

# ASSOCIATION OF ENGINEERING GEOLOGISTS

SOUTHERN CALIFORNIA SECTION

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June 1995

## THIS MONTH'S MEETING

June 13, 1995

### An Overview of Groundwater Contamination in the San Fernando Valley, California

*presented by*

**Richard C. Slade**

**Reservations must be made by Friday, June 9!**

**call GeoSoils at 818-785-2158**

**(leave your name and the number of people in your party)**

**Cost: \$20.00 (full-time students \$10.00)**

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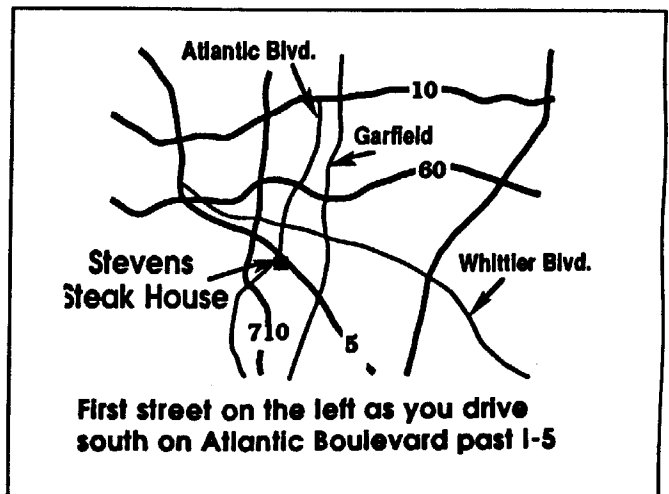
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Atlantic-south exit  
T.G. Page:675 G-3)

**5:30 Social Hour**

**6:30 Dinner**

**7:45 Program**

Map to Meeting



**First street on the left as you drive south on Atlantic Boulevard past I-5**

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 July newsletter: June 19**

## MAY PROGRAM

# An Overview of Groundwater Contamination in the San Fernando Valley, California

by Richard C. Slade

*Richard C. Slade & Associates, Consulting Groundwater Geologists*

The San Fernando Valley Groundwater Basin (SFGWB) lies within a 328,500-acre tributary watershed area known as the upper Los Angeles River Area (ULARA). ULARA consists of the entire hill and mountain watershed of the Los Angeles River and its numerous tributaries, and four alluvial-filled groundwater basins. These four separate groundwater basins within ULARA are the San Fernando (the largest), Sylmar, the Verdugo, and the Eagle Rock (the smallest) Groundwater Basins.

SFGWB comprises approximately 112,000 acres of valley fill deposits within the San Fernando Valley. The westerly side of this basin is generally characterized by shallow groundwater, local artesian conditions, generally poor water quality, a few contamination sites, no municipal-supply wellfields, and a relatively thin but fine-grained water-bearing section.

The easterly side of the SFGWB is generally characterized by deep groundwater, generally good water quality, numerous groundwater contamination sites, a large number of municipal-supply wells and wellfields, and a relatively thick section of generally coarse-grained water-bearing sediments.

Groundwater flow direction across the valley is generally from west to the east/southeast. There are no lateral groundwater barriers to regional flow across the valley. Numerous wells and well fields locally modify the regional groundwater flow direction. Municipal-supply purveyors in the valley include: Los Angeles Department of Water & Power (8 major wellfields with approximately 100 wells); the City of Burbank (formerly as many as 10 active wells); and the City of Glendale (formerly as many as 14 wells).

In late 1979, Assembly Bill 1803 mandated that large public water systems conduct sampling of their water supplies for possible organic contamination. As a result of AB-1803, The California Department of Health Services (DHS) requested that all major purveyors conduct laboratory testing for the presence of certain industrial chemicals in the water they were serving to local residents. Results of the initial groundwater sampling and subsequent laboratory testing in the San Fernando Groundwater Basin revealed a volatile organic compound (VOC) contamination problem in the local groundwater reservoir. Principal VOC contaminants encountered were trichloroethelene (TCE) and pentachloroethelene (PCE). Both VOCs are well known to have been widely used in the basin for machinery degreasing and metal plating.

