



ASSOCIATION OF ENGINEERING GEOLOGISTS

"Serving Professionals in Engineering, Environmental, and Ground-Water Geology"

THE ROCKY MOUNTAIN SECTION NEWSLETTER

www.aegrms.org

MEETING DATE

**THURSDAY
SEPTEMBER 12, 2002**

TIME

5:45 p.m. Social Hour
6:30 p.m. Dinner
7:30 p.m. Presentations

LOCATION

GEOLOGY MUSEUM
Colorado School of Mines
Golden, CO
See map below

COST

\$20 Members
\$22 Non-members
Free for Students

RESERVATIONS

c/o AEG Reservation Line
(303) 790-2161 x 243 or
meeting@aeqrms.org
**BY NOON, FRIDAY
SEPTEMBER 6th**

Standley Lake Improvement Project

Roy Spitzer – Rocky Mountain Consultants, Inc.

The presentation will focus on the outlet works design that involves microtunneled wet taps into the Standley Lake reservoir. The project's purpose is to renovate the dam and appurtenant facilities, enhancing the safety of the dam and reservoir so it can continue to function as a reliable storage facility for the next 50 to 100 years. Key elements of the overall project include constructing a new spillway to meet current State of Colorado dam safety standards, a new outlet works with a multi-level intake, and a downstream embankment stability berm and abandoning the existing outlet works in-place. The project design was completed by a design team of CH2M Hill, GEI Consultants, and Rocky Mountain Consultants. The construction has been awarded to a joint venture of A.S.I. RCC and R.E. Monks. Construction is slated to start in July and will take approximately 2 years to complete.

Next Month...

Our October meeting will be held on the *first* Thursday of the month, **October 3**, instead of the second Thursday. Jim Lambrechts of the Haley and Aldrich Boston office will be giving a talk on an issue that has plagued Boston for decades, namely rotting wood piles due to lowering of the groundwater level. He plans to use that specific example to highlight the overall theme of engineering geologic problems that we have brought upon ourselves. This talk will be different from the keynote address that he's giving at ASCE the following day.

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Case Histories

This is a guest column we hope to continue with contributions from AEG members. Harry Siebert offered the first column, it is our hope this will spark interest in other professionals to share their insight and knowledge with their peers through this medium. If you have an article to contribute contact Kristi McQuiddy newsletter@aegrm.org.

Foundations on Rock

Harry L. Siebert

As an engineering geologist this can be a test of communication skills and economics in providing information to a structural engineer. Foundation designs must have the appropriate factor of safety and also be cost effective. Structural engineers some unfamiliar with rock types tend to make the assumption that rock is "dense and hard". When a preliminary engineering geology report indicates the bearing capacity is 50% of what has been used in selecting a structural design a conference is the usual result. Engineering geologists interfacing with structural engineers must have an understanding of structural design and this can dictate the acquisition of subsurface data. A conservative structural engineer for 20 mid-rise apartment buildings require four boring per structural element five feet into rock. The site was exposed Triassic sandstone and it was agreed that one 5' core would be obtained. The test boring contractor had a core drill mounted on a rubber-tired trailer for coring concrete pavement that was modified to take the 5' cores. At the end of every day he had a smile as he bid the work at \$20.00/ft plus mobilization etc. Well it was better than four borings per structural element and all the borings indicated how consistent the sandstone was over the site. On a large site do not make recommendations without a field visit of the site and surrounding area in the preliminary stages of a project.

Perched footings for abutments or stepped footings are a challenge. Structural engineers draw straight lines and assume rock can be sliced like cheese. Rock can be damaged in the fragmentation for excavation. Always draw a 1:1 line from the toe of slope to the back of the footing as this is a critical zone. If the preliminary design can not be achieved a change in structure type might be necessary (simply put from the lowest elevation the back of the footing (excavation). Two mainline grade separation structures over a ramp for an interstate roadway three of the perched abutments "were on the money". The fourth was staked incorrectly and the slope holes for the cut face below the abutment had the centerline of bearing staked out as a chord rather than the curve. The redesign and additional concrete cost the contractor \$ 250.000. The construction survey should be reviewed by the engineering geologist prior to start of work.

One large pier of a four pier was constructed on the edge of a buried channel. Problems of settlement of granite curbing were evident along with fire hydrants. The northeast pier failed and collapsed the roof of a civic center when loaded with 12 inches of wet snow. The building was not located. The subsurface exploration and due diligence were not adequate for a large suspended roof.

