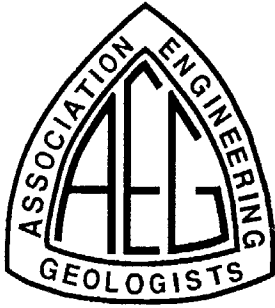


Association of Engineering Geologists



Southern California Section

NEWSLETTER - March 1989

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Los Angeles, CA 90057

Dinner Meeting Wednesday March 15th Annual Joint Meeting with the American Society of Civil Engineers (ASCE) - Geotechnical Group

- Stevens Steak House
5332 Stevens Place
City of Commerce
- Cost - \$15.00
- For reservations call

Patti Kimball/Jerry Diaz (213)617-7232 or (714)259-7992

Make reservations by Noon on the Friday before the Meeting

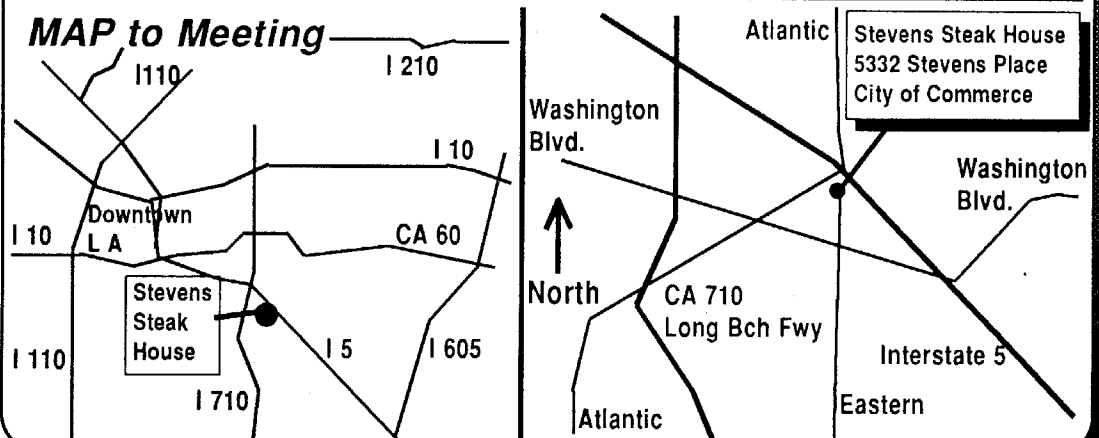
- 5:30 Social Hour
- 6:30 Dinner
7:15 Announcements
- 7:30 Program

Program

TOPIC Geologic and Engineering Aspects of
METRO RAIL Tunneling in Los Angeles

SPEAKERS Dr. James Monsees, Chief Tunnel Engineer
MRTC (Parsons PBQD)
Howard (Buzz) Spellman, Manager Geology Dept.
Converse Consultants

MAP to Meeting



Program

Topic & Speakers

Geologic and Engineering Aspects of METRO RAIL Tunneling in Los Angeles

Dr. James E. Monsees & Howard (Buzz) Spellman

Buzz Spellman is Chief Geologist for the Converse Consultants Pasadena office where he has practiced for the last 25 years. Prior to that he was employed by Bechtel Hydroelectric and Ralph M Parsons Ground Water Division. He is currently President of the State Board of Registration for Geologists and Geophysicists. Converse serves as geotechnical consultant on the Metro Rail Project for RTD and MRTC.

Dr. Monsees is Chief Tunnel Engineer for Metro Rail Transit Consultants (MRTC), a consortium of four firms: DMJM/PBQD/KE/HWA. Jim is directly employed by PBQD, the past six years on the Los Angeles tunnel project. He is a registered Geotechnical Engineer in California and received his B.S. and M.S. at University of Missouri and doctorate under **Ralph Peck** and **Don Deere**, University of Illinois.

One of the points **Buzz** will discuss is the rationale as to why the Hollywood fault was deemed active; i.e., displacement in the last 10,000 years (Holocene time), as well as geologic, groundwater and other conditions along the line.

Jim will report on: 1) the first application in the world of seismic design criteria based on imposed strains rather than pseudo loads and 2) MRTC's pioneering use of membranes for sealing structures from methane gas rather than conventional ventilation/pumping systems to reduce long-term maintenance. The end result is that the tunnel will be one of the safest places to be during a Southern California earthquake, even the "Big One".

