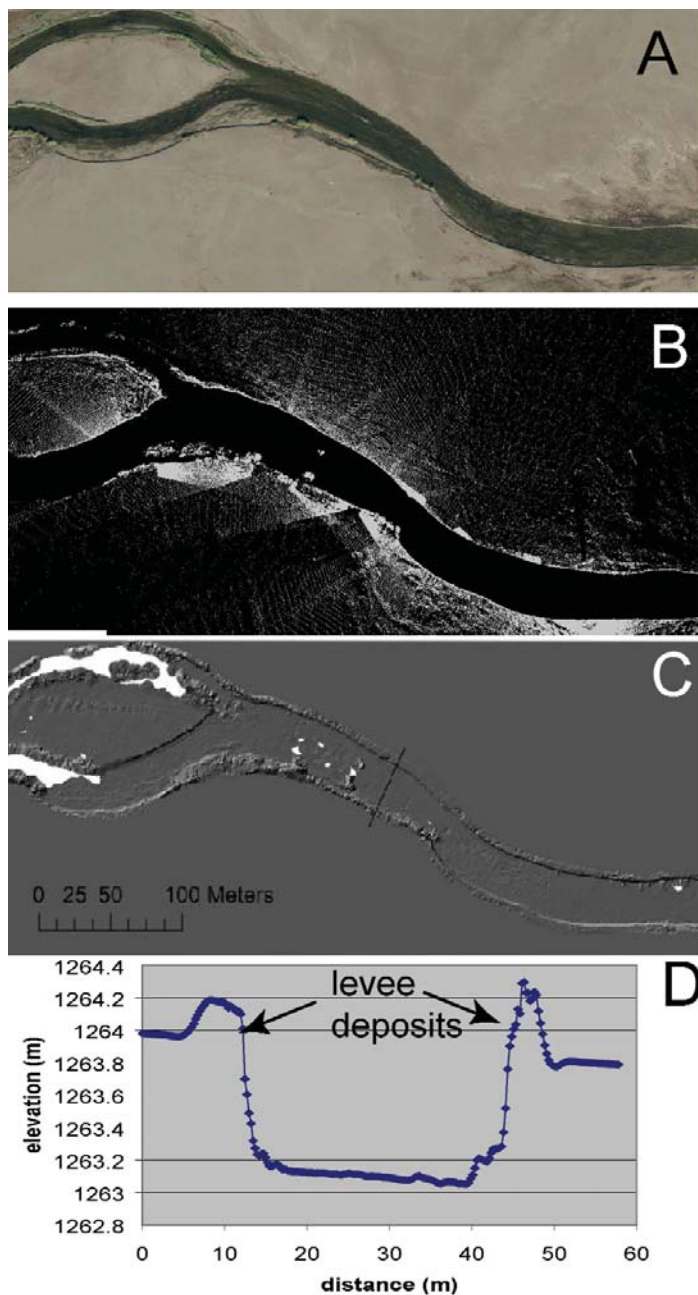


FIGURE 3. (A) Aerial photo of a section of the Goggin Canal just upstream of its entry into the Great Salt Lake. (B) Ground-based LiDAR point cloud image of the same area as (A). Each white dot represents an individual laser return. The irregular distribution of the laser returns is due to multiple scans of the area from different perspectives. (C) Hillshade of gridded DEM produced from LiDAR point cloud data. (D) Profile of the stream channel showing associated levee deposits on both banks.

referenced points during each survey. Point cloud coverage of the area is irregular due to the multiple scans taken from various perspectives (Figure 3b). Gridding of the point data allows analysis of the area with standard GIS software (Figure 3c) which in turn reveals such features as millimeter-scale details of channel bottom morphology and levee deposits (Figure 3d). Scans completed in the same reach of the stream during the fall of 2007 and again in the spring of 2008 will allow quantitative analysis of

PROFESSIONAL CONTRIBUTIONS

bank stability and the net erosional/depositional processes in the stream as a result of spring runoff.

Discussion

The benefits of LiDAR surveys in relation to more traditional, spatially limited surveys or aerial photo analysis are clear and the potential of this technology to solve basic scientific and applied problems in the future is enormous. Possible applications of interest to the environmental and engineering geology community being explored by the authors and others include: fracture analysis of rocks masses that could lead to better understanding of rock fall hazards (e.g., Kemeny et al., 2005) long-term, kinematic understanding of landslide behavior (e.g., Rowlands et al., 2003), quantitative understanding of sediment bulking of alluvial channels and their relation to debris flow hazards.

The cost of LiDAR surveys vary according to the instrument platform, mobilization costs, post-processing procedures, and desired accuracy. A typical cost for an extensive airborne survey is around \$500–\$1000/km². Ground based surveys are typically on the order of \$1000/day including post-processing of the data. The use of LiDAR for any geological or engineering investigation is thus dependent on the ultimate end use and a reliable cost-benefit analysis.

Acknowledgements

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In this series, we present the opinions of the author as he explores the issues that are important in the implementation and operation of statutory licensure for geologists. The author's opinions are not necessarily those of the Association of Environmental & Engineering Geologists or any other organization or entity.

Issue LV: Licensure Administration Models: Would Self-Regulation Work for Geology Licensure in the United States?

Robert E. Tepel, PG & AEG Past President

Introduction and Summary

Scope, Nomenclature and Societal Trust

This article explores design professional licensure models from around the world, with emphasis on geology and engineering, and attention to self-regulation characteristics. Surprisingly, there is an example of a self-regulating design professional licensure board in the United States. Notes: The nomenclature of credentialing is explained in the sidebar on page 24. I use the term “state” to refer a state in the United States, or in a general sense to refer to a sovereign government such as a Canadian province, a country, or one or more states in the United States, as the context demands. Government-imposed regulation of the design professions is rare outside of the countries discussed here. I welcome additional information from readers.

Some societies trust the professions more than others, and they grant a high degree of self-regulation. Based on this review of regulatory models around the world, it appears that the level of societal trust in the integrity of the professions as to self-regulation is low in the United States and high in Western European and British Commonwealth countries. Hence (with one exception) the heavy hands of the state place a chokehold on the autonomy of professional licensure boards in the United States. That is the system we grew up with, so it seems normal. The prevalent American licensure model suffers from the seemingly constant attack or risk of attack in the political arena, from arbitrary budget restrictions, and from stifling bureaucratic administrative policies. So, let's step outside the box of our national boundaries see what is “normal” elsewhere in the world, and ask if that “normal” would work in the USA. Would the public benefit (even indirectly) if our state legislatures adopted a self-regulatory licensure model? And just how far can self-regulation go and still function in the public interest?

Regulatory Models

The way that professions are regulated varies according to the cultural norms of each country or group of countries. CLEAR (2006 a, b, c, d) provides extensive descriptions of occupational practice laws in Canada, Mexico, the United Kingdom, and the United States, respectively. For convenience here, I generalize regulatory methods into three models: The Government Agency Model, the Semi-Privatized Self-Regulatory Model, and the Voluntary Self-Regulatory Model. (In some contexts, the term “self-governing”

is used instead of “self-regulatory”). Some distinguishing characteristics of the three models are described below.

Distinguishing Characteristics of the Regulatory Models

Regulatory Autonomy and Appointment Process

In the Government Agency Model (prevalent in the United States) licensure boards have little autonomy. Board members may self-nominate by independently applying to the appointing authority, or they may apply for appointment in response to an announcement or request by their professional association. The board is staffed by state employees and licensure law administration is fully integrated into the state agency system. These boards are referred to here as *integrated boards* within the Government Agency Model. Geology licensure boards in Kansas, North Carolina, and Oregon are housed in the state bureaucracy and staffed by state employees, but enjoy certain elements of independence. Using the term applied in Oregon, I characterize these boards as *semi-independent boards* within the Government Agency Model.

In the Semi-Privatized Self-Regulatory Model, almost complete autonomy is granted by the state to a self-regulatory organization (SRO) created by statute. SRO board members might come to office through a statutory nomination system that involves the professional associations, or some or all may be self-nominated or appointed by political leaders. The SRO, which may be nominally a part of government, is responsible for its own financing, staffing, administration, and governance.

In the Voluntary Self-Regulatory Model, a professional association or institute credentials its members and regulates their practice through a Code of Ethics. The members of the organization's Board of Directors are elected by the general or credentialed membership. The Board of Directors may be the board that hears complaints, or complaint resolution may be delegated to an appointed panel. The association or institute is authorized to exist by the state but does not have any of the sovereign powers of the state to regulate the profession.

Examinations

A principal distinguishing characteristic of the Government Agency Model is the requirement for a written examination on the technical subject matter of the profession. The requirement for a written examination, prepared under third party professional control (psychometricians) is, I suggest, symptomatic of the skepticism about the *bona fides* of the institution of

ISSUES IN PROFESSIONAL LICENSURE FOR GEOLOGISTS

professionalism and professional organizations prevalent in American society and government. (However, research in progress indicates that at least one of the early state engineering licensure boards in the United States prepared and graded its own written examinations on its own volition).

In the Semi-Privatized Self-Regulatory Model, a written examination on the technical subject matter of the profession is used in the United States. In Canada, the written examination covers only applicable practice law and ethics.

The Nomenclature of Credentialing

The nomenclature of credentialing terms varies around the world. In the United States, the National Organization for Competency Assurance (NOCA, 2006) provides authoritative definitions of credentialing terms. Working definitions of key terms, in the context of world-wide usage as to geologic practice, and slightly modifying or extending the definitions of NOCA (2006) are provided here.

Credentialing is an umbrella term defined in part by NOCA as "...the process by which an entity, authorized or qualified to do so, grants formal recognition to, or records the recognition status of individuals, organizations, institutions, programs, processes, services, or products that meet predetermined and standardized criteria."

Licensure is a government-operated public or government-sanctioned semi-private regulation of a profession. People become licensed by establishing their qualifications to practice by way of education, experience, and passing a written examination that covers the substantive technical subject matter of the profession. Some licensure examinations may also cover knowledge of applicable laws and regulations governing practice and (or) relevant ethical criteria, either within a single exam or as a supplemental exam. (*Registration* is an outmoded term for *licensure*, still in use in some jurisdictions).

Certification is an attestation of a person's qualifications offered by an occupational or professional association. Some certifications are based on the same three qualifiers as licensure; others either do not have a written examination or they use an examination limited to certain aspects professional practice, such as knowledge of applicable laws and codes of ethics. Importantly, this last type of examination does not cover the substantive technical subject matter of the profession.

Chartering is a form of credentialing not defined by NOCA because the term is used only outside the United States. Chartering is similar to certification, but it is offered only by professional associations authorized to do so by law. The term *chartering* (e.g., chartered geologist) is used in some British Commonwealth countries. In the examples I have seen, chartering parallels certification in that it is based on peer review of qualifications. It may have an examination component similar to that of some certification programs, but as with certification, the exam is concerned with knowledge of applicable law and codes of ethics, not technical subject matter. Certification and chartering may take on some of the attributes of licensure if they are endorsed, recognized, or required by government.

Exemptions

In the United States, the Government Agency Model is characterized by a variety of exemptions from licensure—not all are present in all state laws. The exemption for subordinates is ubiquitous. It is necessary so that beginning level professionals can practice under the charge of a licensed professional. The industry exemption is ubiquitous, but is not necessary. It allows geologists employed in a company, the primary business of which is not the offering of geological services to the public, to be unlicensed as long as their work is purely internal to the company. The industry exemption is not found in the Semi-Privatized Self-Regulatory model prevalent in Canada. It also appears to be lacking in the Government Agency Model of geologic practice regulation in the Republic of the Philippines. Other common exemptions are for academics, research geologists, government geologists, military personnel, and natural resource (economic) geologists. These are found in particular cases in licensure under either the government agency or semi-privatized model.

Public Members

In the United States (Government Agency Model), twenty-four of the thirty boards that license geologists have at least one public member (see Tepel, 2009b, Table A-1), and the Delaware engineering practice law (Semi-Privatized Self-Regulating Model) specifies three members who are not necessarily engineers (see www.dape.org). In Canada (Semi-Privatized Self-Regulatory Model) nearly all jurisdictional associations have at least one public (lay) member on their governing boards. Public members appear to be missing from the consumer opt-in (Voluntary Self-Regulatory Model) boards discussed here and in Tepel (2008 and 2009a).

Discussion: Self-Regulation Examples — Voluntary and Statutory

The concept that voluntary self-regulation of a profession can well and fully serve the public interest is a chimera because self-regulation without the authority of the state behind it is not effective in protecting and asserting the public interest in the practice of the profession (see Tepel, 2006, 2008, 2009a). Voluntary self-regulatory organizations that also promote the profession and the interests of their members are in a mission conflict situation: which mission has priority, protecting the public or promoting the interests of their members?

