



# SAN DIEGO ASSOCIATION OF GEOLOGISTS

## 1996 EXECUTIVE COMMITTEE

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(619) 236-7251

**TREASURER**

Lowell Lindsay  
Sunbelt Publications  
1250 Fayette St.  
El Cajon, CA 92020  
(619) 258-4911

### MEETING NOTICE

WEDNESDAY JANUARY 17, 1996

- SPEAKER:** Scott Kerwin, Engineering Geologist, AGRA Earth and Environmental, Anaheim  
Jim Stone, Geotechnical Engineer, AGRA Earth and Environmental, San Diego
- TOPIC:** LIQUEFACTION FAILURE AND REMEDIATION: KING HARBOR REDONDO BEACH, CA
- PLACE:** Tickled Trout  
2151 Hotel Circle South  
San Diego, CA 92108  
(619) 291-6500
- TIME:** 6:00-Social Hour  
7:00-Dinner  
8:00-Program
- DINNER:** Teriyaki Chicken, green salad, rice, vegetable du jour, rolls and butter, carrot cake, coffee or tea.
- COST:** \$20.00

**RESERVATIONS REQUIRED by noon Monday January 15th.** Please phone in your reservation to Werner Landry at (619) 236-7251. Leave name, number in party and affiliation. Please call Werner if you need to cancel your reservation. If you have special diet requirements, contact Anne Sturz by Monday January 15th.

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### ABSTRACT

The magnitude 6.6 Northridge earthquake of January 17, 1994 caused extensive damage in the greater Los Angeles area. Although much of this damage was concentrated in close proximity to the earthquake epicenter, significant ground deformation and/or structural damage also occurred at many locales several tens of kilometers from the epicenter. Preliminary evaluations at these more distant sites have generally attributed these pockets of distress to local ground conditions, including both geologic and, in some instances, topographic characteristics of the failure areas.

One of the most noteworthy examples of localized ground deformation/structural damage occurred at Redondo Beach King Harbor about 42 kilometers south of the epicenter. Liquefaction failure of an area approximately 150 meters long and 50 meters wide severely damaged the Mole B marine facilities in the harbor. Mole B is one of several earthen jetties bounded by seawalls and rock revetment slopes that provide access to the boat slips, along with foundation support for associated infrastructure services and buildings. All of the offshore jetties appear to have been constructed in a similar fashion: by end-dumping and spreading relatively clean sand obtained from nearby beach and dune deposits. However, the combined effects of a unique set of local ground conditions resulted in significant liquefaction failure occurring only in the central section of Mole B.

Lateral extension of approximately 5.5 meters occurred across the central portion of the mole, with settlements on the order of about 1.2 meters. Rather than attempting to reconstruct the seawall, infrastructure, and support buildings with deeper foundations and other liquefaction resistant design measures, it was decided to modify the existing ground conditions to mitigate the liquefaction potential. This was accomplished by compaction grouting procedures to densify foundation soils along the relatively undamaged northern side of the mole. Vibratory displacement and installation of gravel columns not only densified the foundation soils, but also provide additional subsurface drainage capacity. These ground improvement techniques effectively reduced the liquefaction potential and allowed the marina improvements to be reconstructed on shallow foundations similar to the original design.

## ANNOUNCEMENTS

- \* The 1996 SDAG Executive Committee and Members want to thank Phil Rosenberg for four years of dedicated service to the organization. THANKS PHIL!
- \* 1996 MEMBERSHIP DUES ARE PAYABLE NOW. If you want to continue to receive the SDAG Newsletter, and haven't renewed your membership, please use the form included in this newsletter. Membership forms will be available at the January Meeting. Your membership dues support printing and mailing of the newsletter, student scholarships, the annual picnic and the annual field trip. We appreciate your continued support.
- \* DEADLINE for announcements to be included in the February SDAG newsletter is February 1st 1996. Please submit your items in writing to Anne Sturz, 6466 Bonnie View Dr. San Diego, CA 92119 or by fax at 619 461-2644.
- \* SPORTING CLEARANCE / NEW PUBLICATIONS LIST - SDAG has reduced prices on all sportswear items. These items will be on display at the January meeting and would make unique post-Holiday presents. ALSO - The latest SDAG Publications list will be available at the January meeting.
- \* The SDSU Geology Department is offering a graduate-level course in Applied Numerical Modeling of Groundwater Flow this spring semester. The course will be taught by David Huntley and is scheduled for Wednesday evenings, from 6:00 to 9:30 pm. Unlike the modeling courses taught for the past 17 years, this course **does not** require programming skills. This course is being taught as an experiment at the request of several people in the consulting community, and may not be taught again in the future.
- \* 1996 ANNUAL SDSU ALUMNI FIELD TRIP - is scheduled for the last weekend in February (as it is usually scheduled) which falls on February 24, 25 & 26th. So mark your calendars and call Lyne Perry if you need information now. Lyne can be reached at 619 445-3928.
- \* TUCSON GEM AND MINERAL SHOW The 42nd annual Gem and Mineral Show, the largest of its type in the world, will be held at the Tucson Convention Center February 8-11, 1996. Calcite is the featured mineral. The Fluorescent Mineral Society will provide a special exhibit of fluorescent minerals. For additional information please call (520) 322-5773.



# SAN DIEGO ASSOCIATION OF GEOLOGISTS

## 1996 MEMBERSHIP FORM

### SAN DIEGO ASSOCIATION OF GEOLOGISTS

Please check preferred Mailing Address

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DUES

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student member

\$5.00

regular member

\$15.00

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DATE \_\_\_\_\_

PLEASE MAKE CHECKS PAYABLE TO SDAG AND MAIL TO:

Lowell Lindsay  
Sunbelt Publishing  
1250 Fayette St.  
El Cajon, CA 92020

Membership dues may also be paid at the monthly dinner meetings.

San Diego Association of Geologists  
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Development Services Department  
City of San Diego  
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San Diego, CA 92101-4154



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