

# WASATCH FRONT FORUM



VOL. I NO. 4 SPRING 1985

## EARTHQUAKE HAZARDS PROGRAM

THE WASATCH FRONT FORUM IS NOT TO BE QUOTED OR CITED AS A PUBLICATION BECAUSE MUCH OF THE MATERIAL CONSISTS OF REPORTS OF PROGRESS AND RESEARCH ACTIVITIES AND MAY CONTAIN PRELIMINARY OR INCOMPLETE DATA AND TENTATIVE CONCLUSIONS.

**DEADLINES FOR FUTURE ISSUES**  
SUMMER 1985.....July 31, 1985  
FALL 1985.....October 31, 1985  
WINTER 1985.....January 31, 1985

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### UTAH GEOLOGICAL & MINERAL SURVEY

The WINTER 1985 edition of Utah Geological & Mineral Survey's "SURVEY NOTES" includes a discussion of the Earthquake Hazards Mitigation Program by Genevieve Atwood, Director of UGMS in which she states.....

"To reduce our vulnerability to earthquakes requires a joint effort by all levels of government. I believe that the Federal government has the primary responsibility to perform and fund the research efforts that lead to an understanding of : (1) the earthquake hazard along the Wasatch Front, (2) the potential losses from earthquakes, (3) the systems needed to make earthquake information available for use.

The state responsibilities include; (1) providing an example of responsible construction of State facilities, including consideration of seismic safety in design and construction and requiring geotechnical review of sites before the design of public buildings (preferably before acquiring the site); (2) compiling geologic information so it can be used by local governmental entities and by the public, and (3) providing advice and assistance to local governments on seismic safety.

Utah's county and city governmental entities have the responsibility for regulating land use and the protection of life and property. And all of us have the responsibility for personal preparedness. What surprises most people is that many of these actions do not require major expenditures to make significant improvements in safety.

Many of these actions are underway or are being considered for implementation. We are seeing several positive changes and the potential for major changes in the understanding and reduction of hazards along the Wasatch Front."

In addition, Don R. Mabey, Senior Geologist, Utah Geological and Mineral Survey, has an article entitled EARTHQUAKE HAZARDS IN UTAH. Among the topics discussed are:

- HISTORIC EARTHQUAKES  
Instrumentation and Research  
Borah Peak Earthquake
- WASATCH FRONT EARTHQUAKE HAZARD  
Where in the area and surrounding region are earthquakes likely to occur,  
  
The recurrence interval of earthquakes in various magnitude ranges for each source area,  
  
The intensity distribution of each source area,  
  
The ground shaking response and possible surface rupture zones within the study area,  
  
Secondary effects of ground shaking such as slope failures and dam failures.

(UGMS Report continued...)

- CAUSE OF WASATCH FRONT EARTHQUAKES
- WASATCH FRONT EARTHQUAKE HAZARD REDUCTION PROGRAM

Information Systems  
Hazard Evaluation and Synthesis  
Ground Motion Modeling  
Loss Estimation Models  
Implementation

- CONCLUSION

"Earthquake research over the last two decades has greatly increased our understanding of the earthquake hazard along the Wasatch Front, and research now in progress will improve this understanding. How this knowledge will be used by government, private organizations, and individuals to reduce the threat of life and property remains to be determined. An important role of the UGMS and other earth scientists involved in the earthquake program is to provide decisionmakers and individuals information on earthquake hazards that they can understand and use to provide the desired degree of protection from earthquakes. If we are successful and if the decisionmakers and individuals act on the information we can avoid the situation that G.K. Gilbert predicted 101 years ago when he wrote,

"Our occupation of the country has been too brief for us to learn how fast the Wasatch grows: and, indeed, it is only by such disasters that we can learn. By the time experience has taught us this, Salt Lake City will have been shaken down and its surviving citizens will have sorrowfully rebuilt it of wood: to use a homely figure, the horse will have escaped, and the barn door, all too late, will have been closed behind him."



**U.S. GEOLOGICAL SURVEY  
PRIMER ON IMPROVING THE STATE OF EARTHQUAKE  
HAZARDS MITIGATION AND PREPAREDNESS**

P.L. Gori, Editor

U.S. GEOLOGICAL SURVEY OPEN-FILE REPORT 84-772

" Since 1977, the U.S. Geological Survey has convened, in cooperation with other sponsoring agencies, a series of workshops under the auspices of the National Earthquake Hazards Reduction Program. The workshops were designed to foster and to strengthen cooperation between Federal agencies, state and local governments, universities, and the private sector. Workshops have been held throughout the United States, including:

- DENVER, COLORADO... "Communicating Earthquake Hazards Reduction Information"
- LOS ANGELES, CALIFORNIA... "Earthquake Prediction Information"
- SANTA FE, NEW MEXICO... "Evaluation of Regional Seismic Hazards and Risk"
- KNOXVILLE, TENNESSEE... "Preparing for and responding to a damaging earthquake in the eastern US"
- ST. LOUIS, MISSOURI... "Continuing actions to reduce losses from earthquakes in the Mississippi Valley area"

- CHARLESTON, SOUTH CAROLINA... "The 1886 Charleston, South Carolina earthquake and its implications for today"
- BOSTON, MASSACHUSETTS... "Continuing actions to reduce potential losses from future earthquakes in the Northeast"
- LITTLE ROCK, ARKANSAS... "Continuing actions to reduce potential losses from future earthquakes in Arkansas and nearby states"
- SAN JUAN, PUERTO RICO... "Geologic Hazards in Puerto Rico"
- ST. THOMAS, VIRGIN ISLANDS... "Earthquake Hazards in the Virgin Islands Region"
- SALT LAKE CITY, UTAH... "Evaluation of regional and Urban Earthquake Hazards and Risk in Utah"
- ALBANY, NEW YORK... "Continuing actions to reduce potential losses from future earthquakes in New York and nearby states"

The papers which appear in this primer have been chosen from the proceedings of the above workshops which the U.S. Geological Survey conducted with the general goal of improving knowledge utilization by bringing together knowledge producers and users. These papers present some of the best practical information available on improving earthquake hazard preparedness and mitigation. They emphasize:

- 1) increasing public awareness of earthquake hazards and personal and private industry preparedness,
- 2) improving land-use in hazard-prone areas,
- 3) increasing earthquake resistance of buildings and lifelines,
- 4) using scientific and technical information in hazard reduction actions, and,
- 5) formulating seismic safety organizations

The papers were written to address the earthquake hazards in specific regions of the United States, however, the information contained in each paper is transferable to other parts of the United States and to other parts of the world with only some fine tuning."

Some of the articles included are:

- EARTHQUAKE PREDICTIONS AND THEIR EFFECTS ON PREPAREDNESS; A PUBLIC EDUCATION PERSPECTIVE
- HOW TO GAIN ATTENTION AND COMMITMENT OF POLITICAL OFFICIALS; AN EARTHQUAKE POLITICS PRIMER
- GAINING COMMITMENT OF VOLUNTARY AGENCIES
- REDUCING EARTHQUAKE DAMAGE THROUGH LAND-USE PLANNING
- SEISMICALLY SAFE STRUCTURES AND THEIR COST-EFFECTIVENESS
- EVALUATION OF THE EARTHQUAKE GROUND-SHAKING HAZARD
- FORMS AND FUNCTIONS OF SEISMIC SAFETY ORGANIZATIONS

## WASATCH FRONT COUNTY HAZARDS GEOLOGISTS

Gary Christenson  
Utah Geological and Mineral Survey

In the March 1985 issue of the WASATCH FRONT FORUM (vol.1, no.3), the U.S. Geological Survey (USGS) and the Utah Geological and Mineral Survey (UGMS) announced a cooperative 3-year program to provide funding and technical assistance to Weber, Davis, Salt Lake, Utah, and Juab Counties to hire hazards geologists. The initial phase of the program consists of geologic hazards information compilation and aid to city and county governments in geologic hazard-related problems. During the second and third years, a folio of hazards maps and a final report for each county or group of counties will be compiled and published by the UGMS.

Three geologists have now been hired by the five counties, and work on the first phase of the program began on June 3, 1985. The geologists are staff members of the county planning departments, but will be available to work with other agencies of local government (city and county) as required. MICHAEL LOWE was hired by Weber and Davis Counties and will maintain offices in both county planning departments. CRAIG NELSON was hired by Salt Lake County and ROBERT ROBISON by Utah and Juab Counties. All three geologists have recently completed graduate degrees with emphasis on engineering and surficial geology at Utah State University, and bring to the jobs a variety of academic and industry experience. In the coming months, these geologists will be contacting many of those working on geologic hazards-related investigations and research along the Wasatch Front. This may include many of you as readers of the Wasatch Front Forum, and it is hoped that you can be counted on for cooperation and support in this program. For more information, contact Don Mabey or Gary Christenson at the Utah Geological and Mineral Survey, 801-581-6831, or:

MICHAEL LOWE

Weber County Planning Commission (Graham Shirra,  
Director) 801-488-5061

Davis County Planning Commission (Rick Mayfield,  
Director) 801-451-3278

CRAIG NELSON

Salt Lake County Planning Commission (Jerry  
Barnes, Director) 801-488-5061

ROBERT ROBISON

Utah County Planning Commission (Jeff Mendenhall,  
Director) 801-373-5510, ext. 340