To be effective, the SRO must be a creature of the legislature (or other government authority) and, at some level, be accountable to it and thus under its control in some ultimate sense. Why is this so? A state will grant some of its sovereign powers to the self-regulatory organization only if those powers are subject to recall, and the self-regulatory organization needs those powers from the state to function in the public interest in the name of the state, and needs the protection of the state's umbrella to shield it from legal challenges and liability.

The principal examples of effective semi-privatized SROs are those that regulate the design professions in Canadian provinces, and, in the United States, the Delaware Association of Professional Engineers (DAPE), which is based on the Canadian model.

The Voluntary Self-Regulation Model is essentially a *consumer opt-in* regulatory model. In this model, the consumer (whether individual, corporate, or governmental) may optionally

require that certain employees or providers of professional services hold the title controlled by the organization. European organizations that offer voluntary self-regulation of the profession of geology are the European Federation of Geologists, the Geological Society of London, and The Institute of Geologists of Ireland. In Australia, the Australian Institute of Geoscientists and the Australasian Institute of Mining and Metallurgy have voluntary self-regulation programs. In the United States, the American Institute of Professional Geologists offers voluntary certification as a form of self-regulation.

Discussion: Advantages of Semi-Privatized Self-Regulation

Billingsley (1995) provides a rationale for moving from government agency regulation to semi-privatized self-regulation in engineering licensure. Similar reasoning would apply to geologic practice. The lower level of socio-political trust (or higher level of skepticism) in the United States works against granting licensed professions here more self-regulation than is provided by the existing Government Agency Model. Nonetheless, the Semi-Privatized Self-Regulatory Model has been implemented in one case (Delaware), so it is doable. On a practical basis, semi-privatized self-regulation holds some attractions:

- It moves licensure operations off center stage in the theater of politics;
- It moves the cost of licensure operations off the state budget;
- It reduces the number of government employees involved in administering licensure;
- The semi-privatized SRO controls its own staffing and salaries, and hires and fires its own employees;
- The semi-privatized SRO has plenary control of its funds; they cannot be clawed back at whim by the legislative or administrative branches; and,
- The SRO has the powers and responsibilities of a non-profit corporation. For example, it may rent, lease, buy, and sell real and personal property, or borrow, loan, or invest money.

The big question is: could the semi-privatized self-regulatory model work for geology licensure in the United States?

The answer could be yes. The primary driver toward semi-privatized self-regulation might be the state budget crisis found in almost every state. By removing licensure operations from the state budget, the budget can be reduced. Yes, the costs of licensure programs are trivial in the big picture, and yes, the costs of licensure programs are zero-sum in the state's budget because boards are self-supporting, but privatization does take the cost of licensure programs off-budget. Politicians desperately need something to crow about, and eliminating some of those pesky licensure boards is a bulls-eye for them. Geologists in states with boards that license only geoscientists could be in the best strategic position to explore the possibilities. The task of developing a business plan for self-regulation of the profession is left to interested readers. Note: It is not yet clear that self-regulation significantly reduces the cost of operating a licensure program.

Political allies in a shift to semi-privatization would be those who want to reduce the size of government and its budget, and those who think that geology licensure is not necessary or marginally necessary to protect the public.

The profession may benefit from a change to a self-regulatory model if the administration of licensure by the state is inefficient and provides slow service to the licensees and applicants, and costs more than necessary, or does not function aggressively to protect the public. (Anecdotally, dissatisfaction in the engineering community with the administrative and enforcement performance of the Florida engineering licensure board drove the change to require outsourcing of the board's administrative and investigative functions to a state-created single-purpose non-profit corporation. And, anecdotally, licensee satisfaction has increased and service to the public has improved as a result.)

The state budget benefits if licensure is semi-privatized, and the profession might benefit, but does the public? The public could benefit if the present board in a state has an insufficient enforcement program and the self-regulating board that replaces it does better. The public could also benefit if the self-regulating board can invoke better consumer outreach and complaint administration programs than the state board.

The following sections provide a detailed exploration of the regulation of design professions around the world. We geologists might find an example to adapt and adopt.

American Licensure Boards

Introduction

Key characteristics of American geologist licensure boards were analyzed in Tepel (2009b). Summarizing, geologist licensure acts have two basic scopes: 1) acts that license only earth scientists, whether single-discipline or multi-discipline, and 2), multi-discipline design professional licensure acts that license geologists and related design professionals. Except as described below, American geology licensure boards are fully integrated into the state agency administrative system (integrated boards, as the term is used here).

Semi-Independent Boards

In the licensure of geologists in Kansas and North Carolina, and the licensure of geologists and engineers in Oregon, the programs incorporate some elements of independence, but remain too closely tied to the state to be classified as self-regulating programs. In Kansas and North Carolina, geology licensure board autonomy is indicated by the general budget-setting independence of the licensure boards.

In Oregon, geology licensure and engineering licensure follow the same pattern as other "semi-independent boards" established by the legislature in ORS 182.456 through 182.472. The principal features of the Oregon process that move in the direction of self-regulation are 1) the board's budget must be adopted under specific guidance, but the budget "is not subject to review and approval by the Assembly (ORS 182.462); however there is a provision for financial review by the Secretary of State (ORS 182.464, 2) the board may select and appoint an administrator, ...(and) the administrator may employ persons as the board determines for carrying out the business and responsibilities of the board (ORS 182.468), and 3) all monies received are continuously appropriated to the board and the board is responsible investing the monies and managing them (ORS 182. 470). Through several reporting requirements, the board remains a creature of the legislature and under its control."

Administrative Outsourcing

In Oregon, a step toward board independence allows semi-independent licensure boards to “contract with any state agency” for administrative services (ORS 182.460 (3)).

Florida represents a special case in licensure program reform. In Florida, engineering licensure is administered by a hybrid system. According to Schwartz (1998) a 1997 “law ‘privatizes’ the administrative, investigative, and prosecution duties related to the Board of Professional Engineers. To accomplish this, the law creates the Florida Engineering Management Corporation (FEMC), which will assume the responsibility for contracting out the aforementioned duties (presently handled by board and department staff)....

“Activities such as processing applications, administering examinations, issuing and renewing licenses, handling complaints, investigations, prosecutions, and inspections will be assigned to the new private corporation. The Florida Engineering Board retains all rule-making and license issuing authority, as well as all final decision-making authority for disciplinary penalties. The seven member FEMC will be composed of licensed engineers, with three members appointed by the Secretary of the Department of Business and Professional Regulation, and four members appointed by the Board.”

The outsourcing process mandated by law in Florida is a change in the way that the licensure law is administered and not a move toward self-regulation. While many of the administrative duties formerly performed by a unit of state government are now performed by a legislatively-created non-profit corporation, the licensure board is still present and seated in a state agency and retains quasi-judicial, licensing, and rule-making authority. Legislative oversight is maintained through reporting requirements. (See Florida Engineers Management Corporation at <http://www.fbpe.org/>)

Self-Regulatory Models in the United States and Canada

Introduction

Self-regulatory models are available in two flavors: voluntary self-regulation and semi-privatized self-regulation.

Voluntary Self-Regulation — United States

The efficacy of American voluntary earth science-related certification programs, including that of the American Institute of Professional Geologists (AIPG), was evaluated in Tepel (2006 for AIPG, 2008 and 2009a for all programs). Summarizing, voluntary certification by professional associations is sometimes presented as an effective form of self-regulation of a profession. Because the certification is voluntary, the percent of potential certificants who become certified is low. Discipline by credentialing professional associations does not rise to desirable levels of transparency and effectiveness because a) non-members (non-certificants) cannot be disciplined, b) certificants can in some cases avoid discipline by resigning (or not renewing) membership, c) avenues of restitution to the consumer are minimal or non-existent, and d) names of disciplined members are not generally disclosed or published. In my opinion these drawbacks mean that voluntary credentialing cannot adequately

assert and protect the public interest in the practice of the profession of geology

Semi-Privatized Self-Regulation — United States

Delaware

There is no example of legislatively decreed self-regulation of geology in the United States, but Delaware licenses engineers in with an act that moved deeply into self-regulation (see www.dape.org). Schwartz (1998) remarks that “the state of Delaware...looked northward to the self-regulatory scheme utilized in the Canadian provinces to regulate the practice of engineering.”

According to Schwartz (1998), “Since 1972, the Delaware Association of Professional Engineers (DAPE), an association established by state statute, has regulated the practice of engineering in Delaware. DAPE was created by a statute enacted by the Delaware legislature (Delaware Professional Engineers’ Act, Delaware Code, Title 24, Chapter 28). All professional engineers licensed under the laws of Delaware, and residing or having a place of business in the state, are “Members” of the DAPE.” Schwartz (1998) further notes that, “Those most familiar with the Delaware experience characterize the system as one of almost total independence with the exception of the requirement of an Annual Report from the DAPE to the Governor. In addition, DAPE is totally self-supporting with all revenue being derived from licensure fees, examination fees, certificate of authorization fees and return on investments.” In my opinion, it is only in a distant sense that DAPE is subject to oversight from the state legislature that created it because the legislature can change the licensing law at will.

Semi-Privatized Self-Regulation — Canada

In Canada, regulation of the learned professions is implemented at the provincial level by self-regulatory organizations that are separate from professional associations. This system is described by Cleland and Lemay (2001) (see sidebar, *Canada has a long tradition of self-regulated professions*). In essence, the professions are trusted to regulate themselves under general orders from the provincial government. The Canadian system works well for five reasons: 1) the element of trust the public, through its government, has in the professions’ ability to self-regulate, 2) the authority and requirement set by statute upon the professional self-regulatory organizations to function in the public interest, 3) the separation of mission and leadership between the regulatory organizations and the professional associations, 4) strong support from the professional associations, and 5) ultimate oversight is exercised by the provincial governments.

Geologic Practice Regulatory Models in Other Countries

European Countries — Government Regulation

The practice of geology is regulated at the national level in Spain and Greece, and also in Italy (Ruth Allington, email, 2010). Allington further indicates that some Eastern European or former Soviet Union countries likely regulate the practice of geology by national laws. According to Norbury (2004), in Italy a system of registration is administered by regional “Orders” of geologists,

Canada Has a Long Tradition of Self-Regulated Professions

“Contrary to the practice in most other countries, Canada enjoys a long tradition of self-regulated professions which flows from the Constitution Act 1867. Section 92(13) of the Act places professions within the jurisdiction of the provinces and territories, who in turn have delegated legal authority to certain professions to regulate themselves in the interest of the public.

In Canada, there are over forty regulated professions and occupations in the areas of medicine, nursing, dentistry, engineering, geoscience, architecture, chiropractic, technology, and veterinary medicine, among many others. Self regulation also confers the right to title. It is against the law for individuals to use the title professional engineer, or any variant of this title that could create the impression that they are licensed to practice engineering, unless they are registered members of one of the twelve provincial/territorial regulatory engineering associations/ordres in Canada.

In the words of Chief Justice Beverley McLachlin et al., self regulation “constitute a tacit recognition by the legislature that the members of the profession are best qualified to determine the appropriate standards of professional competence and ethics required for the protection of the public.” (From Cleland and Lemay, 2001. *The embedded reference to McLachlin et al. is also listed in the References.*)

and “geologists must be a member of the Order to legally practice.” In Spain, (Norbury, 2004) “...the Official Association of Spanish Geologists (ICOG) registers all geologists. In order to practice the professional must be registered with the association.”

European Countries — Voluntary Self Regulation

The designation EurGeol is a voluntary title offered by the European Federation of Geologists (EFG). The EurGeol title is recognized or required in relation to the reporting of exploration results, mineral resources, and ore reserves in some reporting codes, but it has not been adopted as a general requirement for professional practice as a geologist in any country.

Recently, the brochure available on the EFG web site (www.eurogeologists.de) lists Member National Associations representing 21 countries as full members of the EFG. Although the EFG has disciplinary procedures (reported for 2008 by Chaplow, 2009, p. 6), its objectives (as reported by Chaplow, 2009, p. 1) are focused on promoting the profession in Europe. “The aspiration of the EFG is that EurGeol will be a ‘passport’ for geologists to work in any European country. This is far from being achieved at present because of the differences between the legislative frameworks....” (Ruth Allington, email, 2009).

Geologists are voluntarily chartered in the United Kingdom by The Geological Society of London. The requirements to qualify for the Chartered Geologist title are essentially the same as the requirements to qualify for Fellow in the organization (see www.geolsoc.org.uk). There is no generally applicable or broadly based law, regulation, or code in the United Kingdom that requires the signature of a Chartered Geologist in specific instances. Norbury (2004) notes that “Market forces reign, and no qualifications are required to practice.”

Geologists are voluntarily credentialed in Ireland by the Institute of Geologists of Ireland (www.igi.ie), which confers the title PGeo.