My years of experience clearly indicate an engineering geologist must be available during construction on a weekly schedule. Reduction of problems and change orders can be placed in the proper perspective.

Next commentary will be on field data I feel is required for a preliminary report.

New Headquarters in Denver

AEG Headquarters are now located in Denver Colorado. The address is 720 South Colorado Blvd., Suite 960-S, Denver, CO 80246. We are enthusiastic about this change, and feel it will bring us to higher levels as an association.



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Rocky Mountain Section AEG – Annual Report 2001-2002

The Rocky Mountain Section (RMS) has had a tremendous 2001-2002 season. We have had 28 new members join this past year. Our numbers at monthly meetings have increased 30%, and our financial status is satisfactory. Our student section has excelled in motivation and in numbers, and is

anxiously awaiting news from their 'Student Section Award' nomination to be presented in Reno.

The RMS has meetings every month from September to May. Our presentations for the past season were as follows:

September 2001 - Christoph Goss,
Rehabilitation of the Laramie Poudre Tunnel

October 2001 - Phil Sirles, *Geophysics,
Coursier Lake Dam*

November 2001 - Jonathan L. White, *CGS,
Collapsible Soils in Western Colorado*

December 2001 - Jonathan Caine, *Family
Night, Antarctica!*

January 2002 - Bob Schuster, *USGS, Dams
Built on Landslides*

February 2002 - Student Night, *Students
from Colorado School of Mines and South Dakota
School of Mines and Technology*

March 2002 - Myles Carter, *An Evening
with The President*

April 2002 - Harry Siebert, *Rock
Mechanics*

May 2002 - Vince Matthews, *CGS,
Earthquakes in Colorado*

The RMS Annual Student/Career Night is our most advertised and attended meeting of the year. Our numbers usually approach 100. Students, vendors, employers, and AEG members are in attendance. Brunton Compass and Rockware are two of our biggest sponsors for the event. The RMS family night is a good time for our members and their family and friends to get together for a quiet ale or a glass of root beer. The presentation this year was spectacular! Jonathan Caine presented Antarctica. The penguin slides were great for all ages.

We hold our monthly meetings at the Colorado School of Mines in the Rock Museum on the second Thursday of each month. The Rock Museum at the School of Mines is great for the student members and gives professional members crystals to critique.

The RMS is pleased to have its web page up and running smoothly. www.aegrms.org is the address. Edwin Friend with GEI Consultants was behind this feat.

The RMS treasurer is Matt Benson. Matt has prepared the Treasurer report and submitted to Headquarters on July 5, 2002.

The RMS is prepared for the next season and the next crew of officers. We have informative talks on the 2002-2003 schedule and some good field trip ideas. Jim Wright will be coming on as the new Chairperson. I would like to thank our officers for a fun and educational year. The present list of officers are as follows:

Chair – Tim Petz
Vice Chair – Jim Wright
Secretary – Scott Walker
Treasurer – Matt Benson

The officers for the RMS student section are as follows:

President---Robyn Brown, rbrown@mines.edu
Vice President---Chris Nocks, cnocks@mines.edu
Secretary---Brad Crenshaw, bcrensa@mines.edu
Treasurer--Ben George, bgeorge@mines.edu

Tim Petz, Chairperson

RMS 2002-2003 Speakers

September 12, 2002 - Roy Spitzer, Rocky Mountain Consultants, *Standley Lake Improvement Project*

October 3, 2002 - Jim Lambrechts, Haley and Aldrich, *Boston's Rotting Wood Piles*

November 14, 2002 - Tony Stirbys, *I-25 Corridor Project*

December 12, 2002 - TBD

January 9, 2003 - TBD

February 13, 2003 - Student Night, *Students from South Dakota School of Mines and Technology and Colorado School of Mines*

March 13, 2003 - TBD

April 10, 2003 - TBD

May 8, 2003 - TBD

Colorado Engineering Geology Publication

Things are really coming together for the upcoming publication. The dedication and hard work of so many has gone a long way in a short amount of time to bring this publication from just an ambitious notion to a blossoming reality. The abstract response to date has been incredible! We've received almost 65 abstracts and are still hoping for a few more by the revised abstract deadline of August 31, 2002. The committee has named the publication "Engineering Geology in Colorado - Contributions, Trends, and Case Histories" to reflect the diversity of abstracts we have received. The publication will cover many topics relating to engineering geology on Colorado, including landslides and rockfalls, dams, tunnels, transportation, expansive soil and bedrock, collapsible bedrock, groundwater, mining, and land use planning to name a few topics. The publication will also include an overview paper on the engineering geology of Colorado as well as papers looking at the historical perspective and future trends of engineering geology in Colorado. A preliminary table of contents for the publication will be ready for the annual meeting in Reno next month.

