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SOUTHERN CALIFORNIA SECTION

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This Newsletter is provided as part of your membership in the Association of Engineering Geologists. If you are not a member of AEG and would like to subscribe to this newsletter, send check or money order in the amount of \$35.00 (\$15.00 for full-time students), made out to "AEG Southern California Section", to the newsletter editor (see address on back page).

Deadline for submittal to the March newsletter: **February 17**

THIS MONTH'S MEETING

February 14, 1995

Geomorphic Indicators of Neotectonism, Northern San Fernando Valley, California

presented by

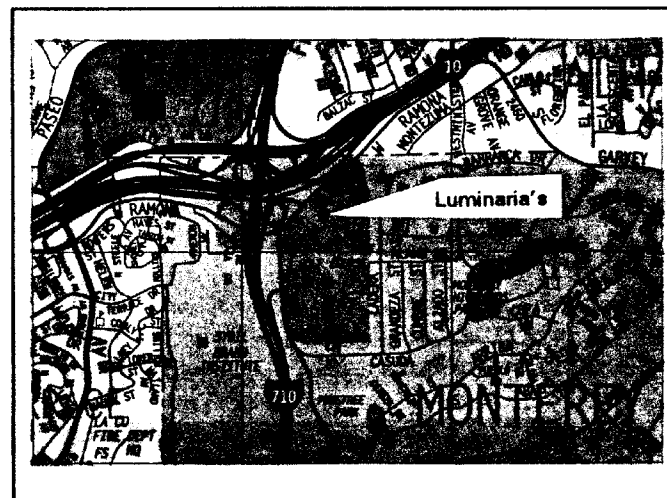
Roy J. Shlemon and James E. Slosson

Reservations must be made by **Tuesday, February 7**
by calling GeoSoils at (818) 785-2158
(leave your name and the number of people in your party)
Cost: \$25.00 (full-time students \$15.00)

**Luminaria's
Restaurant
3500 Ramona Blvd.
Monterey Park**

**6:00 Social Hour
7:00 Dinner
8:00 Program**

Map to Meeting



FEBRUARY PROGRAM

Geomorphic Indicators of Neotectonism Northern San Fernando Valley, California

Roy J. Shlemon and James E. Slosson

Many near-surface buried faults (blind thrusts) in southern California are geomorphically expressed at the near surface by topographically low fold belts, by isolated hillocks in alluvial terrane, and by disrupted drainage patterns. Such geomorphic features, although long identified in the San Fernando Valley, have been little appreciated as indicators of neotectonism and hence potential seismic constraints for urban development. These features are particularly well displayed near Granada Hills in the northern San Fernando Valley by the approximately six-mile long Northridge Hills and related Northridge Hills fault zone that diverge southeastward from the Mission Hills fault zone near Santa Susana Pass.


The Northridge Hills, rising up to 200 feet above Holocene fans, are composed mainly of folded and faulted "upper Saugus" beds, replete with strongly-developed calcareous buried paleosols. Although now almost completely covered by residential development, pre-development topography (1926-1928 6 minute quadrangles with 5-ft. contour intervals) shows that south-flowing, high order drainage originating in the Santa Susana Mountains, such as Limekiln (west), Aliso, and Bull Creeks, are antecedent streams that have maintained their courses, albeit with steepened gradients, during late Quaternary uplift of the geomorphically expressed Northridge Hills. These channels have thus formed distinct water gaps. In contrast, lower-order drainage have been "defeated" by uplift, but their former channels are geomorphically preserved as windgaps. Even where not topographically visible, the trend of the Northridge Hills and related fault zone is often surficially expressed by incised ephemeral drainage.