Regulation in Additional Countries

Australia

The Australasian Institute of Mining and Metallurgy (AusIMM, www.ausimm.com.au) offers chartering in several practice areas, including geology. The Australian Institute of Geoscientists (www.aig.org.au) offers certification as a Registered Professional Geoscientist (RPGeo). Both act as self-regulatory organizations, and both also promote the professions they represent. There are no statutory restrictions on geological practice in Australia, but the Australian Securities Exchange (www.asx.com.au) requires that reports concerning exploration results, mineral resources, and ore reserves for listed securities be prepared in compliance with the Joint Ore Reserves Committee (JORC) Code (www.jorc.org), which in turn requires that the reports are prepared by a “competent person,” e.g., a Chartered Geologist or Registered Professional Geoscientist.

New Zealand

Summarizing from information provided by Philip Robins (email, 2009), The Institute of Professional Engineers New Zealand (IPENZ) is authorized by an Act to charter its members. It both promotes and self-regulates the engineering profession. Geologists and engineering geologists may become members, but it charters only engineers. There is no general law or regulation requiring that chartered persons be in responsible charge of all engineering work, but the Building Act of 2004 requires a CPEng for some specific tasks.

Republic of the Philippines

Republic Act No. 4209 regulates the practice of geology in the Philippines and provides for licensure in the Government Agency Model as the term is used here. In my reading of the Act, it does not include the common “industry exemption.”

Conclusions

The administration of the regulation of design profession practice takes different forms around the world. The general arrangement of the regulatory process, where implemented, varies according to the cultural norms of a country or group of countries as influenced by stakeholder groups. There are many variations on each regulatory theme. The principal differentiators of regulatory themes are:

- The choice of regulation by
 - a. a board housed in and supported by a government agency (either an *integrated board* or a *semi-independent board*),
 - b. self-regulation by a quasi-independent authority created by the government (*semi-privatized self-regulation*), or
 - c. *voluntary self-regulation* by a professional organization (consumer opt-in regulation),
- The level of autonomy formally granted to the regulatory authority by the government,
- The scope and intensity of governmental oversight and control exercised over the regulatory body,

ISSUES IN PROFESSIONAL LICENSURE FOR GEOLOGISTS

- The exemptions from credentialing allowed for subordinates, academics, industry employees, government employees, and military personnel,
- The extent to which certain professional tasks or attestations/reports/documents are required by law, regulation, ordinance, or code to be performed by or under the responsible supervision of credentialed persons (licensees), and
- The use (or non-use) of written examinations on the technical subject matter of the profession being regulated, or on the law and code of ethics governing practice, as part of the credentialing process.

Of the examples of self-regulation presented here, licensure for engineers in Delaware, and licensure for engineers, geologists, and other design professionals in Canada, represents government-sanctioned regulation carried as far as reasonably possible into privatization, with the government retaining ultimate authority that links the self-regulatory body to the sovereign powers of the state and requires the self-regulatory organization to place the public interest foremost at all times and in all decisions.

In the United States, Delaware is the only state that has adopted semi-privatized self-regulation for a design profession, engineering. Small steps have been taken toward increasing licensure board autonomy for engineers in Oregon, and for geologists in Kansas, North Carolina, and Oregon. Although welcome, these steps are far from the semi-privatized self-regulation ideal.

It should again be emphasized that for semi-privatized self-regulation to work effectively in the public interest, the state must grant some of its police power to a single-purpose corporation, and must place a shield over the corporation by defending it against legal claims and suits through the office of the state Attorney-General. Without a commitment by the state to defend the self-regulatory corporation (and its directors, employees, and volunteers) against legal challenges, just as it defends all other regulatory boards, it would be very difficult to find qualified people to lead the self-regulatory organization or work for it. Without the duty and ability to exercise the sovereign power of the state, which is ultimately responsible for the well-being of its citizens, a self-regulating licensure board could not function effectively. In the ultimate sense, the state must retain the right to control or terminate a self-regulatory board that it creates, and it must exercise some oversight of the board's functioning to assure that the board is properly exercising the powers the state has granted it for the benefit of the public. Voluntary self-regulation (i.e., self-regulation by a professional organization with voluntary membership and without a state-imposed duty to regulate in the public interest) is not an effective mechanism to protect the public interest.

It is difficult to comprehend a compelling direct benefit to the public if design professional licensure were changed to a semi-privatized self-regulatory model in a state in the USA unless the system is sub-functional as a government agency operation. Equally, it is difficult to comprehend that the public would lose operational transparency or the opportunity to be heard or file a complaint, or receive less than satisfactory complaint resolution, by the adoption of a semi-privatized self-regulatory program consistent with the model described here. Benefits to the public and the profession could accrue from more efficient or more energetic administration of the licensure law under the semi-privatized plan. Efficiencies in board operations could be derived from less burdensome reporting than is typically required in a state bureaucracy, and of course from less time spent by

the board members, staff, and volunteers in meeting legislative and administrative demands for compliance reporting, including sunset review reports. Thus, workload on the legislature and its staff, and the state administration, could also be reduced.

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Allegheny–Ohio Section

Nichole Wendlandt, Chair

The A-O Section hosted President **Duane Kreuger** on November 12, 2009. Before his presentation, Duane received a Cliff-Notes' tour of Pittsburgh from the lookout in Mt. Washington. He traveled to Kent, OH, the next day to spend time with Kent State University students and to deliver a presentation. Other events this past fall included a joint meeting with the Pittsburgh Geological Society (PGS) on the topic of *Emerging Requirement to Maintain P.G. Licensure in Pennsylvania* and a Winter Social at Claddagh's Irish Pub.

The A-O Section and ASCE-GeoInstitute hosted the 2010 Jahns Lecturer **Dr. Paul Marinus** and his wife, Katerina. The Jahns Lecture was a well-attended event with over 60 attendees, including over 20 students from KSU and Carnegie Mellon University. The Marinus continued their trip to Kent State University, where Paul delivered another Jahns Lecture. **Dr. Abdul Shakoor** and his wife hosted a dinner party for the couple that was attended by KSU students and Faculty.

The A-O Section, ASCE-GeoInstitute, and PGS are looking forward to holding the 7th Annual Student Night on April 21, 2010. At this event, each society will choose a student to deliver their research topic via an oral presentation and the other students who submit abstracts will present their research with poster presentations.



Jahns 2010 Pittsburgh: The 2010 Jahns Lecturer, Paul Marinus at the A-O Section meeting.



Paul Marinus, Abdul Shakoor and KSU students after the Jahns Lecture.



KSU students and faculty with the Marinus at the dinner party hosted by the Shakoor.

Arizona Section

Pancho Garza, Vice Chair

The Arizona AEG Section celebrated the end of 2009 with our second annual Holiday Party. The fairly new event for the Section was developed and spearheaded by **Heather Hespeler**, the AEG Holiday Party Coordinator. We looked to improve on our first effort by making this year's event even better. This time, the family-friendly event was held at the Phoenix Zoo as part of their annual ZooLights. ZooLights allows visitors to view one of the largest holiday lighting events in the southwest with more than 2.5 million lights and 500 custom-made light sculptures. As night fell, AEG guests were greeted at the AEG check-in booth at the front entrance to the Zoo, and provided with wristbands that allowed them to bypass the long lines. Once inside the Zoo, everyone headed to the designated meeting location that was cordoned off from the general public. The AEG meeting space was set amongst the festive lights in a serene desert setting. Guests were then able to enjoy some beverages and conversation before dinner. There was no formal speaker for this meeting, but a few words were said shortly after the catered dinner. With dinner completed, the guests were able to roam around the Zoo-Lights that also included a carousel, Stingray Bay, and a "dancing tree" show with synchronized audio, visual and special effects. It was estimated over 45 people (including many excited children) attended the event despite the slightly chilly weather. AEG was glad to bring families and friends together to participate in a Phoenix holiday tradition.

Our first meeting of 2010 was also our second annual joint meeting with the Arizona Society of Mining, Metallurgy, and Exploration (SME). The meeting, which attracted over 65 people from both groups, had the largest turnout of the last two years as stated by Madan Singh, Arizona SME president. The speaker was Tim Casten, of Freeport McMoran Copper and Gold, who gave an interesting presentation on Freeport Indonesia's Grasberg District, the world's largest gold mine. One great thing about the meeting was that it also allowed members of both groups to interact prior to the talk. Casten's presentation on the underground mining efforts did not disappoint. He first gave a brief overview of the project history, and a general overview of the mining operations and ore body. The talk then focused on the

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underground operations including the block cave method, cave propagation, and extraction. The presentation included a very interesting computer-generated video clip showing the underground mining operations. The magnitude of the operations, including the infrastructure to support a 21,000 person self-contained complex, is quite impressive. We look forward to many more great presentations and continuing our successful relationship with SME next year.



Members of the Arizona Section at their Holiday Party at the annual ZooLights at the Phoenix Zoo.

Baltimore–Washington–Harrisburg Section

Cheryl Pruiett Gannon, Editor

The November meeting was held on the 19th in Frederick, MD. Jeff Basford of Whitman, Requardt & Assoc. gave a presentation regarding slope failures that occurred in the Richmond, VA, area after the storm called Gaston brought excessive amounts of rain there in 2004. Engineering efforts and the measures to stabilize and repair several slopes around Richmond were discussed. Basford is a geotechnical engineer with experience in the geotechnical aspects of various projects including transportation, tunnels, marine facilities, and slopes.

The January 28, 2010, meeting was held in Frederick, MD. The presenter was Mark W. Eisner, PG, CV, President of Advanced Land and Water, Inc. (ALWI). Eisner's presentation was titled *Groundwater Resources on Delmarva: Sustainable Management or Long-term Water Mining?* The presentation reviewed the hydrogeological and regulatory settings of several select areas on and near the Delmarva Peninsula where withdrawals are occurring at rates that appear to be not sustainable and offered recommendations for the future. Eisner possesses more than 22 years of experience in environmental and hydrogeological consulting and is a licensed Professional Geologist in Delaware, Pennsylvania, and Virginia. His foremost technical expertise is in matters relating to water resources including the occurrence, movement, use and management of both groundwater and surface water as a natural

resource; its susceptibility and properties when contaminated; and methods for its safe and sustainable development, and when necessary, its remediation.

Member News

From October 13 to December 21, 2009, **Bill Holtz** was on loan from Bechtel Power to Mining and Metals in support of the Kitimat Modernization Project in Kitimat, British Columbia. Previously, Bechtel signed an engineering, procurement, and construction management agreement with Rio Tinto Alcan for the modernization of their aluminum smelter. The purpose of the project is to increase the production capacity of the smelter while simultaneously reducing greenhouse gas emissions. Holtz oversaw all subsurface investigation work (test pit excavation, mud rotary drilling, and cone penetrometer testing) completed by the contractors for the 2009 fiscal year. Other geologists at Bechtel are replying to requests from the U.S. Nuclear Regulatory Commission for additional information on various applications for a combined license to construct and operate a nuclear reactor. And others are working on the geologic aspects of a license application.

On the Horizon

Two short courses will be coming up in April. *Rock Slope Stability* (**Skip Watts** and **Marty Woodard**) will be held April 10–11, 2010, and *Sirovision* (**Paul Hartley**) will be held April 17–18, both in Frederick. The Sirovision course will be tied into the Rock Slope Stability course and ROCKPACK software. Attendees will go to a LaFarge quarry for the fieldwork and will use actual measurements made by the attendees in the first class. Additional information regarding tuition and Continuing Education Units to be assigned by PA and DE will be provided to members as it becomes available.

Harrisburg Chapter

The Harrisburg Chapter has teamed with the Harrisburg Area Geological Society to meet this year. The January meeting featured Dr. Alexandra Krull-Davatzes, of Temple University, who spoke on *Water on Mars: Recent Findings from the HiRISE Camera on the Mars Reconnaissance Orbiter*. Over 30 people attended the meeting.

The Chapter's February joint meeting with the Harrisburg Area Geological Society featured Dr. William Sevon speaking to the groups about *Pennsylvania Appalachian Plateaus Province Anticlines: Characteristics and Significance*. In March Lauri Lebo, reporter for the *York Daily Record*, spoke on the landmark 2005 Kitzmiller vs. Dover School Board Intelligent Design trial, and her book, *The Devil in Dover*. The Harrisburg Chapter is fortunate to be able to meet in the classroom at the GTS Technologies, Inc. offices in Harrisburg, Pennsylvania, usually on the second Thursday of the month.

Intermountain Section

Niall Henshaw, Chair

The Intermountain Section has had two additional meetings (one in November and one in January) since the last *AEG NEWS* article. Our meetings are held on the second Thursday of each month at Rocky Mountain Pizza in Salt Lake City, UT.

