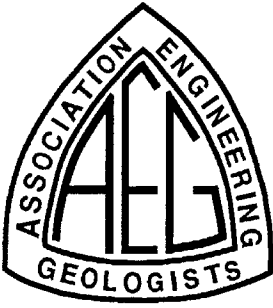


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NEWSLETTER - April 1989



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Dinner Meeting *Tuesday April 11th*

- The Quiet Cannon Restaurant
901 North Via San Clemente
Montebello
- Cost - \$20.00
- For reservations call by April 7th
Jerry Treiman
(213) 620-3560 (CDMG LA Office)

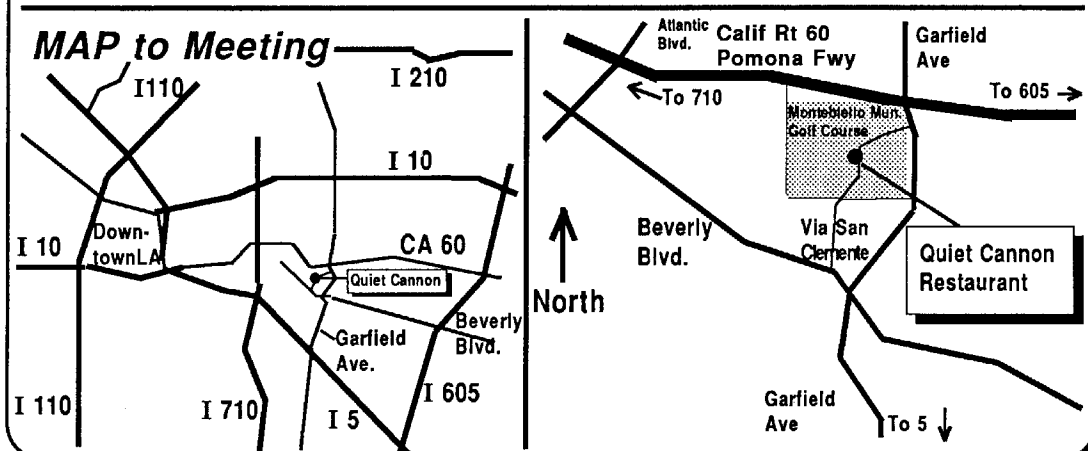
Make reservations by Noon on the Friday before the Meeting

- 5:30 Social Hour
- 6:45 Dinner
- 7:30 Announcements
- 8:00 Program
- 9:00 Section Affairs

Program

TOPIC Vadose (Unsaturated) Zone Monitoring Techniques for Underground Storage Tanks & Landfills and Recent Advances & Future Trends

SPEAKER Dr. Lorne G. Everett, Chief Scientist
Natural Resources Program
Kaman Tempo, Santa Barbara



Program

Topic & Speaker

Dr. Everett will discuss **Vadose Zone Monitoring Techniques as applied to leaking underground tank sites and landfills. He will also discuss recent advancements and future trends in Vadose Zone Monitoring Techniques.**

Dr. Lorne G. Everett is the Chief Scientist of the Natural Resources Program for Kaman Tempo in Santa Barbara, California. Dr. Everett received a Ph.D. in Hydrology from the University of Arizona. He joined General Electric's "think tank" in Santa Barbara in 1974. He subsequently published the monograph "Groundwater Monitoring" (1980), which is endorsed by the U.S. EPA as "establishing the state-of-the-art used by the industry today." This book is also used by the World Health Organization as its guide on the subject for all developing nations.

Dr. Everett is a Registered Professional Hydrologist with the Amer. Institute of Hydrology and is a full Research Professor at UC Santa Barbara, where he directs the Vadose Zone Monitoring Laboratory. He has authored several books and over 85 professional papers, book chapters, and reports on groundwater and vadose zone work.

