



Association of Environmental and Engineering Geologists  
Inland Empire Chapter, Southern California Section  
Kleinfelder West  
1220 Research Park Drive, Suite B  
Redlands, CA 92374  
Phone (909) 557-1463

[www.aegsc.org/chapters/inlandempire](http://www.aegsc.org/chapters/inlandempire)  
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Aug 1, 2008

Vol. 6, No. 8

--- Officers 2008-2009 ---

## "Demonstration of Virtual Structural Mapping with Terrestrial Photogrammetry"

Wednesday 20-Aug-2008

5:00 - 6:00	Geologist Orientation	Bar Room
6:20 - 7:20	Dinner Meeting	Banquet Room
7:30 - 8:30	Guest Speaker Presentation	Banquet Room

Marie Calendars, Temecula

(Meeting Cost \$30.00, includes taxes, room and gratuity)

(Fund-raising donation suggested is \$5.00, or more)

(RSVP/Directions below)

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### *This Months Speaker*

*Romo Pierre, Geologist and Geophysicist, MACTEC, Los Angeles, California*

### **Abstract**

“Demonstration of Virtual Structural Mapping with Terrestrial Photogrammetry”

Jeffrey R. Keaton and Pierre E. Romo  
MACTEC, 5628 East Slauson Avenue, Los Angeles, CA 90040

Digital photography and computer technology allow the principals of photogrammetry to be used to construct 3D models suitable for measuring rock structure as well as point positions, lengths and areas. Three systems were developed independently at approximately the same time; the presentation demonstrates the one developed by 3G Software & Measurement in Graz, Austria. The other two systems are from Australia (CSIRO Sirovision and Adam Technologies).

A pair of photos taken with a handheld, calibrated camera is resolved into a 3D model by software which matches groups of pixels from each photo. A range pole is placed in a position visible in both photos, but not obstructing the area of interest. The software uses targets on the range pole to fix the dimensions of each pixel which allows accurate measurements to be made. The azimuth of a line between two points can be used to orient the model to north; surveyed monuments can be used for this purpose, too. Tools in the software allow the geologist to make virtual measurements of rock structure (dip direction and dip magnitude) using points, lines, and polygons. Rock structure data determined with the line tool can be used to calculate joint spacing and other statistical parameters. Groups of rock structure measurements can be plotted in conventional lower-hemisphere equal area (Lambert) or equal angle (stereographic) projections

using poles of planes. Statistical parameters associated with the rock structure groups are summarized with the pole plot. Positions of points on the surface (x,y,z) can be exported as ASCII or Autocad files. Rock structure data can be exported in a similar fashion, but independent from the surface points.

The time required to capture the images is on the order of 1 minute. The time required to produce a 3D model is less than a half hour. The rock structure measurements are made individually by hand rather than by an automated process. The point cloud of the model surface can be exported for use with other software (GIS or rock structure, such as Split-FX). Rock structure data can be exported for use with rock slope stability software, such as RockPack III.

The ShapeMetriX3D system can be used for non-rock structure applications, such as making 3D models of stereoscopic aerial photographs and ‘digital sieving’ of coarse fragments. Free software allows models and structural measurements made with the system to be viewed.

### **Speaker Biography**

Pierre Romo is a geologist and geophysicist for the MACTEC’s geotechnical group in Los Angeles. Mr. Romo graduated from UC Riverside in 2006 with a bachelors degree in geophysics. Recent projects include: geologic and geotechnical investigations for Metro’s Westside Extension (“Subway to the Sea”) and Downtown Regional Connector tunnels; geotechnical and geophysical investigations for the UNEV (Utah and Nevada) and Ruby Pipelines (Wyoming, Nevada, and Oregon); virtual structural mapping of road cuts for Virginia’s I-81 widening project; and fault investigations for the Los Angeles Unified School District and Arcadia Unified School District. At UCR, Mr. Romo led the applied geophysics lab and participated in magnetotelluric surveys in Parkfield, California and Central Asia (Tien Shan Mountains) for modeling of the upper mantle.

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### **Comments from the Chapter Chair**

The July meeting was an informative presentation on the natural biodegradation processes occurring along the Santa Ana River, cleaning up perchlorate impacted groundwater down gradient of the Stringfellow landfill. Dr. Galen Kenoyer presented some inventive methods used to monitor and collect samples within the river channel.

We are now more than half way through the Calender year and 5/6th the way through the Chapter Operating Year and looking for nominations for the 2008-2009 Inland Empire AEG Board. We have had a full schedule this past year including our monthly meetings, a field trip, and a well attended Continuing Education Course at UCR. If you would like to get more involved in this very active Chapter or know someone who is interested, the Board is seeking nominations for Chairman, Treasurer, and Vice Chairman North. Requirements are that the Chairman be paid National AEG members. The other board members just need to have the interest; however we must have a person to be Treasurer, AEG Member or not. I am planning on announcing the full board nominations at the August meeting. Please send your nominations to [mcook@kleinfelder.com](mailto:mcook@kleinfelder.com) or any of the current board members.

Please send your August Meeting RSVP to me at [mcook@Kleinfelder.com](mailto:mcook@Kleinfelder.com), call Kleinfelder Redlands at 909-793-2691, or contact Lisa Battiato at the [geochick@aol.com](mailto:geochick@aol.com)

**And remember, a geologist is someone who even on an average day in the field makes Indiana Jones look like a bit of a klutzy wuss.**

See you all in August.

Michael Cook

Chairman

AEG Inland Empire Chapter

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**Meeting Details** (see inside). **RSVP Due by COB 14-Aug-08**. Send Name, Company/Affiliation to Lisa Battiato [TheGeoChic@aol.com](mailto:TheGeoChic@aol.com) or call (909) 793-2691, Kleinfelder West ATTN Mike Cook, say "AEG Meeting" in RSVP.