In November, **Walid W. Sabbabh** and **J. Lucy Jordan** of the Utah Geological Survey (UGS) Ground-water Program presented

on the *Simulation of Ground-Water Flow in Cedar Valley, Utah County, Utah*. This talk concerned the construction and validation of a three-dimensional groundwater flow model of Cedar Valley, which lies southwest of Salt Lake City and focused on the basin-fill aquifer.

Cedar Valley occupies an area of 100,000 acres and is surrounded by mountains on all sides with consolidated bedrock outcrops of Paleozoic and Tertiary ages. Utah Lake and the Jordan River lie to the east. Geologically, Cedar Valley consists of Pleistocene and Holocene basin-fill unconsolidated deposits intercalated with many thin clay layers. The unconsolidated basin-fill forms an unconfined to semi-confined aquifer while the underlying consolidated bedrock forms a confined aquifer in the study area.

The ground-water flow model consists of two layers, representing the basin-fill unconfined aquifer and the bedrock-confined aquifer. The simulation aimed at defining the spatial and temporal distribution of the ground-water head and the direction of ground-water flow movement, defining and verifying the flow rates of the various components of conceptual water budget, defining the hydrologic characteristics of the principal basin-fill aquifer and its relation to the underlying consolidated bedrock, defining the boundary conditions that control the ground-water flow regime, calibrating the model and predicting the response of the aquifer system to any future change in the water withdrawals and/or recharge flow rates.

In January, **Jeff Hirst**, CIC, of American Insurance & Investment, and **Adam Mow** JD, AIA, of Babcock, Scott and Babcock,

presented a timely and important talk on *Contracts*. We are all aware of how contract problems can lead to bigger issues, such as change orders, scope creep, unreasonable demands, or even lawsuits, all of which can impact the financial performance of any organization.

This talk focused on two main themes: the elements of contracts and their associated obligations; and, how to avoid problems from the legal and insurance perspective regarding the contractual issues that may affect project and client management. A good question and answer segment followed the presentation.

On the Horizon

The Section is moving forward with the planning for the 2012 Annual Meeting in Salt Lake City under the very capable hands of two co-chairs **Dave Simon** and **Danny Horns**.

Member News

We are pleased to announce that Intermountain Section member **William "Bill" Lund** of the Utah Geological Survey (UGS) was awarded the Utah 2009 Governor's Medal for Science and Technology (Government Section). This award was given for his scientific contributions in the field of geologic hazards of Utah. Lund is an expert on landslides, debris flows, rock falls, collapsible soils, expandable soils, earthquake faulting, and other hazards, and has authored over 90 articles and publications on Utah's geologic hazards. He has recently completed a substantive study on the geologic hazards of the Washington

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County area in southwestern Utah, and has worked with officials in the area to ensure that this study is used in development decisions in the region.

Lund is also a nationally recognized scientist and expert in the field of paleoseismic faulting. His work on determining ages and timing of large prehistoric earthquakes by digging trenches in the earth's subsurface across Utah's Wasatch fault is the most comprehensive body of work performed on this active fault. He has spent his 30-year career with the UGS researching, documenting, and disseminating crucial scientific information on geologic hazards in Utah, to protect the life safety of its citizens and reduce the risk from geologic hazards. Throughout his career with the UGS, Bill has taught and mentored numerous staff, taking them from the just-out-of-college, "green" stage, to expert-level hazards geologists. He is a tremendously knowledgeable scientist as well as a wonderful teacher and insightful supervisor.

The entire Intermountain Section wishes to congratulate Bill Lund on this wonderful achievement.

Kansas City–Omaha Section

Josh Sales, Chairperson

The 18th Annual Kansas Hydrology Seminar was held on November 20, 2009. The seminar was sponsored by the American Institute of Hydrology (AIH) Kansas Section and the Association of Environmental & Engineering Geologists (AEG)—Kansas City–Omaha Section. The program was held at the Topeka-West Holiday Inn and included presentations on a variety of technical and regulatory topics pertaining to the hydrologic environment of Kansas.

On the same day, the 41st Annual Geotechnical Conference was held at the University of Kansas in Lawrence, KS. The two most recent Terzaghi Lectures were presented at the conference: *Uncertain Geotechnical Truth and Cost-Effective High-Rise Foundation Design* by Clyde N. Baker Jr., PE, Dist. M.ASCE, Senior Principal Engineer, AECOM, Vernon Hills, IL; and *Criteria for Geotextile and Granular Filters* by J.P. Giroud, Independent Consultant, JP GIROUD, Inc., Ocean Ridge, FL.

John Moylan, 2007 Jahns Lecturer, presented two of his lectures by telephone as brown bag presentations to the Corps of Engineers' Huntington District Geotechnical Branch. *Geologic Influences on Mid-Continent Dams* was presented in November and *Strength Reduction in Shales* was the subject of a January presentation. He reports that the long distance presentation worked well. The folks in Huntington were given copies of the slides that they showed as he spoke.

Our last section meeting for 2009 was a social event held on December 1 at Barley's Brewhaus, a local "eating" establishment. Several people brought geology-themed vacation/field trip photos to talk about.

On February 23, Rick Miller of the Kansas Geological Survey (KGS) presented *Detecting Voids: Karst, Mines, Tunnels*. The event was held at the KGS Auditorium in Lawrence, KS.

As we go to press, we are looking forward to AEG President **Duane Kreuger's** presentation on March 16.

Upcoming Events

On April 28 and 29, Jahns Lecturer **Dr. Paul Marinos** will present *Ongoing Challenges in Engineering Geology for Tunneling in Difficult Ground*. Dr. Marinos is Professor of Engineering Geology in the

School of Civil Engineering at the National Technical University of Athens and has served as head of the Geotechnical Section of the School for several years. He was a visiting Professor in the Geology Department of the University of Grenoble in 1987, and at the School of Mines in Paris in 2003.

Lower Mississippi Valley Section

The AEG Student Chapter at Mississippi State University

The Student Chapter kicked-off the 2010 Richard H. Jahns Distinguished Lecturer Season hosting **Dr. Paul Marinos** on January 13, 2010 with a university-wide seminar. Dr. Marinos spoke on the *Geology of Athens, Greece: A Case of Urban Geology for Land Use, Construction of Major Engineering Structures, Hazard Assessment and Sustainable Development*. Following the seminar, Dr. Marinos and his wife, Katerina, enjoyed a reception and dinner at the A.B. McKay Food Research and Enology Lab located on the north farm at Mississippi State University. The meal included MSU raised prawns and our world famous Mississippi pond-raised catfish which Dr. Marinos and his wife had never had. We do believe they enjoyed the delicacy.

Following his talk at Mississippi State University, Dr. Marinos was the guest speaker at the Winter Meeting of the Lower Mississippi Valley Section at the Capital Club in downtown Jackson, MS. A social hour and dinner/business meeting took place prior to Dr. Marinos' talk on *Geology in Dam Engineering: An Evolving Contribution of Engineering Geology for Safety and Efficiency*.

Dr. Marinos made three additional presentations within the LMVS: the University of Southern Mississippi in Hattiesburg, MS, on January 25; the University of Mississippi in Oxford, MS, on January 26, and at Tulane University on January 27, in New Orleans, LA.

On April 5, 2010 the Lower Mississippi Valley Section – AEG Student Chapter at Mississippi State University will host the current AEG President, **Duane Kreuger**, as part of his presidential tour. The title of Kreuger's talk is *Environmental Consulting – Where We Are and Where We Are Going*. Plans are still in the early stages; a fish fry is being considered but this will depend on how many fish President Kreuger catches to feed the masses. If no fish are caught, everyone will enjoy Little Dooey's Barbeque. All section members and student chapter members are invited to attend this meeting. More information concerning the meeting will be forthcoming.

New England Section

Bradford A. Miller, PG, Editor

The AEG New England Section continues their monthly dinner meeting schedule. The meetings serve as the primary social and networking events among Section members, with a guest speaker presenting a technical lecture. Typical attendance averages about 30.

In January 2010, **Andy Koenigsberg** presented an impressive overview of the volcanic terrain in and around Yellowstone National Park. He conveyed the scale of many earlier, massive eruptions and far-reaching tephra fallout that blanketed hundreds of square miles in the west and midwest.

Patrick Barosh reports another successful season mapping thrust faults in the Kunlun Mountains of northern Tibet for the China Geological Survey. He is part of a Chinese team providing control for a deep seismic survey, called INDEPTH that is still being processed. Nearer home, he has reviewed reports on a liquefied natural gas (LNG) site in seismically-active northeastern Narragansett Bay. His geologic map of the Webster Quadrangle was finally published by the Massachusetts Office of the State Geologist, but his Hudson Quadrangle is way behind in being digitized. The Hudson Quadrangle straddles the Nashoba Thrust Belt, which is the largest known zone of faults in eastern North America, and displays well the ubiquitous faults that control the ground water and contaminant flow in the bedrock, as well as producing an occasional earthquake. He and **Dave Woodhouse** have continued to battle the manuscript of the revision of the *Geology of Boston*, now at 400 pages, but refuse to start a second volume. They request a moratorium on engineering projects so they can finish.

Bradford Miller has returned after an eight-month hiatus to Haley & Aldrich in Boston, MA, as a Senior Geologist. His primary role is high-level technical support for numerous trenchless construction/trenchless design projects, including a horizontal directionally-drilled (HDD) crossing design below the Schuylkill River in Pennsylvania, crossings below several other large rivers, and jacked pipe crossings beneath an interstate highway. During his time off, he took training sessions in photovoltaic (PV) solar panel design, and low-temperature, closed-loop geothermal well design and installation.

New York–Philadelphia Section

Daniel A. Vellone, PG, Editor

Meeting News

On Thursday December 3rd, 2009, the NY–PA Section welcomed Brian A. Blum, CPG, of Langan Engineering & Environmental Services to offer his presentation *Fundamentals of Geothermal Heating and Cooling Systems – From the Ground Down*.

A discussion of the fundamentals of geothermal heating and cooling systems was presented, including what types of geothermal systems are being designed and built in the northeast U.S. Additionally, Blum discussed how to tell if your project site is right for geothermal and the design, permitting, and construction of geothermal systems process.

Blum is a hydrogeologist and Associate at Langan with 25 years of experience in environmental contamination investigation and remediation mostly relating to groundwater impacts, water resource permitting and development for irrigation and water supply systems, and geothermal ground-coupling in support of constructing indoor heating and cooling systems.

The NY–PA Chapter welcomed **Dr. Paul Marinos**, the 2010 Jahns Distinguished Lecturer of the National Technical University of Athens School of Civil Engineering to offer his presentation *Geology of Athens, Greece – A Case of Urban Geology for Land Use, Construction of Major Engineering Structures, Hazard Assessment and Sustainable Development* at the Thursday, February 25, 2010, Section Meeting.

Unlike most capital cities, Athens does not have a history of continuous expansion; it is one characterized by the glory

of the golden age of the 5th century BC, followed by decline and near annihilation and then resurgence in the 19th century when it became the capital of independent Greece. This was associated with increasing demands for expansion and the subsequent land use. A brief review of the way that the ancient Athenians practiced geology in founding their city is presented. Particular attention is given to the building materials and the quarrying of marbles for monuments such as those on the Acropolis and the Parthenon that enjoys the reputation of being the most perfect Doric temple ever built (438BC).

The hydrogeologic model is presented. The water supply of greater Athens is secured from a system of dams, some as far as 200km far from the city. A brief geological account is given on the weak foundations and the water tightness of these dams. Management of solid wastes and the choice of appropriate site for landfills is a priority issue at present. A site-specific assessment of ground conditions, using rock mass classification was applied successfully for the metro works of Athens. The method considers the rock mass competence for boring on the basis of criteria related to lithology, tectonic deformation (fracturing-folding-shearing), weathering and rock mass classification rating as well as the geometrical-structural position around the tunnel and ground water criteria. Experiences from this construction and how weak zones in the “Athens’ schist” were crossed by the boring machines, either rock shielded or an earth pressure balanced TBMs, are highlighted. In conclusion the various ways in which the citizens of Athens are made aware of the geological conditions of their city are discussed.

Luncheon Lecture at Rutgers University

Dr. Marinos was guest lecturer at Rutgers University Geology Session on Tuesday, February 23, 2009 at noon at Rutgers Department Geology presenting *Tunneling through Karstic Rocks – How Engineering Geology needs Hydrogeologic Input and Logic*.

AEG Student Participation and Sponsorship

The NY–PA Section is seeking more student participation in our organization. Therefore, the Section is seeking financial contributions to off-set the cost of student admission at upcoming Section meetings. The sponsor’s name (or name of company) will be announced in an upcoming Section announcement and recognized in AEG NEWS. For more information, please contact **Curt Schmidt**, Treasurer (862) 207-5900, Ext. 2234 or cschmidt@h2m.com

News of Affiliated Organizations

Call for Papers for “Mega Projects of New York City – Geotechnical Aspects” on Thursday, May 13, 2010 to be held in Hotel Pennsylvania in Manhattan, New York.