The Groundwater Newsletter, published by Geraghty & Miller, says Dr. Everett is the "leading expert in the field", while the Assoc. of Groundwater Scientists and Engineers identify him as "the foremost expert on the subject of vadose zone monitoring" Dr. Everett has testified before Congress and luncheoned with the President to discuss national water resources legislation. In addition, he has provided many training seminars on vadose zone monitoring techniques.

THIS MONTH

April 1989



Kelly E. Rowe
Hydrogeologist

The featured speaker for our meeting this month is one of the foremost experts in the field of vadose zone monitoring in the world. Dr. Everett will address techniques that are currently employed at underground storage tank sites & landfills and will provide insight to future work in this field. The prospects for advancement in this field is intriguing because of the new techniques being developed for extracting and treating contaminants in soil and groundwater.

Consider for a moment what techniques of vadose zone monitoring should be employed for, for example, each of the promising remedial strategies: 1) enhanced microbial bioremediation, 2) steam injection mobilizing, or 3) vacuum extraction of contaminants from soils. In these strategies monitoring of the pressure, temperature, chemistry and biology in the air, water and soil at a site may be extremely complex. The appropriateness and effectiveness of a remedial action plan will require monitoring many aspects of the vadose zone.

Mr. C.V. Theis, who determined many of the basic principles of groundwater hydraulics, is attributed to have said that because of its complexity, the study of the vadose zone is a "no man's land". Because of the extent of contaminants in soil and groundwater in our society "no man's land" will probably become a burgeoning "every man's land" to those who are working in the environmental and water resources fields. Therefore, it is with great interest that Dr. Everett is welcome to our meeting.

At last month's meeting with the ASCE - Geotechnical Group, Dr. James Monsees & Buzz Spellman spoke about some of the geological, engineering, political, and institutional issues of the Metro Rail project. Dr. Monsees said that the present mass transit system for metropolitan Los Angeles is 25 years out of date. Master plans were shown for the entire system, that would help remedy this situation.

Tunneling for each alignment in the Metro Rail project involves the following steps: 1) advancing a cylindrical "Shield" to breakup and remove tunneled material, 2) setting up prefabricated concrete sections on the tunnel walls, 3) sealing the walls with plastic sheeting, and 4) lining the walls with an additional layer of concrete. As the shield advances an engineering geologist, Richard Escadon, logs exposures of the formations at the tunnel face. Gas monitors are subsequently installed to detect whether natural gas leaks occur, indicating failure and required repair of the tunnel lining.

The tunnel design was mathematically modeled, using 1210 nodes, to determine the impact of a magnitude 7.1 earthquake (e.g., San Fernando Earthquake, 1971). The simulated Operational Design Earthquake used a 0.3 g maximum acceleration, shut down of the tunnel for about 5 minutes. The simulated Maximum Design Earthquake used a 0.6 g maximum acceleration, shut down of the tunnel for inspection. Analysis of modeling results indicated that 5 percent additional reinforcement was required. Thus, the joining portions of the prefabricated concrete sections were reinforced. The engineering design ensures that the safety & integrity of the tunnel should theoretically be maintained in the event of an earthquake.

Continued from page 2

Call for Suggestions on engineering geology sites to visit for local International Geologic Congress Field Trips to be held here this summer.

Joe Cobarrubias (213) 485-3435, (City of LA) is leading a portion of the T181 field trip during the first week of July as part of the International Geologic Congress (IGC) activities. He wants input from people for sites that have interesting points for foreigners. The route of the field trip will generally be through Pacific Palisades, Malibu, the Santa Monica Mountains & the central and northern parts of San Fernando Valley. The field trip will discuss gas incursion in the Fairfax area, landslides & faulting. Input may be for pointing out interesting observations for the guidebook.

In addition, John Hansen and Ed Steiner (714) 250-7115 (Leighton & Assoc.) are coordinating a one-day portion of the T181 field trip for presenting "Engineering Geology in Orange County" for the IGC. They are also looking for suggestions for field trip sites that have interesting points for foreigners. Short write-ups for the guidebook or as a hand-out at the site would be appreciated.