Early mapping by Kew (1924) and pre-WW II oil exploration (Hazzard, 1940) identified the Northridge Hills ("Devonshire fold belt") as steep-sided (south) asymmetrical folds probably bounded by en-echelon, north-dipping faults. Slosson and Barnhart (1967) and Barnhart and Slosson (1973) called attention to groundwater barriers and geomorphic evidence for possible Holocene activity of the Northridge Hills and nearby faults. Later, Saul (1975) recommended that the Northridge Hills fault zone be deemed "active," similarly based largely on geomorphic expression. Specifically, Saul pointed out that an extremely anomalous, approximately 1,500-ft. wide watergap in the southeastern Northridge Hills, now occupied by the underfit Bull Creek, may well have been the former course of the Bee Canyon drainage presently diverted eastward by neotectonic uplift and regional tilting.

In light of the San Fernando and the more recent Northridge earthquakes, it is instructive to "re-discover" the almost 100-yr old, classic descriptive geomorphology of W.M. Davis, W. Penck, A. Lobeck, and N. Fenneman. Their models of landscape evolution are intrinsically non-quantitative and hence now often disparaged, if

not totally ignored, by many in the academic community. However, the plethora of classic geomorphic features, such as windgaps, watergaps, anomalous drainage patterns, and Reidel-type folds readily discernable on old topographic maps of the San Fernando Valley, provide the engineering geologist with very useful (and inexpensive) indicators of regional neotectonism. These geomorphic indicators thus identify locations of likely active faults, of potential ridgetop shattering, of possible liquefaction and a host of other seismically induced constraints requiring engineering-geological analyses.

References

- 
- Barnhart, J.T., and Slosson, J.E., 1973, The Northridge Hills and associated faults -- a zone of high seismic probability?: in Moran, D.E., Slosson, J.E., Stone, R.O., and Yelverton, C.A., eds., *Geology, seismicity, and the environmental impact*: Association of Engineering Geologists Special Publication, p. 253-256.
- Hazzard, J.C., 1940, *Geologic map of a portion of Santa Susana - San Gabriel Mountain District, Los Angeles County, California*: Union Oil Company of California unpublished map, scale: 1:18,000.
- Kew, W.S.W., 1924, *Geology and oil resources of part of Los Angeles and Ventura counties, California*: U.S. Geological Survey Professional Paper 733, 202 p.
- Saul, R.B., 1975, *Geology of the southeast slope of the Santa Susana Mountains and geologic effects of the San Fernando earthquake*: in Oakeshott, G.B., ed., *San Fernando, California, earthquake of 9 February 1971*: California Division of Mines and Geology Bulletin 196, p. 53-70.
- Slosson, J.E., and Barnhart, J.T., 1967, *Late Pleistocene deformation in the Limekiln Canyon area, Santa Susana Mountains*: Southern California Academy of Sciences Bulletin, v. 66, no. 2, p. 129-134.

About the Speakers

Dr. Roy J. Shlemon received the Ph.D. degree from the University of California at Berkeley. Formerly on the faculty of the University of California at Davis and the Louisiana State University at Baton Rouge, Dr. Shlemon continues to give seminars at various local universities and colleges as well as for the Southern California

Section of the AEG. For the past 25 years he has been a consultant to government agencies, to engineering firms, and to industry throughout the world. Dr. Shlemon specializes in the application of Quaternary geology, geomorphology and soil stratigraphy to engineering practice.

Dr. James E. Slosson received his BA, MS, and Ph.D. from USC. He served as California State Geologist and Chief of CDMG from 1973-1975, having taken a government service leave from Los Angeles Valley College where he was Professor of Geology. He is a registered Geologist in California, Arizona, Arkansas, Delaware, Georgia, Idaho, North Carolina, Tennessee, and Wyoming. He held an engineering geologist rating of GS-14 with the U.S.G.S. dealing primarily with erosion control. He has been a lecturer at universities throughout the U.S. including Harvard, UCLA, USC, Caltech, California State universities and other institutions. In 1989 he was

the first recipient of the GSA/ABG Richard Jahns Distinguished Lecturer Award and was awarded the GSA Distinguished Practice Award in 1992. He is a certified hydrogeologist with the American Institute of Hydrology. He is chief engineering geologist with the firm of Slosson & Associates and is currently serving as a member and vice chairman of the Seismic Safety Commission.