More information about the seminar program and full instructions for the paper submission will be posted on the ASCE Met Section website <http://www.ascemetsection.org>.

Member News

Doug Isler and his family have moved to their newly purchased home in Wilton, NY. Doug continues to serve as a Senior Engineering Geologist and Field Engineer for Haley & Aldrich. Doug is presently working on a dam rehabilitation and power generation project in Holtwood, PA. Doug may be reached at disler@haleyaldrich.com.



Doug Isler on his "snowmobile"

Calling all New York-Philadelphia Section Members:

Do you have news of professional activities such as a recent promotion, awards, publications, earning professional licensure, etc.? Has your family vacation taken you to an interesting geologic destination? We want to hear about it! Please send news items to **Dan Vellone** at dvellone@pirmie.com for inclusion in The HomeFront in the next *AEG NEWS* edition.

North Central Section

Need Name of Submitter

The North Central Section is experimenting with "LinkedIn" for communications. It has not replaced email yet.

The annual AEG/ASCE joint meeting on January 13, 2010, was a huge success. The meeting was attended by 81 professional engineers and geologists and was held at Costas restaurant in Greek Town, Chicago. The guest speaker was Faruk Oksuz, Vice President, Black & Veatch, Chicago. Oksuz presented the latest information on the development and construction of the McCook and Thornton reservoirs, which are key components of the Tunnel and Reservoir Plan for Greater Chicago (TARP). The TARP system consists of a network of large diameter deep tunnels over 300 feet beneath Chicago that capture combined sewer overflows during periods of high runoff. The current phases of the TARP project are being constructed by the U.S. Army Corps of Engineers and the Metropolitan Water Reclamation District of Greater Chicago, who each had representatives at the meeting. The deep tunnels, which are currently in service, were constructed by the U.S. EPA and the Metropolitan Water Reclamation District. The TARP project was conceived in the late 1960s and has been under various stages of development since that time. Construction of the Thornton and McCook reservoirs will be the culmination of the efforts of hundreds of engineers throughout these decades and will complete the system. Once in service, the reservoirs are expected to alleviate most, if not all, the releases of untreated combined sewer overflows to Lake Michigan and surrounding waters. Construction of the Thornton reservoir is expected to begin later this year with an extensive grout curtain.

Oksuz's presentation included design details for the perimeter grout curtain system and the connection of the existing 22-ft diameter Thorn Creek tunnel to Thornton Composite Reservoir and a 33-ft diameter Main Tunnel and Gates system for connection of the TARP Mainstream Tunnel to the McCook Reservoir. The projects feature access shafts, tunnels, gates, energy dissipating structure, bulkheads, and live tunnel connections to existing systems. Many of the attendees at the January meeting had spent portions of their careers working on the TARP project and Oksuz's presentation was well received.

Allen Wehrmann, Head, Center for Groundwater Science, Illinois State Water Survey, Champaign, spoke on *Recent Water Supply Planning Activities in Northeastern Illinois* at the November 24, 2009, meeting at the Greek Islands Restaurant in Lombard. Wehrmann discussed the principal sources of water for northeastern Illinois, historical and future water demands in the region, and the Water Survey's recent investigations of the impacts of meeting water demands with pumping from the principal aquifers of the region. Groundwater flow modeling shows the deep bedrock (Cambrian-Ordovician) aquifers are being over pumped along a corridor between Aurora and Joliet. Water levels may have already fallen below the top of the Ancell unit in some areas. Water levels are projected to fall below the top of the deeper Ironton-Galesville unit by 2035. As these water levels continue to drop, deep well yields will decline and water quality may become a concern as underlying saline waters move upward. Greater dependence on shallow groundwater is not without problems. Modeling shows there have been impacts to stream base flows and these impacts will increase as withdrawals increase

SHORT COURSE

A New World in Surface Geophysics

May 18-19, 2010

Morton Arboretum, Lisle, IL

New technology has substantially changed the practice of near-surface geophysics. This two-day short course is designed for civil engineers, geologists, engineering geologists, archaeologists, law enforcement investigators, consultants, owners, and managers. Participants will gain a working knowledge of geophysical tools and a familiarity with pitfalls in subcontracting geophysical services for seismic refraction, seismic reflection, seismic surface waves (MASW), resistivity, SP, IP, EM, VLF, ground-penetrating radar, gravity, magnetics, borehole, and water- and airborne geophysics.

Speakers are Dr. Philip Carpenter, Northern Illinois University, Dr. Timothy Larson and Dr. Ahmed Ismail, Illinois State Geological Survey. Sponsors are AEG-North Central Section, ISGS, NIU.

Registration: \$350 by January 1, 2010; \$450 after that. Make checks payable to "AEG-North Central Section".

Mail registration to:

AEG-North Central Section
c/o Dr. Kevin Richards
1530 Willow St.
Lake Forest, IL 60045

For information: Kevin Richards (kevinlaurie@sbcglobal.net) or <http://www.aegweb.org/i4a/pages/index.cfm?pageID=4680>.

to meet demand. However, while the amount of water Illinois diverts from Lake Michigan is limited by Supreme Court decree, studies by IDNR suggest this supply can support growth within the present service area, home to 77% of the region's population. The Fox River may also provide additional supplies—flows continue to increase as more treated effluent is discharged to the Fox, a resource that could be tapped to meet downstream demand currently using the deep aquifers. As Al stated, "Now is the time to start planning for ways to meet future water demand."

Member News

Barney Markunas was recognized for his service to AEG and as Chair of the North Central Section with a special award at the November meeting. **Dr. Kevin Richards**, incoming section Chair, presented the award to Barney for outstanding leadership of the section. Barney graciously extended his term in office to the end of the calendar to coincide with the new AEG fiscal year.



Barney Markunas receives a special award for outstanding leadership of the section from Dr. Kevin Richards, incoming section Chair.

Bill Haneberg invited and hosted **Christopher Stohr** who spoke at the University of Cincinnati Geology Department Colloquium on December 4, 2009, on *Geologic Outcrop Characterization for 3D Modeling: Using Technology to Reach What We Cannot Otherwise Grasp*. Stohr's family was in attendance and enjoyed a tour of the OSL Dating Lab and campus.

Dr. Kevin Richards has been appointed to the Illinois Board of Professional Geologists for a four-year term.

Sara and Christopher Stohr have become grandparents for the 3rd time. Paige Elaine Nawroth was born January 25, 2010, in Cincinnati, OH.

When the Illinois State Geological Survey provided a number of surplus copies of *Summary of the Geology of the Chicago Area*, **Christy Barry** took 50 to give to her friend who teaches earth science at St. Ignatius College Prep High School in Chicago. She received the following thank-you email:

"Many thanks for the many books. I received them at just the right time, we were going to order a few to have in the library,

and I wanted to use them in some way for an honors project. They are really going to come in handy." – Frank Bellucci, Science Teacher, St. Ignatius.

Barry is planning to spend a day at St. Ignatius this spring to share her knowledge of Northeastern Illinois geology with Mr. Bellucci's earth science classes.

Oregon Section

Robin Johnston, Secretary

It's been a great quarter! We were treated in November to an interesting presentation by Geobruigg's **Tim Shelvin**, PG, on high-tensile strength, light-weight, flexible systems for mitigation of shallow landslides: the TECCO® system that anchors the unstable mass to the hillside and the Shallow Landslide Barrier system that captures the flowing mass downstream of the scarp. We shifted focus in December and were honored with a presentation by AEG President **Duane Kreuger** of Geotechnology, Inc., on the state of environmental consulting. With environmental regulations being a strong driver for consulting, Duane's talk reiterated the need for understanding the differences in regulations from state to state, as well as keeping abreast of changes and current focus in federal regulations. Our annual joint meeting with ASCE was held in January, at which **Robert "Red" Robinson**, of Shannon and Wilson, Inc., provided a fascinating look at recent tunneling projects in the Puget Sound region of Washington State, including the Beacon Hill station/tunnels and the Alaska Way viaduct. Red's presentation of the complexity and dynamic nature of these projects reminded us all of the important interplay our various professions have on their success.

Member News

With sadness, we bid farewell to Oregon's **Doug Williamson**, who passed away in early November. Doug served our professions well in his over 32 years of service as an engineering geologist at the USACE and the U.S. Forest Service. His many contributions included development of the United Rock Classification System, purposeful legislative guidance, years of substantive training and mentoring, and years of contributions to AEG. He was a quiet pioneer, preferring fieldwork to the limelight. He was a respected colleague, and he will be missed.

With much delight, we acknowledge the newest member to the AEG Foundation family of scholarships, the Beardsley-Kuper Geology Field Camp Scholarship Fund. Concern that many schools were making field camp an elective prompted Mrs. Cathryne Beardsley, mother of Oregon's own **Dorian Kuper** (Past AEG President) and mother-in-law of **Tom Kuper** (AEG member and past AEG Foundation Director) to generously contribute to this fund. The scholarship will be available to undergraduates and post baccalaureate students on a yearly basis, with an award of about \$3,500 per student to fund the cost of field camp at an accredited institution. We salute Mrs. Beardsley and the Kupers for their generosity. Additional information about the scholarship and how to apply for it can be found at <http://www.aegfoundation.org/index2.php>.

The Oregon section looks forward to another exciting quarter, which will include Student Poster Night on April 20. We again invite you to join us for a meeting if you are in town. Portland has some of the country's best scenery, best breweries, and a laid-back informal atmosphere. Cheers to the coming Spring.

Rocky Mountain Section

Adam Prochaska, Chair & Julia Frazier, Secretary

For our December meeting, we took a little detour from the norm and held a social event at a local brewery. During the holidays it was fun to meet with fellow members over a beer and game of pool. The first meeting of 2010 was held at AEG Headquarters with a talk by **Duane Kreuger**, Geotechnology, Inc., titled *Environmental Consulting – Where We're at and Where We're Going*. **James McCalpin** of GEO-HAZ Consulting, Inc., presented at our February meeting with a talk titled *Dormant Landslides in Mancos Shale at Crested Butte, Gunnison County, Colorado; Origin, Hydrology, Material Properties, and Stability*. McCalpin spoke about the characteristics of the Mancos Shale, a bedrock formation found in a variety of terrains throughout Colorado and an important one to understand from a geological and geotechnical standpoint.

Some professional news that might be interesting to our members and others: as of the 1st of the year, Lyman Henn, has been acquired by Brierley Associates and will be operating as a division of them. In other news, the Colorado School of Mines is hosting the "31st Annual Short Course on Grouting Fundamentals and Current Practice: Colorado School of Mines, Golden, CO on June 7–11, 2010. For detailed course information and registration, visit: http://outreach.mines.edu/cont_ed/grouting/index/html.

Sacramento Section

John Pfeiffer, Chairman

Pit River Field Trip

On the weekend of July 24–25, 2009, the AEG Sacramento Section held a field trip in northeastern California to look at Geology and Geologic Hazards of the Pit River Region in Eastern Shasta County, California. Approximately 30 AEG members and guests participated in this event that was coordinated by **Kelly Tilford** (HDR) and **Pete Holland** (Vector Engineering). Trip Leaders were Kelly Tilford and **Eric Chase** (HDR), **Tom Sawyer** (Piedmont Geosciences), **Scott Lewis** (CalTrans), **Jeff Cook** (Spring Rivers Ecological Sciences), and **Paul Budesa** (Dicalite). Based out of a group campground on Hat Creek, we were afforded opportunities to see and discuss the latest findings on faulting and seismicity in the region, evidence of dramatic large landslides and associated floods, and construction/ maintenance challenges posed to PG&E's hydroelectric facilities and CalTrans highway projects by the highly varied volcanic terrain. We also visited Burney Falls, learned much about the unique aquatic ecology of the region and toured Dicalite's open-pit diatomite mine in the area.

AEG 2009 Annual Meeting in South Lake Tahoe

Despite the tough economic climate, the AEG 2009 Annual Meeting in South Lake Tahoe was a great success both logistically and financially. I want to extend our gratitude to the Meeting Co-Chairs **Bruce Hilton** (Kleinfelder) and **Gary Luce** (Geocon), Meeting Manager **Heather Skladanowski** (Colorado Event Organizers), all those who joined them on the Annual Meeting Planning Committee, and the numerous additional volunteers and supporting firms who helped plan, support and run the event. I believe that the volunteer hours easily ran into the thousands! The financial success of the event would not have been possible without the generous support of all the sponsors and vendors who participated, as well as all the

attendees. Thank you! We are looking forward to AEG's 2010 Annual Meeting in Charleston.