Call for Papers - South Coast Geological Society Fall 1989 San Andreas Fault Field Trip. San Andreas Fault from the vicinity of Cajon Pass into the Carrizo Plain. Likely date in late October. Request for guidebook papers to be published for the trip. **Topics of the papers need not be confined to the area of the fault covered by the trip.** Deadline for submitting papers is August 15, 1989. Send to Joan Baldwin, South Coast Geological Society, P.O. Box 10244, Santa Ana, CA 92711. For further information call Joan Baldwin at (714) 839-8664 or (213) 715-3368 or John Foster at (714) 727-3223.

Dave Grover (Grover Hollingsworth and Assoc., Inc.), on March 6th, gave a presentation to the California Real Estate Inspection Association, Los Angeles Chapter. The presentation focused on the geologic hazards in the Santa Monica Mountains, hillside construction techniques and tips on spotting building defects due to geologic processes.

Seminars/Meetings/Field Trips

APRIL 1989

Start of UC Irvine Spring 1989 Toxic and Hazardous Substances Program including: Including One-Day Seminars and a Certificate Program for Hazardous Materials Management. University Extension (HMM Program classes start on different days & months and are either 5 or 10 - one day per week meetings total - afternoon &/or evenings). **CONTACT: UCI Extension, (714) 856-5679** for additional information. Some good classes for engineering geologists and hydrogeologists working in the environmental field. UCI Extension is developing a certificate program in Environmental Site Assessment and Remediation. In California, professionals have responsibility for the assessment and clean-up of thousands of identified sites. An awareness of the difficulties involved in this process led to the development of this program. A fully developed program is forthcoming.

San Diego Natural History Museum's EARTHQUAKE LECTURE SERIES (ELS)

Presented in the Museum's Auditorium, 7:00-9:30 p.m. Tickets for each lecture: members \$4; nonmembers \$6; students \$3. Series tickets: members \$10; nonmembers \$15; students \$7.

4 Tuesday Earthquake Geology (ELS)

"Plate tectonics & Earthquakes" with Dr. Pat Abbott, SDSU: Find out what causes earthquakes, where they will occur, how large they will be, and how often they happen in a given area.

"Prehistoric Earthquake Record of Southern California" with Dr. Tom Rockwell, SDSU: Learn how detailed field mapping, analysis of soils, trenching across active faults and radiocarbon dating have shed light on the prehistoric earthquake record of southern California.

11 Tuesday Seismology (ELS)

"Earthquake Ground Motion" with Dr. Steven Day, SDSU: Seismic waves caused by earthquakes move the ground in several ways. Recent studies afford us a clear picture of what the earth does during an earthquake.

"Historic Seismicity of the San Diego Area and the Earthquake Planning Scenario for San Diego" with Dr. Michael Reichle, CDMG: The failure of man-made structures is the main cause of human and economic catastrophe from major earthquakes. Learn how different types of bridges and buildings have responded to major earthquakes in the past and how new designs are expected to reduce those hazards.

Field Trips (ELS) (by bus)

9 Sunday 8:00 a.m. to 6:00 p.m. "Earthquake Topography in the Desert" Drs. Tom Rockwell & Pat Abbott (SDSU Dept of Geology).

This trip will explore the ruptures caused by the 1987 Westmoreland earthquake, the Elsinore fault in the Coyote Mountains, and other eye-opening topographic features in this well-exposed, active zone. Fee: members \$35; nonmembers \$45.

29 Saturday 8:00 a.m. to 5:00 p.m. "San Diego Faults"

Dr. Pat Abbott (SDSU) and Dr. Dick Phillips (USD). See the vertical exposures of the Rose Canyon fault and the pronounced effect of this fault on San Diego's topography. This trip will explore the earthquake potential of faults crossing San Diego and how buildings are constructed to accommodate fault offsets. Fee: members \$25; nonmembers \$35.