Dr. Slosson has authored over 100 papers and articles on all phases of geology and co-authored "Forensic Engineering," a volume of case histories in engineering geology. He is the co-editor with Robert A. Larson for the GSA Reviews in Engineering Geology to be published soon and co-edited GSA Reviews in Engineering Geology, Volume IX, with A.G. Keene and J.A. Johnson. He coached track and field at Valley College & USC from 1951 through 1962 with State and NCAA Championships. ϕ

CHAIRPERSON'S COLUMN

by Robert A. Larson

Forty intrepid people attended our January meeting at Luminaria's, despite the rain, floods, and freeway accidents. They were treated to a great talk by Dr. Robert S. Yeats about thick-skinned vs. thin-skinned tectonics in the L.A. area. Dr. Yeats supports the thick-skinned interpretation, i.e. faults root into the basement and not the current popular paradigm which is ramp and flat/fold and thrust belt structure (thin skinned). Significantly, this has a great bearing on the probabilistic accelerations that the Southern California Earthquake Center is working so hard on. That is what is so great about probabilistic analysis - change the model and you change the answer.

After all the interest shown at the December meeting about the information generated by the Southern California Earthquake Center, no one responded to my request in the last newsletter indicating that they would like to attend a workshop. We'll keep trying to provide good educational experiences for our members, but, unfortunately, hardly anyone wants to volunteer to do the ground work it takes to put on the program. To date, no one has volunteered to put on a field trip this year, so, like last year, we probably won't have one. If you want to change this, please call me.

At the February meeting, Dr. Sands Figuers of the State Mining and Geology Board will introduce 28 revised A-P Earthquake Fault quad maps, prepared by the CDMG. The maps will be posted on the walls and some copies will be available to take home. Dr. Figuers would like your comments on the maps and will be holding a formal public meeting the week following our meeting.

The next Board of Registration for Geologists meeting will be held February 3 in San Francisco. Call the Board for details. Over 1000 applications for certification as Hydrogeologist have been sent out. The test will be March 28, 1995.

Start planning now to attend this year's AEG Annual Meeting in Sacramento. This meeting is likely to be one of the great ones, and

you will not want to miss it. Your attendance will also demonstrate support for our profession, our organization and our Board of Registration. Our Registration Board is tentatively planning a meeting at our Annual Meeting so that more interested professionals can attend. Public meetings to formally discuss why our Board shouldn't be sunsetted will also start in October. In case you still haven't realized it, our Board, according to law made in October of 1994, is terminated in 1997. If you want registration of geologists to continue in California I suggest you get active politically. Otherwise you may be a field technician for a Civil Engineer.

The results of last months poll are stated below. I will represent the Section members viewpoints, per this poll, in letters to appropriate politicians. Please recognize that, as in a state or national election, only a small percentage of the eligible voters have controlled what the leadership will do. Think about getting involved - NOW.

Total number of members in Section - 357 (1994)

Total number of ballots received - 53

Percent of members who voted - 15%

1. Do you want the Southern California Section to oppose the elimination (sunsetting) of the California Board of Registration for Geologists and Geophysicists in 1997?

Yes - 50 No - 3

2. Do you support some form of continuing education requirement in order to renew your geologist registration with the California Board of Registration for Geologists and Geophysicists?

Yes - 36 No - 15 Maybe - 1

3. Do you support some form of requirement to retest registered geologists every few (5?) years in order to maintain their registration with the California Board of Registration for Geologists and

Geophysicists?

Yes - 3 No - 48 Maybe - 1

4. Do you support strong, but fair enforcement actions by the California Board of Registration for Geologists and Geophysicists against registered geologists who violate State law?

Yes - 53 No - 0

5. Are you willing to volunteer to contact legislators about laws and regulations that affect your work as a geologist and our profession?

Yes - 33 No - 18 Maybe - 1

8. Do you support the USGS and the Bureau of Mines in their fight against being eliminated or having major decreases in funding?