## Thanks

Thanks to the Professionals that attended and participated in Redlands on July 16<sup>th</sup> was *The Attack of the Killer Bacteria – the Fate of Perchlorate at the Stringfellow Superfund Site* presented by **Dr. Galen Kenoyer**, RMT Inc., Los Angeles. Much discussion occurred among participants including **Richard Orr**, Leighton Group, Rancho Cucamonga; **Vanessa Prast**, Kleinfelder West Redlands; **William Flores**, HDR, Riverside; **Luke Roebuck**, URS, Ontario; **Rick Gundry**, Inland Geologic, Inc., Moreno Valley; **Michael Cook**, Kleinfelder West, Redlands; **David Gaddie**, Riverside County Planning, Riverside; **Lisa Battiato**, Leighton Group, Palm Desert; and **Phil Bucharelli**, Leighton Group, Rancho Cucamonga.

## Meeting Details and Location

Advance RSVP is requested by Thursday 15-JAug-2008 by Close of Business:

**RSVP Due by COB 14-Aug-08** Send Name, Company/Affiliation to Lisa Battiato

[TheGeoChic@aol.com](mailto:TheGeoChic@aol.com) or call (909) 793-2691, Kleinfelder West, say "AEG Meeting" in RSVP.

### Location:

Marie Calenders Family Restaurant  
29363 Rancho California Road  
Temecula, CA 92591-5201  
(951) 699-9338

### Directions to Meeting:

From the I-15 freeway in City of Temecula, EXIT Rancho California Road to East. On Rancho California Road east from I-15 proceed East 0.2-mile and turn RIGHT (South) and park.

## Future AEG Inland Empire Chapter Meetings

SEP NO MEETING Due to National AEG Meeting  
Meetings to begin Third Wednesday, October  
New Officers in charge

OCT Wednesday October 15<sup>th</sup>, 2008, Redlands, CA  
\_\_\_ \_\_ “ Scour of Rock – Rates and Threshold Conditions”.  
Dr. Jeffrey R. Keaton, MACTEC, Los Angeles, CA

NOV Wednesday November TBA

DEC NO MEETING ?

## SHORT COURSES

### Continuing Education Ongoing Short Courses

An Online course

“An Introduction to Landslides or Mass Wasting”

AIPG Accredited (3.5 CEU’s)

rgfont@geosciencedm.com,

slbishop@geosciencedm.com

www.geodm.com Robert Font, Ph.D.

CONTINUED

HAZ SEEKERS FOR THE FUTURE • GOOD • BEYOND • AHEAD

– – “International Conference on Rock Joints  
and Jointed Rock Masses”

P.H.S.W. Kutatilake and Associates, Conference Chair, Professor, University of Arizona, Tucson, Arizona.

(Abstracts due 30-April-08, field trips/papers)

<http://jointedrock2009.org>

### Inland Empire Chapter Officers and Section/National Contact Information

AEG Inland Empire Chapter, P. O. Box 8944, Moreno Valley, CA 92552-8944

<http://www.aegsc.org/chapters/inlandempire>

AEG Southern California Section Web-site

<http://www.aegsc.org/>

Association of Environmental and Engineering Geologists (Headquarters)

<http://www.aegweb.org>

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ΠΡΟΕΔΡΟΣ . . .

ΠΡΟΫΠΟΛ . . .

ΑΕΓ ΗΣΕ ΠΡΟΫΠΟ

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Chair

Mike Cook  
Kleinfelder, Incorporated  
(909) 557-1463  
[MCook@kleinfelder.com](mailto:MCook@kleinfelder.com)

Vice Chair North  
- Vacant

Vice Chair South  
Mitch Bornyasz  
Leighton Group  
(951) 252-8926  
[MBornyasz@leightongroup.com](mailto:MBornyasz@leightongroup.com)

Treasurer  
Lisa Battiato, Engineering Geologist  
[thegeoctic@aol.com](mailto:thegeoctic@aol.com)

Secretary  
David Gaddie  
Riverside County  
[DGadie@rctlma.org](mailto:DGadie@rctlma.org)

Meeting Details (see inside)  
**RSVP Due by COB 12-Jun-08**  
Send Name, Company/Affiliation to  
Lisa Battiato [TheGeoChic@aol.com](mailto:TheGeoChic@aol.com)  
or call (909) 793-2691, Kleinfelder West, say "AEG Meeting" in RSVP

Program Chairman  
Newsletter Editor  
Rick Gundry (see above)

Webmaster  
Dr. Kerry Cato  
Cato Geosciences  
[Kerry@catogeosciences.com](mailto:Kerry@catogeosciences.com)

Field Trip Chairman  
Mark Spykerman  
Earth Systems Southwest  
[mspykerman@earthsys.com](mailto:mspykerman@earthsys.com)

Membership Chairman  
Richard Orr  
Leighton Group  
[Rorr@leightongroup.com](mailto:Rorr@leightongroup.com)

Past Presidents  
Frank Jordan 2005  
Gary Wallace 2006  
Rick Gundry 2007

The AEG Inland Empire Chapter *Newsletter* a monthly publication

of Inland Empire Chapter of the Southern California Section, Association of Environmental and Engineering Geologists. For more information visit websites shown in Newshead page 1

Submittals: Deadline 28<sup>th</sup> of the month. Employment notices, job position vacancy announcements no cost. (See notice inside this *Newsletter*)

E-Mail Address changes: Send e-Mail to Rick Gundry.

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