THIS MONTH

March 1989



Kelly E. Rowe
Hydrogeologist

The meeting this month, Wednesday - the 15th, is the annual joint meeting with the ASCE - Geotechnical Group. Some of the technical aspects of the Metro Rail Project will be discussed by **Buzz Spellman** and **Dr. James Monsees**. It will be held at Steven's Steak House in the City of Commerce.

Next month, at the Tuesday April 11th meeting we are featuring **Dr. Lorne G. Everett**, with Kaman Tempo of Santa Barbara. **Dr. Everett** is well known for his unsaturated zone groundwater work and will discuss what he knows of the Recent Advances in Vadose (Unsaturated) Zone Monitoring.

Last month **Dr. Topozada**, Senior Seismologist with CDMG, spoke to a "packed house" at the annual joint AEG-South Coast Geological Society meeting about the planning scenario for a major earthquake along the Newport-Inglewood Fault Zone (NIFZ). **Dr. Topozada's** work focused on the possible impacts from a magnitude 7 earthquake. Data from the Long Beach 1933 magnitude 6.3 earthquake was used to compare and support some of the conclusions reached by his computer assisted evaluation. The slides were well organized for his talk. He continued to switch from classic earthquake induced damage photos of critical facilities in other parts of the world to NIFZ area maps showing where similar facilities exist.

The question & answer period following **Dr. Topozada's** talk brought out the point that a magnitude 6.5 is a more likely event to occur. **Dr. Topozada** said that if such an event took place the width of the affected zone would be about 22 miles rather than 45 miles, but the intensity of the event within the zone would be about the same. The CDMG Special Publication 99 addressing the NIFZ earthquake planning scenario is due out in April, 1989. However, at the meeting **Dr. Topozada** did provide a summary of predicted events on a handout. This summary is re-printed at the end of this column in this newsletter, for the convenience of members who were not able to attend.

On January 21, 1989 **Dr. Martin Stout** led an unofficial AEG field trip to Blackhawk Canyon and the Blackhawk Landslide. **Dr. Stout** presented his views on numerous landslides in the area to a group of approximately 100 geologists. The weather cooperated nicely, as did the 40-odd four wheel drive vehicles providing transportation for the assembled mass. **Dr. Stout's** interpretations met with little skepticism, at least publicly. The trip increased the participants' consideration of Mega-Landslides when mapping.

The Southern California Section officers wish to again thank **Dr. Stout**, on behalf of AEG, for this excellent trip. We encourage member firms and individuals to contribute to the CSULA Department of Geology, for their field trip fund.

When you make the donation to the field trip fund, please make the check payable to the Department of Geology, CSULA and mail to Professor Martin Stout, Department of Geology, California State University Los Angeles, California 90032.

AEG Sections in California have recently crossed an important threshold by commissioning a Lobbyist in Sacramento. The Lobbyist (Legislative Analyst) will represent the three California sections before the California Legislature and other appropriate California administrative bodies. He is Mr. William J. Keese, located at 818 "K" Street Mall, Sacramento, CA 95814, (916) 443-4785. His objectives are to:

- monitor all legislation introduced, and furnish copies of relevant bills, amendments, and statute reports.
- prepare position papers, lobby and testify before legislative committees on bills in which we have an interest.
- provide regular reports on Sacramento (Legislature) activities.
- assist AEG Sections in establishing a legislative contact program.

AEG Corporate Offices are located in Massachusetts. Call (408)275-1336 or sent mail to P.O. Box 132, Sudbury, MA 01776-001.

Joe Cobarrubias (213) 485-3435, is leading a field trip this summer as part of the International Geologic Congress 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 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.

It is interesting to note that in the final 48 hours of the Reagan Administration the Superconducting Super Collider (SSC) really accelerated. On the afternoon of 18 January Energy Secretary John Herrington signed the Record of Decision that made the site around Waxahachie, Texas, the official location of the SSC. Only minutes before, DOE had signed a contract with Universities Research Association to manage and operate the SSC for nine years and accepted URA's choice of Roy F. Schwitters, a Harvard physicist, to direct the project.