Yes - 48 No - 3

Yes with qualification - 1

Those of you who checked a box indicating a willingness to join a committee will be contacted in the future by the appropriate committee chair. Thank you for your interest.

Next month's meeting will be a joint meeting with the ASCE L.A. Region Geotechnical Division. Dr. Dave Rogers will talk about his latest work on the St. Francis Dam failure. He has new and startling information since he published his award winning paper in the Engineering Geology Practice in Southern California volume. ϕ

FROM THE EDITOR

By now everyone should be aware that the new Congress is considering abolishing the USGS. While it is in everyone's best interest to reduce the Federal budget, the USGS may not be the most appropriate place to start. There are many reasons why this is so, and I have chosen to summarize a few here. These reasons are not entirely my own, as they are a product of conversations with colleagues, and discussions in the sci.geo.geology newsgroup on the Internet. Particular credit must go to Dr. Joe Dellinger of AMOCO (speaking for himself) for his thorough discussion of the necessity of the USGS.

1) The USGS has a mandate to warn governments of geological hazards. Consider the number of lives saved by the evacuation of the areas surrounding Mt. St. Helens and

Mt. Pinatubo. The USGS was willing to warn of the potential hazard in the Mammoth Lakes area. Although no eruption occurred (yet), the warning was in good faith and served the purpose of alerting the public to a hazard. No private organization would dare to do this because of the potential litigation that would follow.

2) The USGS is the "Library of Congress" of natural resource information. River flow rates, earthquake and volcanic eruption data, historical survey information, geological reports, etc., are collected, maintained long-term, and disseminated. Keeping this data public prevents a distribution problem -- you don't have to keep track of who owes what for using public data. Everyone agrees that this information is of great economic value, but the returns are too diffuse for any private concern to do it. If there is no reward for collecting the information, there is no incentive to do it. The USGS is mandated to collect such information and make it available to all, and has done a very good job at doing that.

3) The USGS is mandated to pursue long-term research that is unlikely to produce dividends in one person's lifetime, but is very likely to prove valuable within several decades. For example, understanding global climate change, advancing earthquake prediction, studying tsunami hazards, studying ocean-bottom and astrogeological mineral resources, and evaluating hazards from low-probability but catastrophic risks such as asteroid impacts, etc. This sort of data collection is not very profitable (in the short term), but prudent governments engage in it, knowing that it pays in the long run. Keep in mind that the US and Canada invested in detailed exploration and surveys very early in their histories, and this may have contributed to their economic development.

4) There needs to be some group the government can turn to for unbiased expert advice when planning long-term natural resource strategy; otherwise government policy is likely to be driven by short-term special interests.

5) As public agencies go, the USGS seems to be fairly efficient: they get a lot of good work out of unpaid volunteers and retirees, as well as their permanent staff.

6) If the USGS is abolished it will be impossible to reestablish it in its current form.

Any of the above may be used in your

letters to your representatives, should you wish. Considering the gravity of the political attack on the Federal budget, it is imperative that EVERYONE write their respective representatives on this issue. The letters need not be detailed: a "vote count" is what the representatives react to; therefore, it is the number of letters sent that matters most. These people are paid by your tax dollars to represent you. If you do nothing to let them know how best to represent you, then they will represent only your neighbors, the lobbyists, and/or themselves.

Use the partial list of representatives provided in the last newsletter to find yours. If you do not know what district(s) you are in call the Registrar's Office (located in the "County Government Offices" section of your phone book). Alternatively, check the "Government Officials" section of the "Local Area Pages" (the ones with the blue border) in your phone book. This section lists the elected officials for the area covered by the book and even has little pictures of them so you'll know what they look like (for whatever that's worth). Opposite that page is a map depicting the district boundaries. These may not be current as of January due to the recent elections, but at least you will know your district number. It is so easy to do, and takes so little time, that you now have no excuse not to write!