CONTACT: San Diego Natural History Museum ELS (619)232-3821.

7-9 "1989 Pacific Cell, Friends of the Pleistocene Field Trip: Quaternary Stratigraphy, Soil Geomorphology, Chronology & Tectonics of the Frazier Mountain, Wheeler Ridge & San Emigdio Cyn Areas, Western Transverse Ranges, Calif."

Meet at the Fort Tejon Campground, just north of Lebec on Interstate 5. Start 8 a.m. Friday. Warning: potential encounters of "Valley Fever" **CONTACT: Anne Elwell, Dept. of Geological Sciences, UC Santa Barbara, Santa Barbara, CA 93106.**

14 Southern California Waste Management Forum

Meeting Michaels Restaurant 6309 E. Washington, City of Commerce Lunch 12:00 Program 11:45 Call (213) 927-2611

17-21 "Applied Groundwater Modeling", Dr. Leonard Konikow (USGS), Dr. James Mercer, and Mr. Peter Andersen (GeoTrans, Inc.) International Ground Water Modeling Center Short Course International Ground Water Modeling Center Short Course. CONTACT (317)283-9458.

28 Friday "McLaughlin Gold Mine Field Trip" in northern Napa County. AEG - Bay Area and Sacramento Sections. Cost: \$40.00 includes guidebook, lunch, bus - 48 people limit **CONTACT: (707) 545-7600) James Ventine 9739 Lakewood Drive, Windsor, CA 95492**

28 & 6/2 Prof. Geology Exam Review Course: in San Diego - J.H. Kleinfelder & Assoc offices, REG Review, Inc. Two - Five (5) hour classes & study manual. Cost:\$250 - Preregistration. **CONTACT: (415) 339-3771 or (415) 852-9099**

29 & 6/3 Prof. Geology Exam Review Course: in Pasadena - Brown & Caldwell offices, REG Review, Inc. as above

30 & 6/4 Prof. Geology Exam Review Course: in Pasadena - Brown & Caldwell offices, REG Review, Inc. as above

MAY 1989

1 "Design & Construction Using Geosynthetics" ASCE Seminar. Los Angeles Airport Holiday Inn. Leader: J. Richard Bell, Ph.D., P.E., M.ASCE, Cost \$295 (Mem) \$345 (Non-Mem) CONTACT: (800) 548-2723.

Continued from page 3

10-12 AAPG-SEPM-SEG-SPWLA Pacific Section 64th

Annual Meeting, Palm Springs, Amer. Assoc. of Petroleum Geologists, the Soc. of Economic Paleontologists and Mineralogists, the Soc. of Exploration Geophysicists and the Soc. of Professional Well Log Analysts. Events AEG members may find useful: 1) full-day symp. "Environmental Concerns in the Petroleum Industry", 2) SEG symp. "Case Histories and Interpretation" and "Acquisition and Processing Developments.", 3) Pre-convention short courses "Remote Sensing for Petroleum Exploration", Practical Petrophysics for Exploration and Development Use of Rocks/Logs to Evaluate Reservoirs, Seals and Source Rocks." 4) two pre- and three post-meeting field trips pre..1) Algodones Dunes via dune buggy 2) Chevron's Heber Geothermal Field; post...1) So. Great Basin Carbonate Rock Sites(2-days), 2) San Andreas Fault Zone-a)Palm Tree Structure & b) Mecca Hills, and 3) Application of Conglomerate Analysis to Interpreting the Origin of the Continental Late Eocene-Oligocene Sespe Formation Bordering the L.A. Basin. CONTACT: (918)584-2555 Ext. 241 Barbara Caves, AAPG Convention Dept., P.O. Box 979, Tulsa, OK 74101-0979 or (213)698-0081 Mike Mitchell w/ Petroleum Testing Service

19 Southern California Waste Management Forum

Meeting Michaels Restaurant 6309 E. Washington, City of Commerce

Lunch 12:00 Program 11:45 Call (213) 927-2611

JUNE 1989

19-23 "Parameter Estimation in Groundwater Simulation",

Dr. Richard Cooley (USGS) and Mr. Steve Larson (S.S. Papadopoulos) International Ground Water Modeling Center Short Course, International Ground Water Modeling Center Short Course. CONTACT (317)283-9458.