New AEG Sacramento Section Officers

The close of 2009 brought the transition of officers for Sacramento Section's Executive Council. For 2008 and 2009, **Kelly Tilford** (HDR) was our Section Secretary, **Pete Holland** (Vector Engineering) was Section Treasurer, **Nate Manley** (SAGE) was Section Vice-Chair, I was Section Chair, and **Eric Chase** (HDR) was immediate past-Chair. For 2010 and 2011, **Garry Maurath** (URS) will serve as Secretary, **Tim McCrink** (CGS) takes over as Treasurer, and **Pete Holland** takes on the duties of Vice-Chair. We are continuing to seek a nominee for Section Chair for 2010 and 2011. I wish to thank Kelly for his input and ideas while covering the Section Secretary duties (among other things) for the past two years and to Nate for his valuable contributions over the past eight-plus years in the various roles of Vice-Chair, Secretary, and Newsletter Editor. I am pleased to have **Garry Maurath** and **Tim McCrink** join with **Pete Holland**, **Eric Chase**, and me on Sacramento Section's Executive Council, to have **Drew Kennedy** (SAGE) continuing as our Scholarship Chair, and **Eric Chase** continuing as our Legislative Affairs Liaison.

Sacramento Section 2010 Plans

Looking ahead in 2010, we already have an active year laid out, with more events still to be added. Sacramento Section is once again proud to host our annual Student Night in April, where we will award Graduate and Undergraduate Geology Scholarships and see presentations by a yet-to-be-selected geology student and by Yosemite National Park Geologist **Greg Stock**. Dr. Stock's presentation, *New Tools For Understanding and Mitigating Rockfall Hazards in Yosemite National Park*, will whet our appetites for an AEG Sacramento field trip to Yosemite on the first weekend of May. On the field trip we will learn about recent advancements in the understanding of glacial and post-glacial geomorphology of the area. Other meetings on our 2010 calendar include: March – **Will Arcand** (State Mining and Geology Board), *Roles of Engineering Geologists Under California's Surface Mining and Reclamation Act of 1975*; May – AEG Foundation Fund Drive/AEG President **Duane Kreuger**, *Environmental Consulting: Where We Are and Where We Are Going*; June – **Mark Stanley** (Kleinfelder), *The Sacramento Valley Levees*; and, October – **Dr. Paul Marinos**, AEG/GSA 2010 Richard H. Jahns Distinguished Lecturer in Engineering Geology.

St. Louis Section

Anna Saindon & Greg Hempen

The October 27, 2009, Section Meeting welcomed Jeff Hill of Hayward Baker to present *Micropiles: An Overview and Case Studies*. Hill is always a fine speaker and gave a good discussion on what sites and loads are appropriate for micropiles. Hayward Baker was doubly appreciated as the sponsor for the October meeting. The meeting was at Growler's Pub in Sunset Hills.

John Cable, Triangle Environmental, was the speaker for the November 12, 2009 meeting. Cable's presentation *Delineation of Soil and Groundwater Impacted by TCE Contamination* was both interesting and informative. There was good interaction at the meeting with the speaker and guests. Our thanks to meeting sponsor PSA Environmental, KC, MO. The meeting was held at Limestone's in Maryland Heights, MO, and the food was excellent as always.

The Fall campaign for the AEG Foundation was completed just before Thanksgiving. A total of \$800 was provided by various large and small donations from Section members. A new fundraiser for the AEG Foundation began in January and will be ongoing until this fall. The Section is offering two exciting books for your collection: *Missouri Field Trip Guidebook* (\$10) and the new *Living with Unstable Ground* (\$5 for members and \$10 for non-members, plus shipping). Proceeds go to support the AEG Foundation.

Jeff Probst, Environmental Management Alternatives (EMA), gave a presentation on *Waste Disposal Options* for the January 20, 2010 Section Meeting. EMA was also our sponsor for this meeting held at Growler's Pub, Sunset Hills, MO, where the Section experimented with appetizers instead of a full meal. This allows more social time to try some of the 131 beers at the pub. Needless to say, a good time was had by all. There were also discussions by Peter Price, Missouri Division of Geology and Land Survey and Jim Williams, former Missouri State Geologists on preparations for the "Shaking Hands" event.

February is Earthquake Awareness Month in Missouri

On Tuesday, February 2, 2010, a group of geoscientists and engineers visited the Missouri State Capitol building for "Shaking Hands in Jefferson City." There they visited with several dozen state senators and state representatives and their staffers. The group provided the Missouri legislators with information about critical issues that are within the realm of geoscience and engineering, such as earthquakes and natural hazards, energy, mineral and groundwater resources, environmental quality, and others. Most of the AEG members were from the St. Louis Section, and included Emma Ruhmann and Matt Hafner, both students at St. Louis University; Ana Londoño, St. Louis University; Phyllis Steckel, Earthquake Insight LLC; Greg Hemen, URS Corporation; Kerry Nikolaisen and John Bogner, both of Legette, Brashears & Graham, Inc.; Jim Williams, former Missouri State Geologist, Marilyn Williams, and Teresa Neinhaus, Treasurer of the St. Louis Section. Peter Price, Missouri Department of Natural Resources, was out of the country and unable to participate, but had planned much of the day's activities.

On Friday, February 5, 2010—despite deteriorating weather and road conditions—about 350 people attended the 16th annual "Earthquakes: Mean Business" event at St. Louis University. The program included presentations on earthquake hazards, earthquake risks, community and business mitigation options, an update on the Haiti Earthquake, and tours of the St. Louis University's Earthquake Center. This annual event is planned by the geoscience and engineering community for the St. Louis regional leadership in business, government, and infrastructure. After the morning plenary session, there were breakout sessions. There also were about 15 exhibitors. Phyllis Steckel, Earthquake Insight LLC, and Tim Bonno led this annual, free event.

On Saturday, February 6, 2010, Anna Saindon coordinated more than a dozen earthquake-related, kid-friendly, special exhibits at the St. Louis Science Center for "Earthquake Day at the Science Center." Families visited the special exhibits and learned about earthquake geology, earthquake engineering, and earthquake safety. Kids enjoyed hands-on, learning-play activities, and adults visited with the geologists, engineers, and emergency management volunteers. At least 350 to 400 visitors stopped by the special exhibits. Stefanie Voss assisted.



Earthquake Day at the Science Center— (above) A Red Cross volunteer hands out pamphlets.

(below) Steve Besemer with SEMA gives a demonstration.



ASCE representative Chad Schrand teaches children about earthquakes using Legos® during Earthquake Days at the Science Center.

THE HOMEFRONT

Another Reason Why You Should Attend Your Local AEG Meetings

Phyllis Steckel recently attended a regular meeting of the St. Louis Section of AEG. There, she was introduced to John Northington, one of the guest speakers for the meeting. The man looked familiar, and, after re-introductions both realized they were both from the small town of Washington, MO, and that they had met almost 25 years before!

In 1985, Phyllis sold her 1958 Edsel Citation (a distinctly collectable car that looks like a Mercury sucking a lemon) to John's uncle who lived out-of-state. John had handled the paperwork for his uncle, picked up the Edsel, and drove it away, giving Phyllis her last sight of her favorite vehicular dinosaur. Soon after that sale, the car was shipped to Ohio and was fully restored by John's uncle. Phyllis learned that it lived a comfortable life in a heated garage, occasionally venturing out on warm sunny afternoons to car shows.

The moral of the story: attend your local AEG meetings, if you want to learn all kinds of interesting information!

San Francisco Section

Jared Pratt, Chair

The Bay Area has been experiencing ample rainfall over the past few months. Although a little soggy, we have had some great monthly dinner meetings with fantastic speakers, food and beverages. In addition to our monthly meetings, all of the California sections have been busy trying to keep informed of the activities

related to the elimination of the Board for Geologists and Geophysicists (BGG) and the transfer of duties and responsibilities to the Board for Professional Engineers and Land Surveyors (BPELS). This was a big blow to the geologic and geophysical community in California at the end of last year. Currently, while attempting to regain our independent board, we are striving to obtain representation within BPELS and maintain the high standards that were enlisted by the BGG and their committees.

In November we had our joint meeting with the San Francisco Chapter of the Geo Institute. David Crouthamel and Erin Hohenshelt, of Jacob's Associates, discussed the rehabilitation of the California Park Hill Tunnel. The tunnel rehabilitation is the first phase of the establishing the Cloverdale to Larkspur commuter rail corridor between Sonoma and Marin Counties. The project was fraught with construction mysteries and challenges that required the specialty contractors, engineers, inspectors and municipalities to work together for quick, sound solutions.

Hans Abramson Ward of AMEC Geomatrix presented a compelling discussion of the work done to assess the potential of surface fault rupture at the Briones Dam during our December dinner meeting. The zoned earthfill embankment was constructed in 1964 at which time traces of the then considered non-active Pinole fault were observed. Current work has indicated that the fault is conditionally active. Abramson Ward presented their work showing the absence of activity of the Pinole fault within the last 35,000 years. The work was heavily reviewed and ultimately the California Division of Safety of Dams concurred with Abramson Ward and the dam remains in place to impound more than 60,000 acre-feet.

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Southern California Section

Peter Thams, Chair

California Geology Board Status Summary

Hello Section and a belated Happy New Year! We kicked off the New Year in the City of Commerce at Steven's Steakhouse. I was glad to see everyone there. There has been a good deal of activity regarding the transfer of responsibility for the Geologists and Geophysicists Act (Act) to the Board for Professional Engineers and Land Surveyors (BPELS) that has been addressed in the News of the Profession (see page 10).

For more information, go to the California Professional Geologists blog, a related website, at californiapg.ning.com or contact **Peter Thams**, thams.peter@gmail.com; **Charles Nestle**, tCNESTLE@dpw.lacounty.gov; **John Pfeifer**, jpfeif@sbcglobal.net, or **Jared Pratt**, jpratt@rghgeo.com. Be certain to let them know also how much you appreciate their involvement in the past months in seeking the best possible outcome of the CA Board merger!

AEG Inland Empire Chapter

Kerry Cato, Chair & Frank Jordan, Secretary

The November Meeting was held in Temecula, CA. **Stephen Testa**, Executive Officer of the California State Mining & Geology Board presented a talk on *Status And Relevancy Of Licensure And Registration Of Geologists And Geophysicists In California And Its Implications...Or...“Do We Still Need Our Stinking Badges?”* A spirited discussion about the licensing and the current actions in the State of California regarding licensing followed this presentation. There was no December Chapter meeting.

The January Meeting was held in Riverside, CA. Instead of a speaker we held a round-table discussion of the attendee's projects and other issues that affect the profession.

The February Meeting was held in Temecula, CA and **Dr. Tom Rockwell** presented an intriguing talk on *The Long Paleoseismic Record of Earthquakes On The San Jacinto Fault: When Is The Next Local Big One*. An interesting aspect of Dr. Rockwell's research is an apparent paleohistoric "alternating" seismic relationship between San Jacinto fault seismicity and San Andreas fault seismic activity; also in terms of pre-historic return intervals of earthquakes, both the San Jacinto fault and San Andreas fault are "overdue" for a large earthquake. This was one of our better-attended meetings in some time. The Geological Sciences Department at Cal Poly Pomona is back in business after a bit of a scare last December when there was a movement afoot to close both of its degree programs. Geology Chair Jon Nourse met with the Cal Poly Provost and the Dean of Science on December 23 and was able to secure the Geology Department as it stands with a combined Geology-Integrated Earth Studies (IES) major. The Provost was receptive to his proposal to merge Geology and IES into one degree program within the existing Geology Department. It was clear during this conversation that multiple letters of support from practicing geoscientists were an important factor that underscored the high value of a Geology degree from Cal Poly Pomona. Engineering Geology, Groundwater Geology, and Natural Hazards Analysis continue to be strong components of the program. Dr. Nourse and the Cal Poly Geology faculty wish to express their gratitude for the overwhelming support from the local geologic community.

In January we were fortunate to have **Greg Stock**, the first-ever Park Geologist at Yosemite National Park, speak regarding the rockfall history of the valley and mitigation measures taken to protect the public in the park. Stock has employed new tools such as LiDAR, high resolution photography, seismic monitoring, cosmogenic dating and simulation software to assess the hazards and recommend precautionary and mitigation measures in the valley. Recommendations by Stock for protective measures included closing part of the widely visited Curry Village which was instituted by the Park.

In the coming months we are looking forward to having **JC Isham** of Shaw Group speak about the reclamation of the Jamestown Gold Mine as well as the distinguished **Jahns Lecturer, Dr. Paul Marinos**. We are excited to be having a short course presented by **Glenn Borchardt** in June on soil stratigraphy for trench logging. Please stay tuned for more information regarding this course and all the rousing activities here in the Section by the Bay.