Based on the response of our earlier survey, we are intending to produce a CD-ROM version of the papers in time for the annual meeting next

year in Vail. The CD version will better be able to provide color photos, figures, maps, etc. to help illustrate the papers at a fraction of the cost of a hard copy. The CD version will also allow users to quickly search subject matter in the 800 to 1,000 page document. For those still favoring the more traditional methods, we are considering a small run of a hard copy version to be available about 6 months after the Vail meeting next September.

We still have some time, so if you've been putting off submitting an abstract and would still like to do so, please don't hesitate. Send you abstracts to Doug Boyer at dboyer@do.usbr.gov.

Workshop on Collapsible Soil and Evaporite Karst Hazards

The CGS is hosting a one-day workshop on collapsible soils and evaporite karst hazards in the Lower Roaring Fork River corridor on Friday, October 18, 2002, at the Eagle Country Community Center in El Jebel. Technical presentations are scheduled for the morning with an informal field trip after lunch. Registration will begin in September. For additional program information, call Jon White at (303) 866-3551 or e-mail: jonathan.white@state.co.us. For registration information, call Betty Fox at (303) 866-3330 or e-mail: betty.fox@state.co.us. See the CGS webpage at <http://geosurvey.state.co.us/> as more information becomes available.

First CGS Interactive On-Line Publication

The Colorado Geological Survey (CGS) has posted its first, interactive online publication, "**Colorado Late Cenozoic Fault and Fold Database**" at <http://geosurvey.state.co.us>

The Colorado Late Cenozoic Fault and Fold Database contains information compiled from available literature about more than 300 faults and folds that are known or suspected to have moved during the late Cenozoic (approximately the last 23.7 million years) (i.e., that cut Miocene or

younger rocks). The Map Server displays a zoomable map of faults color-coded by age within Colorado. This interactive map allows quick identification of structures by displaying a maptip box containing the name, identification, and age of the structure, when resting a cursor over any of the faults. Other layers in the map also contain map tips. For example, resting the cursor over a city area (shaded in purple) will show the city name and when resting on the background the name of the county appears. The map legend shows the data layers and how each feature is symbolized. Zooming in to the map displays different information layers. For instance, highways appear when the map is zoomed to 1:500,000.

The map server is linked to a Microsoft Access database. The database contains a variety of information about each structure; such as length, sense of movement, geomorphic expression, age of faulted deposits and references. To see a report from the database, simply double-click the mouse on the structure in the map frame and the report for that particular fault appears in a separate window. The report you see lists all the information contained in the Access database. The entire database is downloadable.

We would be interested in receiving feedback from you on this new (to CGS) type of publication. The publication has "technical assistance" response e-mails within the document, but you are welcome to send any comments to me as well

Thanks!

Vicki Cowart
State Geologist & Director
Colorado Geological Survey
1313 Sherman Street, Room 715
Denver, Colorado 80203

Phone: 303-866-2611
Fax: 303-866-4445
E-mail: vicki.cowart@state.co.us

Editorial Note: A presentation will be given on this on-line publication at the upcoming GIS In The Rockies conference in October in Denver.

More on Utah Licensure

As mentioned previously (per info from Ben Everitt), the state of Utah passed a geologist licensing act, with implementing rules expected in the fall of 2002. In general, after January 1, 2003, individuals engaged in the practice of geology in Utah will need a license. After January 1, 2004, an examination, as set out in the rules, will be required for licensing.

For additional information, go to <http://www.dopl.utah.gov>.

Informing Colorado AEG Delegation

AEG and AIPG are involved in getting geologists licensed in Colorado. There will be presentations and a symposium regarding this topic in Reno, NV, during the AEG Annual Meeting. Please attend to help our cause.

Rocky Mountain Section Outreach Program

Attempts are being made to increase member participation in the outlying areas of the section. If you have ideas for an event, contact Ed Friend at webmaster@aeqrms.org.

Geological Society of America National Meeting 2002

The 2002 GSA meeting will be held here in Denver this October 27-30. The Engineering Geology Division of GSA is beginning to assemble a program. General information on the meeting and the forms for submitting session proposals is available at <http://www.geosociety.org>. If you have questions for which you cannot find the answer on the web page, please contact Judy Ehlenor jehlen@tec.army.mil or Bill Haneberg, bill@haneberg.com.