Based on ongoing testing of wells in the San Fernando Valley, more and more water wells (owned by the cities of Burbank and Glendale, and LADWP) were found to contain VOC contamination

in excess of Federal and State limits for domestic use. As a result, the Federal EPA in 1984 proposed four sites (areas) within the San Fernando Valley for inclusion on the Federal National Priorities List (NPL) for cleanup under CERCLA. In 1986, these four sites were officially added to the NPL list. The North Hollywood-Burbank wellfield area was the first of these four designated NPL sites. The entire Burbank wellfield lies within the political boundaries of the City of Burbank. The NPL is a list of top priority hazardous waste sites in the country that are eligible for investigation and cleanup under the Superfund program. Local groundwater contamination in the Burbank-Glendale area has resulted in the shutdown of all City water wells. These cities purchase potable water from MWD in order to supply their customers with water that meets State and Federal requirements.

A large number of subsurface investigations (soil gas vapor studies, soils borings, groundwater monitoring wells, Hydropunch holes, etc.) have been performed to help identify the type, location, and extent of contamination in the unsaturated and saturated zones. Major companies, small businesses and cities have been named as PRP's during the Superfund process in the valley. SFGWB is unusual among other EPA Superfund sites due to its large areal extent, its relatively large data base (E-logs and drillers' logs of wells), and the large number of possible historic, uncontrolled waste release sites. Considerably more investigations and money will be expended to mitigate the widespread contamination.

Richard C. Slade is owner and principal groundwater geologist of Richard C. Slade & Associates, Consulting Groundwater Geologists. His education includes a B.A. degree in Geology from University of California at Los Angeles in January 1966 and an M.S. degree in Engineering Geology from University of Southern California in 1974. Between 1967 and 1970, Mr. Slade was a Staff Geologist in the Hydrologic and Geologic Section of the Metropolitan Water District of Southern California.

After leaving MWD, he spent 13 years as Senior Hydrogeologist with Geotechnical Consultants, Inc., working out of their Burbank, Ventura, San Francisco, and Santa Ana offices. In 1983, Mr. Slade formed *Richard C. Slade & Associates, Consulting Groundwater Geologists* to provide consulting services in groundwater to various municipal, industrial and agricultural clients, and expert witness services to a diverse number of legal firms.

Mr. Slade is a Registered Geologist and Certified Engineering Geologist in California, a charter member of the American Institute of Hydrology, and is also licensed as a geologist in Arizona.  $\phi$



## WHO'S KIDDING WHOM DEPT.

The following letter was sent to the Los Angeles County Board of Supervisors:

SOLUTION  
TO  
HILL SLIDES

### BASIC CONCEPT

1. Mount harpoon launching canons on large helicopters.
2. Fabricate long steel harpoons (possibly from steel rebar).
3. Fire harpoons into the hill sides to inhibit earth movement.

### Comments:

Geologists could ascertain the optimum depth of harpoon penetration.

Harpoon-canon engineers could determine the size and required muzzle velocity necessary to achieve the desired earth penetration.

Ballistics engineers could assist in developing the harpoon design and launching configuration.

Prototype testing could provide vital design data. ϕ

## FIELD TRIP!

A field trip entitled "Engineering Geology of Thrust Faulting in the Northwestern Los Angeles Basin Area" is planned for September, 1995 with a tentative date of September 6. We are interested in papers and/or field trip stops regarding the northern San Fernando Valley, Simi Valley, and southwestern Soledad Basin areas. Papers and proposed field trip stops for topics related to the engineering geologic aspects of thrust faulting in these areas will be accepted until July 1. We particularly encourage topics regarding the January 17, 1994 Northridge earthquake, but are not limiting the trip to this event. Papers and proposed stops should be submitted to: Kim Bishop, Dept. of Geology, California State University, Los Angeles, 5151 State University Drive, Los Angeles, CA 90032. Phone: 818-343-2149. ϕ

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## SCHOLARSHIP ANNOUNCEMENT

In honor of Martin L. Stout and with his help and advice, the Martin L. Stout/SCS-AEG Scholarship was formed by the Southern California Section of the Association in 1994. The scholarship is open to all student members of the Association of Engineering Geologists. An award of \$500.00 will be given to one student member in August, 1995. Each year a similar award will be given. **Applications for the award are due July 15, 1995.** If you would like to receive an application for this award please contact Robert A. Larson, Chairperson, Southern California Section of the AEG, 6416 Woodley Avenue, #5, Van Nuys, CA 91406.