Additionally, you may write to: House Committee on Natural Resources, 1324 Longworth House Office Building, Washington, D.C. 20515, or e-mail to resource@hr.house.gov, or 20515natres@hr.house.gov; Honorable John R. Kasich, 1131 Longworth House Office Building, Washington, D.C. 20515; Honorable Newt Gingrich, 2428 Rayburn House Office Building, Washington, D.C. 20515, or e-mail to georgia6@hr.house.gov; and Honorable Richard K. Armey, 301 Cannon House Office Building, Washington, D.C. 20515.

This whole thing was Mr. Kasich's idea, everyone knows who Newt Gingrich is, and Richard Armey is the new Majority Leader

I have received a substantial response to my request for geoquotes of the month and would like to thank John Merrill, Brent Inghram, George Larson, and Allen Hatheway for their generous contributions to my heretofore meager collection. ϕ

JOB OPPORTUNITIES

Employment ads are placed in this newsletter free of charge as a service to our readers. We also accept ads from people looking for work in engineering geology and related fields. Ads run one (1) issue. Contact the editor for further details.

GROVER-HOLLINGSWORTH AND ASSOCIATES, INC., a geotechnical firm specializing in hillside construction is currently interviewing for an entry-level staff geologist (0 to 2 years experience). Please send resumés to:

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LOCKWOOD-SINGH & ASSOCIATES, INC. has an immediate opening for a staff Engineering Geologist. California Certification preferred, but not necessary.

Please call Dr. Singh at 310-477-8208, or send resumé to:

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THE COUNTY OF VENTURA-Public Works Agency has an opening for an engineering geologist with two years responsible experience in the field of engineering geology related to subdivisions or planned development. The individual will be responsible for the review, analysis, and preparation of reports and recommendations concerning the excavation, grading, drainage, erosion control, and geological hazards as related to the development of public and private property in relation to the Agency's subdivision engineering, capital projects, and related functions.

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NOTICE

Leighton and Associates, Inc., a major southern California geotechnical and environmental engineering consulting firm, has announced the relocation of its Corporate and Orange County office, and laboratory facility to 17781 Cowan, Irvine, CA. The new facility consists of nearly 30,000 square feet of space in the Irvine Business Complex near MacArthur Boulevard and the Newport (55) Freeway.

Founded in 1961, Leighton provides comprehensive geotechnical and environmental engineering services throughout southern California. Other offices are located in San Diego, Westlake Village, Walnut, and San Bernardino. ϕ

CALL FOR PAPERS

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- (1) Hazardous Waste Site Characterization
- (2) Town Gas Plants, Coke Works, and Other Coal Tar Sites

In both cases, we wish to emphasize the importance of engineering geologic techniques and interpretations on terms of characterizing site and waste, and towards understanding the interrelationships of surficial soils, geomorphology, rock characteristics, and hydrogeology as they influence fate and transport of the specific contaminants or groups of contaminants.

We are also interested in descriptions of the original layout and character of the sites as well as their technologies of production and the policies of hazardous waste management or disposal. Mention should be made of national and/or state/provincial waste regulation policies and guidelines, and of the manner and degree to which the action levels and nature of remediation have been set, if the subject project(s) have reached the stage.

Papers should have a definite applied nature and should refer to actual sites. Papers dealing with theoretical aspects of the subject or with radioactive waste in general are not being solicited.

Please take care to provide clear and concise literature references, and to define the regulations and policies so that the reader will be able to make use of our assembled technologies.

Submit manuscripts in standard *Engineering Geology* format to:

Prof. (Dr. Ing.) Allen W. Hatheway
Department of Geological & Petroleum Engineering
School of Mines & Metallurgy
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Phone: 314-341-4777
Fax: 314-341-6935

Our policy will be to publish the first available assemblage of a selected number of acceptable papers in either collection. ϕ

MEETINGS, ETC.

