

Announcing
AEG San Francisco Section Meeting

**THE MT. DIABLO FOLD-AND-THRUST BELT
—A “NEW” SEISMIC SOURCE
IN THE EASTERN SAN FRANCISCO BAY AREA**

**Thomas L. Sawyer, Piedmont GeoSciences, Inc.
Reno, NV (tom@piedmontgeosciences.com)**

Restaurant: Spenger’s Fresh Fish Grotto, 1919 Fourth Street, Berkeley
(Phone 510.845.7771 for directions only—not a reservation line)

Date and Time: Tuesday, April 11, 2006

6:00 pm—Social Hour and Sign-in
7:00 pm—Dinner (Chicken, Fish or Vegetarian)
8:00 pm—Presentation

Cost: \$35 AEG Members, \$40 Non-members, \$15 Students

Reservations: AEG members fax or e-mail Sachiko Tanikawa (fax # 510.268.5099, treasurer@aegsf.org) with the following information

- (1) Name
- (2) Phone number
- (3) Meal choice

Driving Directions: From the 80 Freeway, exit at University Avenue. Continue north on the off-ramp and turn right (east) onto Hearst Avenue. Cross the railroad tracks and turn right (south) onto Fourth Street. Spenger’s is on the east side of Fourth Street.

Parking: You may park in the lot in front of the restaurant (sometimes it’s free). Otherwise, street parking is available.

Please Note: Please make reservations by FRIDAY, April 7, if possible; availability cannot be guaranteed after Friday. ****Walk-ins are not guaranteed!**** For financial reasons no-shows and last minute cancellations will be charged.

See over for abstract and speaker biography.

THE MT. DIABLO FOLD-AND-THRUST BELT

—A “NEW” SEISMIC SOURCE IN THE EASTERN SAN FRANCISCO BAY AREA

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Contractional structures in the eastern San Francisco Bay area are part of a late Cenozoic fold-thrust belt, the Mt. Diablo fold-and-thrust belt (MDFTB), that can be traced from the northern Diablo Range, south of Livermore Valley, to the western Sacramento-San Joaquin Delta region. The MDFTB is bounded by dextral faults, the Greenville and Concord faults on the east and the Calaveras fault on the west. Thrust faults and associated folds in the MDFTB generally trend west-northwest, oblique to strike-slip faults of the San Andreas system, and exhibit a well-defined right-stepping, en echelon geometry. From south to north, major contractional structures in this belt include: the Williams and Verona thrust faults; the Tassajara and Mt. Diablo anticlines and the underlying Mt. Diablo thrust fault; the Los Medanos Hills anticline; and the Roe Island thrust fault and related structures in the western Delta.

The Mt. Diablo thrust fault, the largest structure in the MDFTB, is driven by a restraining transfer of dextral slip from the Greenville fault to the Concord fault. Active movement on this buried, or ‘blind’, thrust fault is manifested in the late Quaternary growth of the Tassajara anticline bordering the Livermore Valley on the north. In addition to a deep sedimentary basin, the valley is underlain by the Verona-Williams thrust fault zone and is bisected by Livermore thrust fault and “Springtown” anticlines, second-order structures in the hanging-wall block of the Verona thrust fault.

The MDFTB represents a significant seismic source(s) for the eastern San Francisco Bay area. The Mt. Diablo thrust fault is potentially capable of generating an earthquake of about $M_w 6\frac{3}{4}$, which is comparable to the 1983 Coalinga ($M_L 6.7$) and 1994 Northridge ($M_w 6.7$) earthquakes. As an independent seismic source, the Verona-Williams thrust fault zone might produce a somewhat smaller earthquake, however, the associated rupture would directly underlie population centers in the Livermore Valley.

Speaker Biography

Mr. Sawyer has more than 20 years of professional and research experience specializing in geologic hazard investigations in the western United States, particularly in California and Nevada. He has performed seismic hazards assessments of more than 100 critical facilities in California involving identifying and mapping potentially active faults, documenting fault activity through exploratory trench studies, and characterizing ground motion parameters.

He received a BS degree in geology from Humboldt State University in 1984 and a MS degree, also in geology, from the University of Nevada, Reno in 1990. That year (*before completing his MS thesis*) he accepted a position with Woodward Clyde Consultants in Oakland, and began conducting seismic hazards studies in the San Francisco Bay area, Sierra Nevada, and elsewhere in the western U.S. He continued this work while at William Lettis & Associates from 1993 to 1995, when he ventured out as an independent consultant. In 1997 he founded Piedmont GeoSciences, Inc., a small consulting firm in Reno, Nevada specializing in geologic hazard investigations.

Mr. Sawyer’s research on the Mt. Diablo fold-and-thrust belt, in the eastern San Francisco Bay area and Sacramento-San Joaquin Delta region, began in 1995 and continues to present. This research has led to the discovery of a significant seismic source, or sources, and highlights the importance of contractional deformation in the region.