Southeastern Section

Matthew Howe, Co-Chair

Our Section invited new AEG president, **Duane Kreuger**, to speak at two meetings on February 3, 2010 in the greater Atlanta area. Duane presented a talk titled *Environmental Consulting – Where We're at and Where We're Going*. With the assistance of **Martha Carr** and **Matthew Howe**, Duane visited the University of West Georgia in Carrollton, GA in the afternoon and then the Georgia Institute of Technology in Atlanta, GA in the evening. The evening meeting was publicized as both a Section meeting and a meeting with students. We had a great turnout at both universities.

The 2010 Distinguished Jahns Lecturer, **Dr. Paul Marinos**, presented at many locations throughout the Southeastern Section, including the Atlanta, Georgia and Miami Florida metropolitan areas during the month of February:

February 15 – AEG Meeting, Presentation on *Rock Mass Characterization* at the Georgia Institute of Technology in Atlanta, GA.

February 16 – Joint AEG/American Society of Civil Engineers Geotechnical Section Meeting, Presentation on *Geology in Dam Engineering* at the Georgia Power Building in downtown Atlanta, GA

February 22 – AEG Meeting, Presentation on *Ongoing Challenges in Engineering Geology for Tunneling in Difficult Ground* at Florida International University in Miami, FL.

February 23 – Joint AEG/Atlanta Geological Society Meeting, Presentation on *Geology of Athens, Greece* at the Fernbank Museum in Decatur, GA.

Section News

We continue to look for volunteers that are interested in reviving the Southeastern Section and to serve on the organizing committee that has been formed. We are currently focusing our efforts on the Atlanta metropolitan area, but plan to expand as we get more interest. If you are interested in volunteering, please contact **Matthew Howe** (mhowe@wilbursmith.com).

2010 Annual Meeting

We are also looking for volunteers to help on the 2010 annual meeting planning committee. If you are interested in volunteering for this committee, again, please contact **Matthew Howe**.

THE HOMEFRONT

In November the Board of Registration for Engineering and Land Surveyors (BPELS) met in Riverside, CA. This "Southern California" meeting was one of two that BPELS conducted, the other was a December meeting in Northern California, to address the geologic community regarding the recent change for BPELS to administer geologic licensing in the State of California. Public testimony was lively with about 15-20 geologists in attendance. It is still very early in this process and David Brown, Executive Officer of BPELS said that two staff members would be moved to the BPELS staff from the now eliminated BGG (Board of Registration for Geologists and Geophysicists); however neither of these two positions would be a registered geologic professional. There was talk of future legislation that could add one geologist to the BPELS and add "geologist" to the title of the Board, but this would have to be addressed by legislative action and not BPELS. There was much interest in what would happen to the BGG's existing Technical Advisory Committees (TAC), exam testing standards, disciplinary records, and the BGG licensing fund. It appears that rather than simply moving all existing TACs, the BPELS prefers to eliminate the TACs and to reformulate new TACs of their own. No firm answers were forthcoming on the other issues, but rather we were told that the BPELS was willing to work with geologists. Geologists in California are watching developments with interest, but we all realize that while promises of good will are assuring, the devil is in the details and time will tell how this administration of geologic licensure will work out.

On February 8, 2010, attorneys for the California Association of Professional Geologists filed a Petition for a Writ of Mandate and First Amended Complaint for Declaratory Relief against California Governor Schwarzenegger and the Director of the California Department of Consumer Affairs (DCA), Brian Stiger seeking the reinstatement of the DCA's BGG. The Mandate and Complaint contend that the state Legislature improperly eliminated the BGG during the 4th Extraordinary Session called to address the fiscal emergency *du jour* and transferred the administration of the Geologist Act to the BPELS without proper representation of the geologic licensees governed by the Act. In addition, the Mandate and Complaint state that the Governor exceeded constitutional and statutory limitations on his authority when he signed AB x4 20 into law.

The Board for Professional Engineers and Land Surveyors (BPELS) has announced the schedule for administration of the upcoming ASBOG Fundamentals of Geology Examination, ASBOG Practice of Geology Exam, and the California Supplemental Component Exam. BPELS plans to offer tests only once a year in October (as compared to the former two tests/year offered previously) and in only a northern California location (as compared to an additional southern California location previously). The Writ of Mandate contends that BPELS is not adequately administering the Act. BPELS is presently advertising for a TAC to draft and grade tests. Attempts to add one geologist to BPELS and to add "Geologists and Geophysicists" to the title of the Board (proposed by the union Professional Engineers in California Government in Assembly Bill AB 1431) appear to be headed for failure unless the AB 1431 is amended to maintain the size of BPELS at its current number of 13 members.

In regard to the above-mentioned information, BPELS is recruiting licensed PG's, PGP's, CEG's, and CHG's in the State of California to assist with geologic examination development. To apply as a Subject Matter Expert, submit the recruitment form

located at <http://www.geology.ca.gov/forms-pubs/smeapp.pdf>. For more information, contact the BPELS Examination Development Unit at 916-263-0922 or 916-263-2239.

Southern Nevada Section

Sara Piper & Bill Durbin

The Southern NV Section held its monthly meeting on November 10, 2009, at McCormick & Schmicks Restaurant in Las Vegas. Our guest speaker, Bill Durbin, from the Nevada Division of Minerals, discussed and presented Nevada's abandoned mines program to the group. Durbin also led a field trip on Saturday November 14, 2009, to the Goodsprings Mining District, NV. Field trip stops included several abandoned mine locations illustrating various securing methods employed to promote public safety. Durbin's talk and pictures from the field trip are summarized below.

Background

The 150-year-old mining industry in Nevada had its first recorded mining operation at Potosi Mountain in 1857 near Las Vegas. From its early roots at Potosi Mountain, mining in Nevada has become a 6.1 billion dollar industry. There are 526 mining districts in Nevada that contain almost everything that can be mined except coal and diamonds. Although Nevada is the Silver State, it is currently second in silver production to Alaska. However, it is the number one gold producer in the country and number four in the world following China, South Africa and Australia. Mineral exploration and development activities have taken place in all 17 Nevada counties and continue to today. However, historic mining activities have left a legacy of abandoned mines that now create a public nuisance and danger.

In 1987 the Nevada Legislator created the abandoned mines program which included mine safety and public awareness. The Nevada Administrative Code (NAC) defines mining hazards as *dangerous condition resulting from former mining practices*. Approximately 200,000 to 300,000 documented mining related features in the state have been identified through historical record search and map inquiries or when reported by the public; 50,000 of these have been identified as hazardous. These include vertical or inclined mine shafts and horizontal adits or tunnels that may contain vertical or inclined workings inside. Hazards at these mines can include cave-ins, falling down, drowning, rotting timbers, asphyxiation due to low oxygen, explosions, and encountering critters such as rattlesnakes. The hazardous mines are ranked on a two to ten point scale based on their location (close to a road and easy public access); the type of hazard and any previous history of accidents involving people or domestic animals.

The Division of Minerals abandoned mines program also includes the *Stay out and Stay Alive* public awareness program. The program educates the public and conducts public outreach to schoolchildren on Nevada's mineral resources and dangers of abandoned mines. The abandoned mine program is self funded and receives funding from mining claim transaction fees and grants from Federal land management agencies.

Securing Methods

Mine closure activities are conducted by private property owners, companies and individuals that hold mining claims on public lands, Federal (Bureau of Land Management, U.S. Forest Service,



National Park Service or Bureau of Reclamation) and State entities. State and Federal agencies work under cooperative agreements to secure mines on public lands. Hazardous mines are secured initially with temporary methods such as fencing and public warning signs (Photo 1). These temporary features are often subjected to vandalism and most require occasional maintenance until a mine opening can be permanently closed. Permanent mine closure procedures where easy access to large equipment is available, includes backfilling with material removed from the mine. Polyurethane expansive foam is used to seal a shaft or adit in remote areas with no access to heavy equipment. The foam, which costs \$200 per cubic yard, can be heli-coptered to its location when necessary. Expansive foam can last up to 100 years in dry desert regions; however, it must be covered and protected from exposure to ultraviolet radiation and fire.

On public lands where permanent closures of a mine may alter the environment or cultural antiquity of the area, a National Environmental Policy Act (NEPA) study is conducted. This will include a study of wildlife use in the mine including bats, and desert tortoise, which inhabit a significant area of Southern Nevada. Bat colonies are studied using indirect methods such as sonar, infrared photography and direct internal surveys by bat biologists. If habitat is determined to have been established in an abandoned mine, such as bat breeding colonies, the mine closure is designed to restrict access by the public but remains open to bats and other critters. These closure methods must not alter airflow and temperature of the mine. An adit is closed with a bat gate that has a spacing of 5-3/4 inches between bars. This is the smallest distance that bat can maneuver through and yet impedes public access (Photo 2). An opening may be left on the bottom for tortoise use. For mine shafts, bat cupolas are used to prevent public allow bat usage and proper airflow (Photo 3).

Of the 50,000 mines determined to be hazardous, to date, 14,635 have been investigated and ranked. Greater than 10,000 of these have been secured.



Texas Section

Jerry McCalip, Secretary

On Saturday, January 16, 2010, the Texas Section held its winter meeting in Galveston, TX, at the San Luis Resort, along with a field trip to Galveston Island and the Bolivar Peninsula. A total of 61 people attended the meeting.

Buildings and homes in Galveston and the Bolivar Peninsula were heavily damaged during Hurricane Ike on September 13, 2008, and the storm surge changed the footprint of the coastline with scours channels and erosion. The storm surge with this storm was found to be responsible for more damage to structures than the winds.

A morning session was conducted at the San Luis Resort with presentations by **Duane Kreuger**, AEG President, Mike Lemonds (Texas General Land Office) and Marisol Palomares. **Eric Stiffler** (Texas A&M University) then presented an introduction to the field trip with a historical view of the state and island's storm history, the morphology of the Texas Coastal Plain and the effects of Hurricane Ike on the coastline and structures in the area.

Duane Kreuger's presentation featured a discussion on the benefits of AEG and a talk titled *Environmental Consulting: Where We're At and Where We're Going*. Mike Lemonds' presentation



Securing Methods, from top: Photos 1 – 3

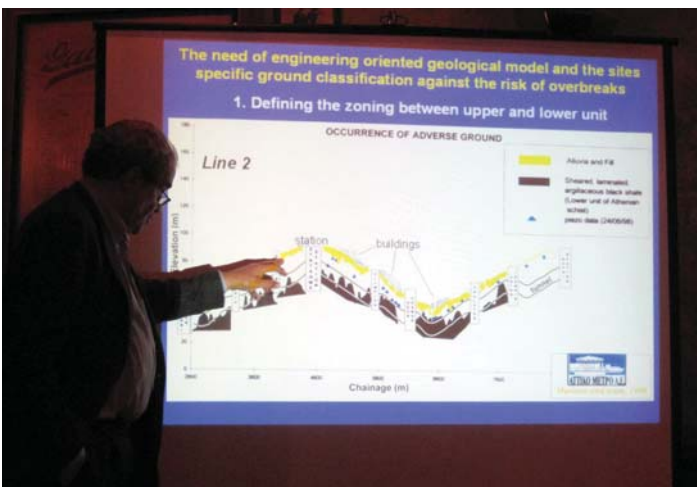
THE HOMEFRONT



Texas Section Chair Paula Jo Lemonds introducing Duane Kreuger
Photo by Jerry McCallip



Marisol Palomares making her presentation
Photo by Jerry McCallip



Dr. Marinos with diagram of metro construction route and engineering Geology issues related to the project
Photo by Cynthia Palomares



Mike Lemonds with the Texas General Land Office
Photo by Jerry McCallip



Dr. Mathewson and Eric Stiffler illustrating aerial features at stop. Marie Garsjo in foreground Photo by Jerry McCallip

summarized the Texas General Land Office's unique role in debris recovery efforts following Hurricane Ike, within the zone of jurisdiction of the State. The much-debated State/private land boundary along the beach front was also discussed, and generated much discussion. Marisol Palomares, a high school student and daughter of Past Texas Section Chair Cynthia Palomares, made a presentation on her Marine Science Project with Texas A&M University at Galveston.

A bus tour led by Eric Stiffler and Chris Mathewson followed the morning session and a guidebook, *Impact of Hurricane Ike on an Engineered Coast*, was provided to the participants. Seven stops were made on the field trip to locations impacted by the storm, including heavily damaged Bolivar Peninsula. The guidebook and discussions at each stop illustrated the damage and the success or failure of engineered structures at each location. At each stop, Texas A&M students exhibited large-scale aerial photos from the guidebook, and a short time was allowed for pictures and for inspection of the site.