FEBRUARY

- 8-11 47th EERI Annual Meeting: **Interdisciplinary Mitigation**, Sheraton Palace Hotel, San Francisco. For information, contact EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934.
- 16 **Inland Geological Society Monthly Meeting: Dr. Lawrence Herber, Cal Poly Pomona - The Rejuvenated San Jose Fault.** San Bernardino County Museum, Redlands.
- 16 The Branner Club, Cal Tech, Mr. John Koivula of the Gemological Institute of America will speak on **Inclusions in Minerals and What They Tell Us.** For reservations call Martine Alter at 818-248-7715.
- 20-21 **Environmental Site Assessments, Short Course, Orlando, FL.** Government Institutes, Inc., Suite 200, 4 Research Place, Rockville, MD 20850. Phone 301-921-2345, fax: 301-921-0373.

SEMINAR

MINE CLOSURE: PROBLEMS & SOLUTIONS

The Southern California Mining Section of **The Society for Mining, Metallurgy & Exploration**, announces the annual **SPRING 1995 DESERT MEETING HALF-DAY FIELD TRIP AND SEMINAR.** The event will be held on Friday, March 24, 1995 and features a mourning field trip to the reclamation projects at the U.S. Borax mine at Boron, and the Cactus Gold Mine near Rosamond. A seminar will begin at 2:00 PM and will feature representatives from the mining industry, the U.S. Bureau of Mines, and the California Department of Water Quality; speaking on heap leach degradation, abandoned mines policy, and specific case studies. Pat N. James, Chairman & CEO of Santa Fe Pacific Gold Corp., headquartered in Albuquerque, NM, is scheduled to be the dinner speaker. Cost for the field trip is \$30.00 (\$35.00 after February 21st.). Cost for the Seminar, including a buffet dinner, is \$30.00 (\$35.00 after February 21st.). For more information, or to register, contact:

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Help support your local section of AEG, and update your personal library at the same time, by purchasing these publications! Use the convenient order form below!

Baldwin, J.E., and Sitar, N., 1991, **Loma Prieta Earthquake: engineering geologic perspectives**, AEG Special Publication No. 1, 170p.

Blake, T., and Larson, R. A., eds., 1991, **Engineering geology along the Simi-Santa Rosa fault system and adjacent areas, Simi Valley to Camarillo, Ventura County, California**: Association of Engineering Geologists, Southern California Section, Annual Field Trip Guidebook, August 24, 1991, v. 1 & 2., 383 p. 4 map sheets.

Buckley, C. I., and Larson, R. A., eds., 1990, **Geology and engineering geology of the western Soledad Basin, Los Angeles County, California**: Association of Engineering Geologists, Southern California Section, Annual Field Trip Guidebook, November 3, 1990, 185 p., 2 map sheets.

City of Los Angeles, 1982, **Geologic maps of the Santa Monica Mountains, Los Angeles, California**: compiled by the City of Los Angeles, Department of Public Works, Bureau of Engineering, reprinted by the Association of Engineering Geologists, Southern California Section, 342 p., 333 map sheets, 1"= 400'.

Ehlig, P. L., and Steiner, E. A., eds., 1992a, **Engineering geology field trips: Orange County, Santa Monica Mountains and Malibu**: Association of Engineering Geologists, 35th Annual Meeting, October 2-9, 1992.

Sieh, K. E., and Matti, J. C., 1992, **Earthquake geology, San Andreas fault system, Palm Springs to Palmdale**, Association of Engineering Geologists, 35th Annual Meeting, Field Trip Guidebook, October 3-4, 1992, ??p.

Stirbys, A. F., 1992, **Los Angeles Metro Rail system**: Association of Engineering Geologists, Field Trip Guidebook, 35th Annual Meeting, October 2-9, 1992, 175 p., 59 photos (56 B&W, 3 color), 2 map sheets.

Stout, M. L., 1976, **Geologic guide to the San Bernardino Mountains, southern California**: Association of Engineering Geologists, Southern California Section, Annual Field Trip, May 22, 1976, 115 p.

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 - Γ = the bugger factor based on your estimate of chances of successful recovery
(1 = high; 10=miserable)
 - Ω = the original cost of the hammer in last week's quotes on Equadorian *sucre*s

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Submitted by Dr. Allen Hatheway