Special International Geological Congress Events in the U.S. beginning this month

The 28th Session of the International Geological Congress (IGC) will be held in the United States of America July 9-19, 1989, in collaboration with, and under the sponsorship of, the International Union of Geological Sciences. The 28th IGC is co-hosted by the U.S. Geological Survey and the U.S. National Academy of Sciences in cooperation with major U.S. earth sciences societies and industry organizations on behalf of the entire U.S. earth sciences community.

Mail to IGC (International Geological Congress)

P.O.Box 727
Tulsa, OK 74101-0727

If paying by check make payable only to: 28th IGC

Preregistration Deadline (at normal rate) February 1, 1989

Deadline for late preregistration May 1, 1989

All other inquires and general correspondence concerning the Congress should be addressed to:

Dr. Bruce B. Hanshaw
Secretary General, 28th International Geological Congress
P.O. Box 1001
Herdon, Virginia 22070-1001

The following field trips are listed for the convenience of AEG SCS members. They focus on trips that are located primarily in the southwestern United States. Contact the above address for field trips available in the other parts of the country you are interested in. Plan your vacation now to take advantage of this unique opportunity.

JUNE 1989

28-7/7 Field Trip T181-Engineering geology of western U.S. urban centers. I.G.C. Program Leaders: Jeffrey Keaton (Earthstore) and Richard N. Morris (San Diego Soils Eng.) Cost: \$1,800 Starts in Los Angeles Stops in Denver.
29-7/7 Field Trip T110- Sedimentation and Tectonics in coastal southern California. I.G.C. Program Leaders: Patrick Abbott (SDSU), Martin H. Link (Mobil R & D Corp.) and Tor H. Nilsen (App. Earth Tech.) Cost: \$900 Starts in San Diego Stops in Los Angeles.

JULY 1989

1-7 Field Trip T105- Geology of San Francisco and vicinity. I.G.C. Program Leader: Clyde Wahrhaftig (USGS) Cost: \$1,100 Start-Stop in San Francisco.
1-7 Field Trip T111- Petroleum geology and structural transect across western Transverse Ranges and southern Coast Ranges, California. I.G.C. Program Leaders: Thomas Davis (Consultant) and Jay Namson (ARCO) Cost: \$925. Start - Stop in Los Angeles.

2-7 Field Trip T108- Tectonic evolution of northern California. I.G.C. Program Leaders: M.C.Blake, Jr., and D.S.Harwood (USGS) Cost: \$1,150 Start-Stop in San Francisco.

3-7 Field Trip T109- Mesozoic and Cenozoic siliceous sediments of California. I.G.C. Program Leader: Joyce R. Blueford and Caroline Isaacs (USGS) Cost: \$700 Starts in San Francisco Stops in Los Angeles.

3-7 Field Trip T113- Petroleum potential of the Basin and Range province. I.G.C. Program Leader: Norman H. Foster (Indep. geol) Cost: \$675 Start and Stop in Las Vegas.

5-7 Field Trip T186- Geology of Nevada Test Site and surrounding area. I.G.C. Program Leader: H. Lawrence McKague (LLN Lab), Paul Orkild (USGS) and Vel Clanton (DOE) Cost: \$500 Start and Stop in Las Vegas.

20-24 Field Trip T311- Oil in the California Monterey Formation. I.G.C. Program Leaders: R.J.B. Young and T.C.MacKinnon (Chevron) Cost: \$800 Start and Stop in Los Angeles.