The field trip ended late in the day, and was followed later in the evening with a dinner at Gaido's Restaurant along the



Eric Stiffler at one of the seven stops of the field trip
Photo by Jerry McCallip



Damaged beach home marooned within state boundary due to storm Photo by Jerry McCallip

beachfront in Galveston. The dinner was attended by 60 people, and featured a presentation by the AEG Jahns Lecturer, **Dr. Paul Marinis** from Athens, Greece. His presentation for the evening event was *The Geology of Athens, Greece, A Case of Urban Geology for Land Use, Construction of Major Engineered Structures, Hazard Assessment and Sustainable Development*. It depicted historical structures and development, the geology and engineering geology associated with construction projects efforts in and around Athens, including construction issue of the underground METRO for the Olympics.

A business meeting of the Texas Section AEG was held Sunday morning at the San Luis Resort. At the meeting, discussions concerning the upcoming Shlemon Specialty Conference—

“Modern Subsidence, Sea-Level Rise and the Future of the Gulf Coast”—to be held in Galveston and hosted by the Texas Section, centered upon confirming the meeting location and other issues. The date of the conference will be May 13–15, 2010. It was decided by the board that the spring meeting of the Texas Section, normally held in April of each year, would be held in conjunction with the Shlemon Conference.

A fishing tournament to be held in Galveston is scheduled for Wednesday, May 12, 2010—the day before the conference begins—to benefit the Texas Section Scholarship Fund. Proceeds of the Shlemon Specialty Conference will be divided between the AEG Foundation and the Texas Section Scholarship Fund. More information regarding the Shlemon Specialty Conference can be found on AEG’s website.

Washington Section

Julia Turney, Editor

The AEG Washington Section and the Association for Women Geoscientists – Pacific Northwest Chapter are co-leading and organizing two field trips that will focus on the north and west coasts of the Olympic Peninsula in Northwest Washington State. The first trip will be a three-day, two-night affair, scheduled for May 14–16, 2010. It will focus largely on the Elwha Dam Removal project, large structurally controlled landslides along the shoreline of the Strait of Juan de Fuca, and many other interesting environmental and engineering geology projects on the north side of the Olympic Mountains. The second trip, not in the planning stages yet, will focus on the west coast of the Olympic Mountains where complex glacial stratigraphy, large landslides, and the rainforest river systems present planning, design, and construction challenges to the members of AEG and AWG. If you are interested in attending the field trips or want some more information, please contact **Doug Anderson**, the AEG Washington Section Field Trip Chair, at leg516@thewiredcity.net. The AWG contact is **Marcia Knadle**, Vice President of the Pacific NW Chapter of AWG, Knadle.Marcia@epamail.epa.gov.

Chip Barnett, Washington Section Vice-Chairperson, reports the Section has begun to scan our records from years’ past to an electronic format with the help of **Kathy Troost**. Just imagine remembering a project taken on by the Section in the past and not having to search through the past Chairperson’s garage to find the records!

WGL Friends

Tom Badger and **Lee Walking** are Board members for the newly formed Friends of The Washington Geology Library (WGL Friends). The Library, part of DNR, Division of Geology and Earth Resources, has been suffering budget cuts and while it remains open and the librarian’s salary is paid; there are no funds for acquisitions or subscriptions. The Library is trying an old solution to gain support. A friends-of-the-library group has been formed; it is a 501(c)(3) non-profit group able to solicit tax-deductible financial contributions and to document (Supporters’ List) the many and varied people and organizations who value the Library’s services and unique collection. In order to gather that long list of Supporters, the annual donation fee is set at a mere \$5.00, but Supporters are free to donate any additional amount. In 2010 the WGL Friends will have a webpage and a quarterly newsletter (online).

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The first fundraising activity, the annual Earth Science Week Rock Auction (Oct. 13) raised \$1100. In December, for Christmas, sales of little bundles of coal tied in red and green tulle (net), with a label saying it was "From: Santa You've been BAD!" raised an additional \$75.00. The WGL Friends also sell vials of ash from the May 1980 eruption of Mount St. Helens. The WGL Friends Board members are **Trevor Contreras**, Dave Knoblach, Nadine Romero, Wendy Gerstel, **Tom Badger** and **Lee Walkling**. To become a Friend, request an application form from wglfriends@yahoo.com or call Lee Walkling 360-902-1473.

Member News

At The Riley Group, **Fred Becker**, Washington Section Treasurer, has been working on two projects that recently were submitted to Ecology's Voluntary Cleanup Program. One project was successfully completed; the other will need a work plan for gathering additional subsurface data before an NFA can be granted. Fred will also be taking part in the forensic analysis of a retaining wall failure.

Dick Galster reports that the Washington State Geologists Licensing Board will hold their annual meeting on March 9, 2010, at the University of Washington. The meeting will include the election of officers for the coming year. Any Washington licensee or other party having items of business for the Board should call Joe Vincent or Erica Miller at the administrative office in Olympia at 360-664-1497.

William T. Laprade, Shannon & Wilson Associates, received the 2010 Distinguished Service Award from ASCE Seattle Section Geotechnical Group at the ASCE & AEG January 28, 2010, joint meeting. Through his work on large public works projects in glacial soils in the Seattle area and in Boston,

Laprade has been recognized as one of the leading experts in glacial history, distribution of glacial deposits, and the behavior of glacial soils during construction in the United States, and particularly in the Puget Sound region. He co-authored with **Dick Galster**, *The Geology of Seattle, Washington*, which has been a staple for the understanding of the engineering geology and engineering properties of Puget Lowland soils since its publication by AEG in 1991. Laprade's expertise in the identification and geologic interpretation of landslides is reflected in his leadership as the prime author of the Seattle Landslide Study for Seattle Public Utilities, which received the 2001 CECW (now ACEC Washington), Engineering Excellence Honor Award and National Recognition Award by the American Consulting Engineers Council. The study is an invaluable tool for many of our design professionals in Seattle, and the City's landslide capital program is based in large part on the results of the study.

As an expert, Laprade is often called on to make public presentations at City of Seattle-sponsored landslide meetings, and before other civic and professional groups in the Puget Sound. His efforts have contributed greatly to elevating the stature of geologists, from information gathering, to that of integral members of geotechnical design teams.

Darrell Sofield, geomorphologist and GIS analyst at aMAP is joining his wife on her sabbatical to Zürich Switzerland. He's hoping to find some work, peers, and friendships to make the best of the opportunity. Please let him know if you have a contact suggestion at dsofield@amazingmaps.us. They plan to leave in September 2010.

Section Meetings

The Washington Section has been very lucky to have local companies sponsor students at our meetings. AMEC, CDM, GeoEngineers, Hart Crowser, Kleinfelder, Lachel & Associates and Shannon & Wilson sponsored students at the February meeting. Thank You!

The November 19, 2009, meeting in Tacoma featured Frank Shuri (Golder Associates) speaking on the White King Uranium Mine, Environmental and Geotechnical Investigations and Mitigation. The White King/Lucky Lass CERCLA site consists of two former uranium mines in south-central Oregon. Frank gave a presentation on the design and construction management for the remedy and the biological studies related to water and sediment quality. The remedial design included consolidating two large mining overburden stockpiles that contained low levels of radioactive and heavy metals by moving over 700,000 cubic yards of material and then capping the combined stockpile. The remedy also included stream restoration and wetlands development. Several innovative approaches were used to enhance the efficiency and value of this project, including an armored cover design, ecological risk characterization using caged mussels, and determining the limits of soil removal using gamma radiation scanning techniques. Remedial construction began in 2004 and was successfully completed in 2006.

The Section's year-end Holiday Party featured personal slide shows from AEG members and family, pizza and beer, a gift raffle, and food drive. Also, this year, **Duane Kreuger** gave a short presentation on the status and current events at AEG at the national level. Our personal slideshow presenters (and their topics) included **Mark Molinari** (Papua New Guinea Pipeline), **Dave McCormack** (Galapagos Islands, Ecuador), **Kami Deputy** (On

the Road Geological Style), and **Bill Laprade** (Alisan Landslide, Central Taiwan). The food drive was successful as always with AEG members donating 65 pounds of food to Hopelink to help the needy during the holiday season.

The January 28, 2010 Joint AEG/ASCE Dinner Meeting in Bellevue featured **Red Robinson** (Shannon & Wilson), and Dick Sage (Sound Transit) discussing the Beacon Hill Station and Tunnels, part of the Sound Transit Link Light Rail in Seattle. Their presentation featured the geologic conditions anticipated and those encountered, how the actual conditions were handled, and the overall construction of the project. The Beacon Hill Station and Tunnels includes approximately one mile of

twin-bore tunnels with portals; a deep, mined, binocular tunnel station with platform, concourse, cross-passage and ventilation tunnels; station access and ventilations shafts with headhouses for access. The Beacon Hill Station is the deepest, mined structure of its size in soft ground using Sequential Excavation Mining techniques for tunnel structures up to 40 feet in diameter in North America. The mainline tunnel was driven using Earth Pressure Balance Tunnel Boring Machine and a one-pass pre-cast segmental lining. The Beacon Hill station and tunnels were constructed in a very complex geological setting influenced by several glaciation periods and tectonic activity and is located in the Seattle Fault zone.

NEW/RENEWING MEMBERS

AEG Welcomes Its New Members

The following is a list of members alphabetically by Section whose membership payments were received January 1–January 31, 2010. Additional contact information can be obtained by logging on to the online membership directory at www.aegweb.org.

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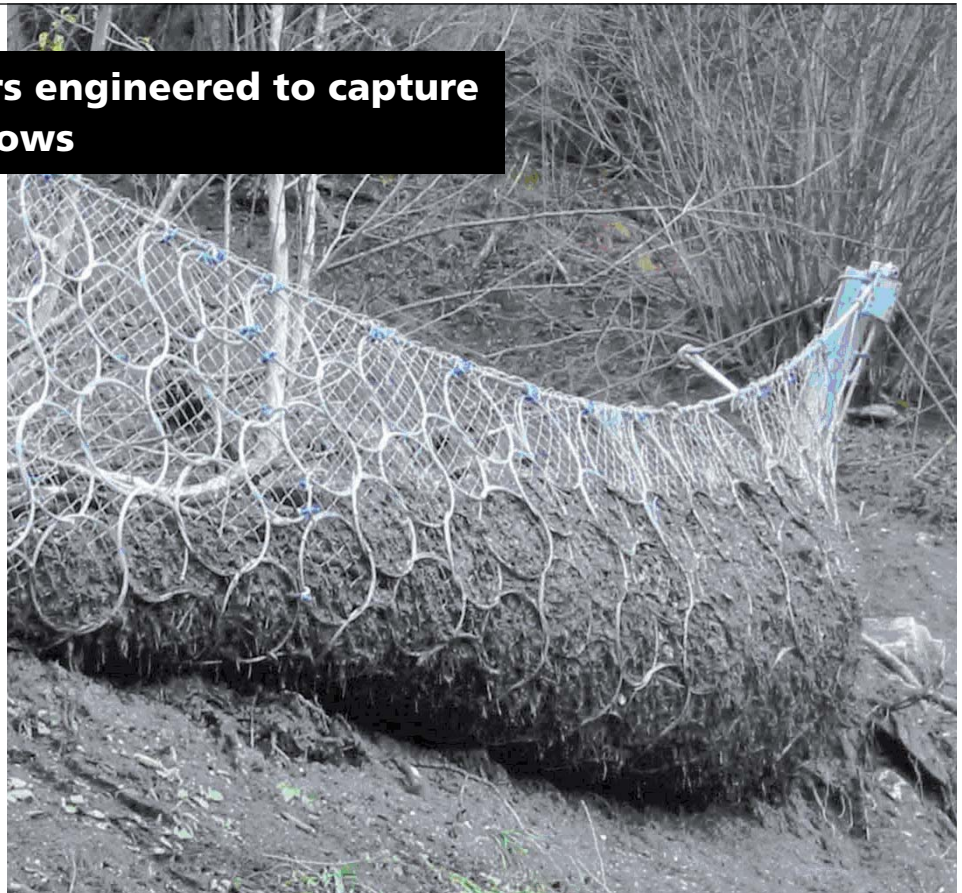


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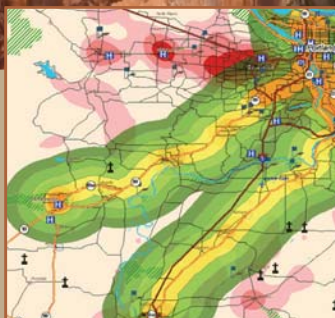
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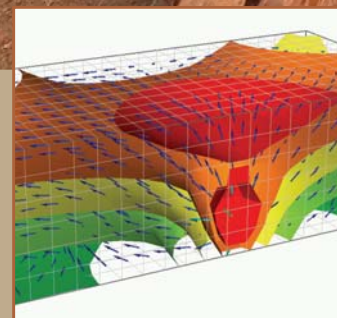


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