Of the seven sites remaining from the selection process which included sites in every state, the Waxahachie site - 25 miles south of Dallas, Texas, was the winner. The Environmental Impact Statement which evaluated all seven sites considered the biggest worry at this site to be fire ants, a particularly venomous species that migrated from Mexico after World War II. The Energy Department claims the project will require special designs for electrical wiring and components as well as special protection for construction workers and for scientists and technicians.

The screening process for determining the suitability of the SSC for this site was partially undertaken by some local professionals. Dr. Matt Werner from Earth Technology in Long Beach spoke about the engineering/geological screening processes last year at a local AEG meeting. Good luck to the Dallas area in spending the project's \$6 billion in the next seven years.

Dr. Topozada's Handout from Feb. Meeting Related to the Newport-Inglewood Fault Zone

Key facts concerning Newport-Inglewood Fault Zone (NIFZ) Earthquake Scenario

CDMG Special Publication 99, describing the effects on lifelines of a M 7 event along the Newport-Inglewood Fault Zone (NIFZ), is the fourth in a series of earthquake damage scenarios.

Other scenarios are for earthquakes of M 8.3 on southern and northern San Andreas fault, and for M 7.5 on the Hayward fault.

This scenario is important because a M 7 earthquake along NIFZ would cause greater damage in the metropolitan Los Angeles-Orange County area than a M 8.3 earthquake along the more distant San Andreas fault.

Rationale for Scenario Earthquake

NIFZ is active and extends from Culver City to Inglewood, Long Beach, and Newport Beach.

Long Beach earthquake (M 6.3), in 1933, occurred along NIFZ segment between Signal Hill and Newport Beach. Segment to north has not ruptured in major historical event.

Geologists believe that a 45-mile long seismic rupture at depth is possible, although there is no evidence that such an earthquake will occur in the near future.

It is prudent to provide a worst-case scenario so that officials can develop best possible emergency response plans.

Continued next page

Geologic/Seismologic Effects

Seismic shaking intensities were predicted using a computer model modified from a well-established USGS method.

Discontinuous surface faulting over a distance of 45 miles, between Culver City and offshore Laguna Beach, with displacements averaging three feet.

Intensity 9 (major damage) within 5 miles of NIFZ.

Intensity 8 (significant damage) within 25 miles of NIFZ.

Liquefaction ground failures in Los Angeles/Long Beach harbor area, Marina Del Rey; scattered earthquake-triggered landslides along steep slopes, such as in Sepulveda Canyon and at Pacific Palisades.

Assessment of Damage to Lifelines

Hospitals: 14,500 of 43,00 beds lost.

Airports: Several hours closure of LAX, Burbank, Van Nuys, and Long Beach. Runways at John Wayne and Los Alamitos closed for 24 hours.

Highways: Discontinuously disrupted by surface faulting from Newport Beach to Baldwin Hills; many highway interchanges within five miles of fault zone partially closed due to damaged bridges.

Damage to natural gas mains and pipelines results in numerous fires.

Electrical power plants/substations shut down for more than three days in Long Beach-Huntington Beach and Culver City-Compton areas.

Sewage treatment plants: Orange County plant inoperable for several months. El Segundo and Carson plants operated at 50 percent. Sewage contaminates groundwater and the coastline.

Petroleum fires occur in Los Angeles harbor and Carson-Wilmington areas.

The flow of water in pipelines crossing the fault zone is reduced by half. Areas to the southwest of the fault zone, from Huntington Beach to Inglewood, must rely on tank trucks.

(Dr. Topozada noted during his talk that wastewater from broken pipelines was going to be one of the biggest/most significant problem to handle. Wastewater would recharge groundwater reservoirs with sewage, high total dissolved solids content water, bacteria and viruses. Ed.)

Seminars/Meetings/Field Trips

MARCH 1989

20-23 "25th Symposium on Engineering Geology and Geotechnical Engineering" Reno Nevada. CONTACT: Dr. Gary Norris (702) 784-6835.

20-24 "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

30-31 Thurs & Fri "Recent Groundwater Trends in the Central Valley", AEG (Sacramento Section) & Brown and Caldwell Sponsored Groundwater Symposium. 8:30 to 4:15 714-744 "P" Street, Room 102, Sacramento. Cost: \$50.00 for AEG Members \$75.00 for Non-members \$20.00. CONTACT: Rick Humphreys (916) 322-3585

APRIL 1989

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.