Words from the Chair

Here we go! Another year ready to blast off. We have a great lineup of speakers jazzed up and raring to speak. Don't miss the first meeting of the year, Sept 12th at the CSM Museum. We are trying our new caterers, and we need lots of feedback. Come support the Rocky Mountain Section and have some good beer! Tim Petz, Chair.

Colorado Ground-Water Association to Host McEllhiney Distinguished Lecture

The Colorado Ground-Water Association will be hosting the National Ground Water Association 2002 McEllhiney Distinguished Lecture Series. John Schnieders of Water Systems Engineering, Inc. will lecture on **Chemical Rehabilitation of Wells**. This will be followed by a discussion session with opportunity to review local case histories with contractors and consultants. John Schnieders is a dynamic speaker with a vast wealth of knowledge about water wells and water well rehabilitation.

The lecture and workshop will take place in Room 108 at Berthoud Hall at the Colorado School of Mines campus in Golden between 9:00AM and 12:00 noon Saturday, October 12, 2002. Refreshments will be provided. CSM students are welcome.

The CGWA is grateful to Johnson Screens for helping make this event possible.

Aspiring Employees

Many resumes from students graduating in the very near future have been received. Employers, please contact Tim Petz chair@aeqrms.org for information regarding potential employees for summer part-time or full-time work. Students can drop off your information with Tim at the meetings or via e-mail.

Your Business Card Here

The section is looking for companies or individuals who would like to advertise their products or services in the section newsletter and on the website. This is anything from a business card (\$10/month), quarter page spread (\$20/month), to a half page exposition (\$40/month). If you are interested, contact Ed Friend webmaster@aegrms.org or Kristi McQuiddy newsletter@aegrms.org.

Transportation-Related Geotechnical Issues to be Discussed During October 4, 2002 Conference in Denver

The Geotechnical Group of ASCE is planning a 1-day Conference to be held at the Marriot Hotel Southeast on October 4, 2002 entitled: **“More Than Just Lines on a Map: Geotechnical Engineering in Transportation.”** James R. Lambrechts of Haley and Aldrich will give the Keynote Address that summarizes geotechnical innovations developed during Boston’s “Big Dig.” From there, recent transportation-related geotechnical projects across the U.S. and in Colorado will be discussed. New geotechnical research results will also be presented that advance geotechnical design. The conference will be a single-track, one-day event on Friday. Typically, 150 professionals attend the biennial conference. AEG-RMS, CAGE and the CGS will join the geotechnical group in hosting the conference.

Five special sessions have been convened for the conference:

- Foundation Solutions in Transportation
- Slope Stabilization
- Tunnels
- Colorado Challenges
- Geological/Geotechnical Characterization

Projects discussed will include:

- T-REX
- Telluride Airport
- E-470
- Zion National Park highways
- Wolf Creek Pass
- I-70 Corridor
- DIA
- U.S. 285 Windy Point
- Woodrow Wilson Bridge
- Snowmass Canyon State Highway 82
- State Highway 119, Blackhawk

The following research results will be presented:

- Pile driving in the Denver Formation with correlations to unconfined compressive strength
- Drilled shaft load testing in the Denver Formation
- Drainage of landslides using horizontal wick drains
- Surficial stability of earth slopes
- Influence of rock mass parameters on TBM performance
- Use of project-specific database and GIS
- Resilient modulus from direct measurements
- Driving piles through geogrid
- 2D&3D Crosshole Sonic Logging Tomography (CSLT)
- Geosynthetics to reduce swelling
- Micropiles for excavation support
- Use of handheld computers to facilitate data collection

The conference will include poster sessions and exhibits by companies and organizations. The luncheon presentation will be by Arturo Ressi di Cervia from the Treviicos Corporation who will reflect on our geotechnical industry from a contractor’s perspective. Bob Barrett, Dr. Jonathan Wu, and Al Ruckman will give a closing presentation on “Issues of Responsibility” following the technical sessions.

The conference program and registration form may be accessed on our website:

http://sections.asce.org/colorado/tec_grps/geotechnical/prelim.html

Section News

1. Robyn Brown is actively seeking speakers for the CSM Student Section. Please contact her at student-chair@aegrms.org if you are interested in sharing your knowledge and experience.
2. Please forward any newsworthy items to Kristi McQuiddy newsletter@aegrms.org by the 20th of the month.