20-26 Field Trip T312- Arc volcanism in the southern Cascade Range I.G.C. Program Leader: L.J.Patrick Muffler (USGS) Cost: \$775 Start and Stop in San Francisco

20-28 Field Trip T313-Quaternary volcanism of Long Valley caldera and Mono-Inyo Craters, eastern California I.G.C. Program Leaders: Roy A. Bailey, C. Dan Miller (USGS) and Kerry Sieh (Cal Tech) Cost: \$650 Start and Stop in Reno.

20-29 Field Trip T308- Geologic evolution of the northern most Coast Ranges and western Klamath Mountains, California. I.G.C. Program Leaders: K.R. Aalto (Humboldt SU) and G.D. Harper (SU of NY-Albany) Cost: \$750 Start and Stop at San Francisco Intern. Airport.

20-29 Field Trip T309- The San Andreas transform belt. I.G.C. Program Leaders: Arthur G. Sylvester and John C. Crowell (UCSB) Cost: \$1,400 Start in Long Beach Stops in San Francisco.

20-29 Field Trip T381- Landslides in central California. I.G.C. Program Leader: William M. Brown (USGS) Cost: \$1350 Start and Stop in San Francisco

7 & 8/11 Prof. Geology Exam Review Course: in Costa Mesa Converse Environmental Consultants offices, REG Review, Inc. Two - Five (5) hour classes & study manual. Cost: \$250 - Preregistration. CONTACT: (415) 339-3771 or (415) 852-9099

8 & 8/12 Prof. Geology Exam Review Course: in Pasadena - Brown & Caldwell offices, REG Review, Inc. as above

9 & 8/13 Prof. Geology Exam Review Course: in Pasadena - Brown & Caldwell offices, REG Review, Inc. as above

24-28 Introduction to Groundwater Modeling IGWMC Staff International Ground Water Modeling Center Short Course, CONTACT (317)283-9458.

AUGUST 1989

21-25 "Stochastic and Geostatistical Analysis for Groundwater Modeling", Dr. Robert Hoeksema (Calvin College), Dr. Leslie Smith (U of British Columbia), and Dr. Aly El-Kadi (IGWMC) International Ground Water Modeling Center Short Course. CONTACT (317)283-9458.

OCTOBER 1989

1-6 "AEG 32nd Annual Meeting at Vail Colorado, Marriott's Mark Resort Theme "Engineering Geology of Mountain and Plain" hosted by the AEG Rocky Mountain Section. Symposia: "Engineering Geology Problems of Large Landslides" Contact Jerome V. DeGraff, AEG Landslide Committee Chairman (209)487-5640; Short Courses 1) Groundwater Contamination Transport Modeling 2) Landslide Mitigation Techniques; Field Trips 1) Glenwood Canyon Highway Project, 2) Vail Pass Highway Project, 3) a marble quarry in the Vail area, 4) Dillon Dam and other water-supply projects, and 5) a tour of landslides and debris flows in the mountainous terrain surrounding Vail. CONTACT: for Registration (303)744-7105 Ralph G. Mock, Chen-Northern, 96 S. Zuni St., Denver, CO 80223.

23-27 "Multiphase Organic Transport Modeling with Emphasis on Pollution by Hydrocarbons" Dr. John Parker and Dr. Jagath Kaluarachchi (VA Poly Inst.), Dr. Marian Kemblowski (Shell Development Co.) and Dr. Aly El-Kadi (IGWMC) International Ground Water Modeling Center Short Course. CONTACT (317)283-9458.

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or send resume to:

Leighton and Associates, Inc.
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1151 Duryea Avenue
Irvine, California 92714

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121 North Fir Street, Suite F
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Zeiser Geotechnical, Inc.
Ms. Julie Judd
2900 S. Bristol St., Suite B-205
Costa Mesa, CA 92626

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Call (714)754-1127 or send resume to:
Zeiser Geotechnical, Inc.
Ms. Julie Judd
2900 S. Bristol St., Suite B-205
Costa Mesa, CA 92626

Kelly E. Rowe
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