### *CONTRIBUTIONS NEEDED*

Please consider contributing to the Martin L. Stout/SCS-AEG Scholarship. Our Certificate of Deposit is about to turn over and we would like to add as much money as possible for the next year and get the highest interest return. The fund is currently at about \$13,450. We appreciate the recent contributions of Lisa A. Rossbacher, Dallas D. Rhodes, William J. Elliott, Paul Davis and Associates, Richard E. Lownes, and Paul Merifield. 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 details.*

**Bing Yen and Associates, Inc.** is accepting applications for the position of Assistant Project Geologist or Project Geologist. Applicants must possess a minimum of a Bachelor's degree in Geology, and 3 to 6 years experience performing engineering geological work. Registration (CEG), advanced degrees, and related experience in environmental or geotechnical engineering a plus. Candidates should possess excellent communication and writing skills, and must be willing to travel throughout the southern California area. Resumes should be mailed or faxed to:

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# THE INTERNET GEOLOGIST

An extended abstract presented at the Prospector's and Developer's Association of Canada's Annual Meeting in Toronto - March 1995

by

R. Spencer Ramshaw

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The Internet Geologist is not a science fiction concept or a government planning exercise; rather, it is the typical geologist using the Internet. Currently there are many tools to assist this person with information retrieval or dissemination via the Internet, but the Internet is so vast that finding what is valuable to a geologist can be a chore. Hopefully this document will help you with this task. The tools will be dealt with in three groups: e-mail, newsgroups and remote network services. These services are available anywhere in the world that a geologist can sit down with a computer, a modem, a phone line and enough money to pay for the connections. I will also touch on some of the problems associated with each tool.

## THE INTERNET

Before starting into the information useful to a geologist, a basic understanding of the Internet is required. The Internet is the world-wide network of computer networks. It had its start in the United States defense research establishments as various networks were internetted together. The United States government used to own the Internet, but this is changing as more and more commercial concerns provide the networks. The Internet exists because the various owners of individual networks agree to cooperate on how the networks communicate. Getting Internet access is a matter of finding a local access provider. Currently, basic Internet access in Canada, starts at about \$15/month with connect fees running between \$0.50 to \$6.00 per hour depending on the level of Internet access. The services provided via the Internet can be divided between local services and remote services. Local services are services that don't actively involve the networks. E-mail and newsgroups are examples of such services. In these cases the network is used to pass the information around but does not need to be active when a person uses the service. Network or remote services require an active connection to the network at the time you want to use the service. In these cases requests from your computer must pass across the network to reach a remote machine and then the results must traverse the network back to you.

*Spencer Ramshaw lives near Toronto and is quite active in the geology newsgroups on the internet. He is also the keeper of the unofficial Geological Association of Canada e-mail address list.*

## E-MAIL

E-mail is the easiest service conceptually because it has direct

analogies with the postal service. A message is typed in at one location, and passes via the network to arrive at another location. It is faster than the postal service but not instantaneous. It will never replace the telephone or fax, but e-mail is becoming more and more useful as more people obtain access to it. From the geologist's standpoint the advantage of e-mail is who you can reach. Having e-mail access will allow you to request a copy of this abstract for example (from [rsr@amethyst.dweomer.org](mailto:rsr@amethyst.dweomer.org)) and the specifics of accessing many items that are only generally touched on here. A short list of organizations that you can use e-mail to contact follows:

- National Geological Surveys (US, Canadian, British)
- Provincial Surveys (Ontario, British Columbia, Newfoundland)
- Universities
- Associations (GAC, AEG)
- Geochemistry Labs
- Geoscience Software Vendors
- American Geological Institute

The recipient of an e-mail doesn't have to be a person either; it can be a computer that fulfills requests. The request can be to send documentation, or to forward a message to a list of people interested in a particular topic. Getting added to these lists can also be requested by e-mail. There are thousands of lists used to disseminate information and encourage discussion regarding various subjects. Of interest to you are the following lists:

- Mineral Economics and Management Society
- Historical Geology
- Mining Geology
- Newfoundland & Labrador Geology
- Maritime Canada Geology

The people using and maintaining E-mail systems are not infallible, and sometimes messages disappear or an incorrect e-mail address causes the message to be delivered to the wrong person. The security of the Internet e-mail is not perfect. The system works and can be trusted for normal correspondence but do not trust it with your credit card number. You also must be careful of the identity of the person on the other end of the message, since impersonation can occur via the Internet. Used with a normal amount of caution however, e-mail is a very useful tool.

## NEWSGROUPS

Newsgroups are public messages that are classified according to subject. These are the discussion areas where ideas and informa-

tion are shared. Newsgroups can be divided into two categories: Usenet and alternative hierarchies. All newsgroups use the same basic methods to be carried across the networks. The difference between Usenet and the other newsgroups is the creation method. All Usenet newsgroups have to be voted into existence after a lengthy proposal and discussion process. Alternative hierarchy newsgroups are controlled by the group creating them; either government, university, or other groups. Note there is also an alt. alternative hierarchy where there is no control on newsgroup creation other than knowing how to send the right message to other systems in order to create the newsgroup. The range of newsgroups is truly astounding. The following short list of newsgroups (the names are Usenet-ese but self-explanatory) are a few Usenet newsgroups that a geologist should be aware of:

- comp.infosystems.gis
- sci.geo.geology
- sci.geo.petroleum
- sci.geo.satellite-nav
- sci.image.processing
- sci.techniques.microscopy
- sci.techniques.spectroscopy

Since newsgroups are public to all users, the groups can sometimes be the best examples of human miscommunication going. At the worst, discussion in the newsgroups can degenerate to less than pointless, but at the best, insightful or informational posts that produce tremendous benefits pass through the newsgroups. The messages in the newsgroups tend to have a short life on most systems so serendipity and fate comes into play. The newsgroups are like newspapers, if you don't get anything out of the paper today, you need only wait until tomorrow to see a whole new set of articles.

#### REMOTE NETWORK SERVICES

The intricacies of the various remote interactive services available across the Internet can be as daunting as the information they help you retrieve. Each individual service requires its own access software and usage methods. But developments over the past two years have resulted in the simplification of remote network services through the development of the World Wide Web. While the importance of the older interactive network services is not lessened, the Web is becoming the preferred method of accessing the Internet's network services.

The Web consists of three parts: a standardized method of pointing to an information source, a graphical user access method, and a specialized language for describing the information presentation. The Web concept unifies many of the diverse interactive services into one access method and adds richly-formatted text, graphics and sound. This information is presented as pages of text that you can point and click on to make further selections. The first Web browser, the graphical user access program called "Mosaic",

has become intimately intertwined and confused with the Web but it is only the first of many Web browsers. The Web's pointer system or URL codes (Uniform Resource Locators) are beginning to spring up everywhere, even in the Northern Miner. A URL can be typed into a Web browser and will access that system directly. However, the Web was designed as an improvement on a previously unindexed Internet so you really only need to search through a few Web pages to find out if what you are interested in is connected to the Web. For exactly this purpose the USGS tries to maintain a public master list of all earth science Web URL's. As for what you might find via the Web, here is a tiny sampling of what is available:

- Source Code Listings from the Journal, Computers & Geosciences
- Commercial Access to the GeoRef bibliographic database
- Card Catalog access to the USGS and GSC libraries
- US Bureau of Mines Catalog of Publications
- Information from Natural Resources Canada and the USGS
- Archive of various files from the Computer Oriented Geological Society
- Digital Elevation Model files for the entire US and some other areas