11 Tuesday AEG SCS Meeting "Recent Advances in Vadose (Unsaturated) Zone Groundwater Monitoring", Dr. Lorne G. Everett, Quiet Cannon Restaurant, 901 North Via San Clemente, Montebello, Dinner 6:45 Program 8:00 Call (213)620-3560 (CDMG LA office) for reservations.

17-21 "Applied Groundwater Modeling", Dr. Leonard Konikow (USGS), Dr. James Mercer, and Mr. Peter Andersen (GeoTrans, Inc.) Internat. 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. Two - Five (5) hour classes & study manual. Cost: \$250 - Preregistration. CONTACT: (415) 339-3771 or (415) 852-9099

30 & 6/4 Prof. Geology Exam Review
Course: in Pasadena - Brown & Caldwell offices, REG Review, Inc. Two - Five (5) hour classes & study manual. Cost: \$250 - Preregistration. CONTACT: (415) 339-3771 or (415) 852-9099

MAY 1989

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) Chevern'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

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 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 (Internat. 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

Herndon, Virginia 22070-1001

Continued next page

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. Two - Five (5) hour classes & study manual. Cost: \$250 - Preregistration. CONTACT: (415) 339-3771 or (415) 852-9099

9 & 8/13 Prof. Geology Exam Review Course: in Pasadena - Brown & Caldwell offices, REG Review, Inc. Two - Five (5) hour classes & study manual. Cost: \$250 - Preregistration. CONTACT: (415) 339-3771 or (415) 852-9099

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.

SEPTEMBER 1989

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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Career Opportunity For Senior Geologist

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Call (714) 259-7992 or send resume to:

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Career Opportunity For Engineering Geologists

Immediate opening are available for Experience and Entry level engineering geologists. Minimum requirements include Bachelor's degree (Master's preferred in Geology & excellent communication skills. Strong background in hillside development required for Experienced candidates. Challenging work environment, excellent benefits & salary commensurate with experience.

Call (714) 250-1421 or send resume to:

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Ms. Vicky Overly

1151 Duryea Avenue
Irvine, California 92714

Career Opportunity For Soils Technicians

Immediate openings are available for experienced Soils Technicians to work in Ventura and Santa Barbara Counties. Challenging work and a top salary/benefits package with a growing firm, current staff of 50.

Call (805) 6532 or send resume to:

Stall, Gardner & Dunne, Inc.

Mr. T. N. Dunne

121 North Fir Street, Suite F

Ventura, CA 93001

Career Opportunity For Hydrogeologist

Immediate openings are available for a Hydrogeologist. Applicants should have a minimum of 5-7 years experience, masters degree in geology and registration as a geologist in California is preferred. Work is to be undertaken in the Los Angeles Area. Challenging work and promotion potential with a growing firm. Salary is negotiable/commensurate with experience.

Call (415) 652-1164 or send resume to:

E2 Consulting Engineers Inc.

Mr. Hersh Saluja

1900 Bowell St., Suite 250

Emoryville, CA 94608

Immediate DATA Need for Revising the Fault Map of California

Work is underway to quickly revise and update the 1:750,000 scale Fault Map of California (Geologic Data Map No. 1), 1975.

The 3-fold fault activity classification will be expanded to differentiate... 1) faults that have evidence of Holocene activity and/or late Quaternary offsets, 2) faults which have ruptured as a result of earthquakes since the first edition was prepared will be added and 3) faults shown as Quaternary will be re-evaluated and changed where adequate data are available.

New fault names will be shown and new evidence of creeping faults will be plotted. The latest available information on offshore faults will also be incorporated in this new edition.

Persons having any data that would be useful in this new compilation are encouraged to send their information as soon as possible in order to be assured consideration for this revision.

Please send data to:
California Division of Mines and Geology
Bay Area Regional Office
380 Civic Drive, Suite 100
Pleasant Hill, CA 94523-1997

Attention: C. W. Jennings

Mr. Jennings came out of retirement under a special short-term contract with the state to complete this revision. The deadline for submitting information for the revision is ASAP or if you want a date...April 1. Therefore if you have any constructive complaints or suitable additions for this revised state fault map respond to his request now!!!

Kelly E. Rowe
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