Parting Words

It is already the end of August and that means it is time for us to get back to work on the newsletter. This year looks to be just as big as last year with many good talks already scheduled.

It is our sophomore year as editors and we look to continually improve the newsletter and webpage. Please let us know if you have any ideas, comments, or content for either.

We look forward to another good year in AEG RMS!

The Editors

Ed Friend
Kristi McQuiddy

AEG ROCKY MOUNTAIN SECTION

BALLOT FOR FALL 2002/SPRING 2003 OFFICERS

Fax or e-mail to Tim Petz, chair@aeqrms.org, by September 30, 2002.

FAX TO: ATTN: Tim Petz

FAX NUMBER: 303.463.9321

CHAIR-ELECT:

_____ Darin Duran

_____ (write in)

TREASURER:

_____ Matt Benson

_____ (write in)

SECRETARY:

_____ Scott Walker

_____ (write in)

Jim Wright was elected Chair-elect last year and will be taking over as Chair for Fall 2002/Spring 2003.

Dear AEG-RMS Colleague:

The Engineering Geology Section of the Colorado Geological Survey is conducting a survey and interviews on the **Future of Engineering Geology Practice in Colorado** for an upcoming AEG publication. We are interested in your thoughts! Please take a few minutes to answer some short questions for us. If you have comments or questions, please feel free to contact Jill Carlson, Sean Gaffney or TC Wait at (303) 866-2611 or at <http://geosurvey.state.co.us/>.

Please return by **September 13, 2002** via...

fax: 303.866.2461

or mail: Colorado Geological Survey
1313 Sherman Street, Room 715
Denver, CO 80203

Thank you!

1. Please rate the following fields of practice by their importance to the future of engineering geology in Colorado: (1 indicates *lowest* level of importance and 5 is the *highest*.)

	<u>over the next 5 years</u>					<u>over the next 5 to 20 years</u>				
Infrastructure development	1	2	3	4	5	1	2	3	4	5
Groundwater resource development	1	2	3	4	5	1	2	3	4	5
Mining and tunneling	1	2	3	4	5	1	2	3	4	5
Environmental testing & remediation	1	2	3	4	5	1	2	3	4	5
Hazard identification & mitigation design	1	2	3	4	5	1	2	3	4	5
GIS	1	2	3	4	5	1	2	3	4	5

2. Please rate the following areas of technical advancement by their importance to the future of geological engineering:

	<u>over the next 5 years</u>					<u>over the next 5 to 20 years</u>				
Subsurface exploration & sampling	1	2	3	4	5	1	2	3	4	5
Geophysics	1	2	3	4	5	1	2	3	4	5
Remote sensing	1	2	3	4	5	1	2	3	4	5
<i>In situ</i> and lab testing	1	2	3	4	5	1	2	3	4	5
Data collection, processing, presentation	1	2	3	4	5	1	2	3	4	5

3. Please help us focus our interviews by sharing your thoughts on the future of engineering geology practice in Colorado. Possible topics include: future **trends** in engineering geology, **technologies** that are becoming available, ways we can better **communicate** with and benefit each other and the public, areas that you feel need the most **strengthening** in the future, **geographical** areas of increasing or decreasing importance, trends in **education**, **licensure**, or **anything else** you have an opinion on, provided it's at least tangentially related to the future of engineering geology. *You don't have to limit yourself to this tiny space* – feel free to write as much or as little as you want, and fax or e-mail your reply to jill.carlson@state.co.us

4. Which of the following best describes your occupation?
 Geologist Engineering geologist Engineer Other, please specify _____

5. In which region of Colorado do you do the majority of your work?
 Front Range Denver Metro Colorado Springs / Pueblo Grand Junction & vicinity
 Central Mountains North Central Mountains San Juan Mountains & Southwest
 Southeast Northeast Other _____

6. How long have you practiced engineering geology or a related field...
 ...in Colorado? 0 - 5 years 5 – 10 years 10 – 20 years 20 or more years
 ...in any state? 0 - 5 years 5 – 10 years 10 – 20 years 20 or more years

7. How would you describe your receptiveness to being interviewed by CGS regarding your views on the future of engineering geology?

Sure, I have some good thoughts on the future of engineering geology in Colorado and would be pleased to share them with one of the fine folks at CGS.

OK, but it better be quick, I'm very busy.

Only if CGS is buying lunch.

Not a chance.

Name	Phone	E-mail	Time best reached
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