There are problems with remote services. They are not guaranteed to be secure so the same warnings regarding e-mail apply. Because the Web is so network-intensive it can often be very slow. As more people use the Web and other services, the response will get worse until the network resources catch up to the demand. However, given the current level of interest in tools for the Webs Hypertext Markup Language (HTML), the Web is going to become the reason many people join the Internet.  $\phi$

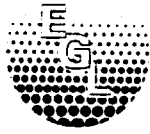
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## COMPUTER CORNER

As of May 4th, the Association of Bay Area Governments has published about 300 GIF (graphics interchange format) maps of earthquake faults and damage zones for the bay area on their web server. They are available at: [www.abag.ca.gov](http://www.abag.ca.gov). Check this one out with a graphics-based web browser. For additional info contact Terry Bursztynsky at: [terryb@abag.ca.gov](mailto:terryb@abag.ca.gov)



Next month in this space: a rather lengthy list of useful FTP (file transfer program) and Gopher sites, WWW pages, Usenet Newsgroups, and Mailing lists, that I have been collecting for sometime.  $\phi$



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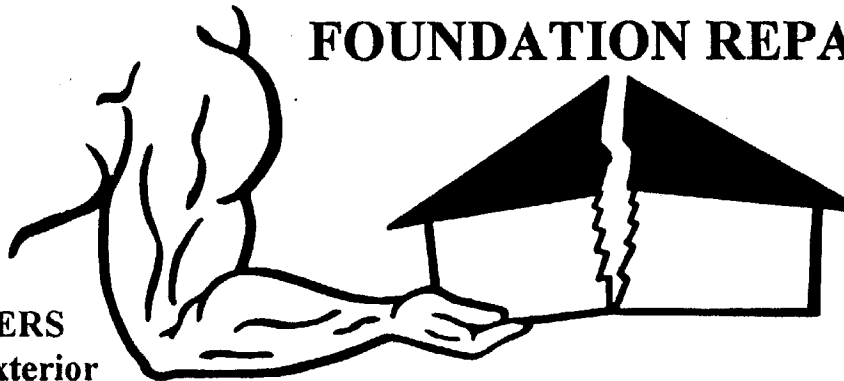
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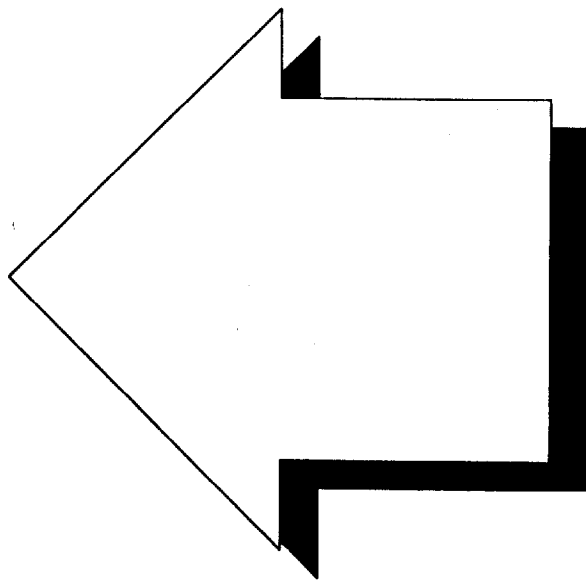
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## GEOQUOTE OF THE MONTH

"May 2, 1995

Dear Charles,

The updated Soils & Geology Report in response to your first Screen Check Review is ready for submittal on May 4. Our project, \_\_\_\_\_, V.T.T. Map # \_\_\_\_\_, is scheduled for a Subdivision Committee hearing on May 8, 1995. Since I have not allowed you adequate time to review before the Subdivision Hearing, it is my request to ask for a conditional approval of the project".

excerpt from actual letter sent to your humble editor  
regarding review of pending 1795 acre, 2200 lot subdivision  
in Los Angeles County

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