Juab County Commission (Thomas Fowkes, Chairman)  
801-623-0275

## UTAH EARTHQUAKE ACTIVITY

January through March 1985

James G. Pechmann  
University of Utah Seismograph Stations  
Department of Geology and Geophysics

The University of Utah Seismograph Stations records a 77-station seismic network designed for local earthquake monitoring within Utah, southeast Idaho, and western Wyoming. During January 1 to March 31, 1985, 140 earthquakes were located within the Utah region (Figure 1). The largest earthquake during this time period occurred on January 26, 1985 in the Utah-Idaho border area north of the Great Salt Lake and had a local magnitude ( $M_L$ ) of 3.6. It was followed one day later by an  $M_L$  3.3 event with nearly the same epicenter. Both events were felt locally. The only other earthquake of magnitude 3 or greater to occur in the Utah region during this three-month period was an  $M$  3.1 event on January 18, 1985 near the Utah-Nevada border west of Cedar City, Utah.

Other significant aspects of earthquake activity during the report period shown in Figure 1 include (from north to south):

(Utah Earthquake activity continued)

- 1) an  $M_L$  2.7 earthquake on February 24 in southeastern Idaho;
- 2) a large number of small-magnitude earthquakes in the Utah-Idaho border area north of the Great Salt Lake;
- 3) a magnitude 2.9 seismic event, possibly a blast, in south-western Wyoming;
- 4) an  $M_L$  2.4 earthquake on February 6 located 30 km northeast of Salt Lake City;
- 5) an  $M_L$  2.7 event on February 8 along the Utah-Nevada border west of Provo;
- 6) small-magnitude ( $M_L \leq 2.3$ ) earthquakes in the vicinity of active underground coal mining southwest and north of Price, Utah; and
- 7) clusters of earthquakes in southern Utah located 20 km northeast of Richfield, 50 km southwest of Richfield, and 100 km northeast of Cedar City.

ADDITIONAL INFORMATION ON EARTHQUAKES WITHIN UTAH IS AVAILABLE FROM THE UNIVERSITY OF UTAH SEISMOGRAPH STATIONS, SALT LAKE CITY, UTAH 84112, 801-581-6274.

...FIGURE 1 ON FACING PAGE...

**DEADLINE**  
for the  
**Summer 1985 issue of**  
**The Wasatch Front Forum**  
is July 31, 1985

## EARTHQUAKE PREPAREDNESS:

### *Activities, Newsletters, Reports and a Conference*

by  
William M. Brown III

In California, a great deal of attention was recently focused on "getting ready for the big one" during Earthquake Preparedness Week, April 15-20, 1985. The activities of that week plus associated written materials have many applications toward earthquake preparedness for the Wasatch Front region and other areas as well.

Earthquake Preparedness Week was coordinated by the California State Office of Emergency Services (OES), and jointly funded by OES and the Federal Emergency Management Agency (FEMA). Activities were organized statewide, and particular emphasis was given to the state's two major metropolitan regions, the San Francisco Bay area (population 6 million) and the greater Los Angeles area (population 10 million). Each region is served by specialty regional commissions that promote comprehensive earthquake preparedness by local, state, Federal, volunteer, and private organizations, and provide technical and planning assistance for programs therein. The San Francisco Bay region entity is BAREPP, the Bay Area Regional Earthquake Preparedness Project, and the Los Angeles region counterpart is SCEPP, the Southern California Earthquake Preparedness Project. Both of these groups were primary actors in organizing and promoting Earthquake Preparedness Week at the regional and local levels, and providing the people and media services, equipment, written materials, and other elements of what was basically a statewide training and educational program. Program elements ranged from using the week's events in the development of a comprehensive preparedness plan (SCEPP, Orange County, CA) to public exhibitions of simulated earthquake shaking using the Earthquake Simulator Truck loaned by the City of Yokohama, Japan (BAREPP, San Francisco Bay area). Complete listings of these elements by county, plus abundant other news, are contained in the newsletters of BAREPP and SCEPP, issues of which were published to coincide with Earthquake Preparedness Week. For further information and subscriptions to the newsletters, use the following information:

BAREPP  
Bay Area Regional Earthquake Preparedness Project  
Metrocenter  
101 - 8th street, Suite 152  
Oakland, California 94607  
(415) 540-2713  
NEWSLETTER : NETWORKS Earthquake Preparedness  
News  
The Quarterly Publication of BAREPP, Vol. I,  
No.1, Spring 1985

SCEPP  
Southern California Earthquake Preparedness  
Project  
6850 Van Nuys Boulevard  
Suite 110  
Van Nuys, California 94105  
(818) 787-5103  
NEWSLETTER: UPDATE for the Southern California  
Earthquake Preparedness Project, Vol. 3, No. 1,  
Spring 1985

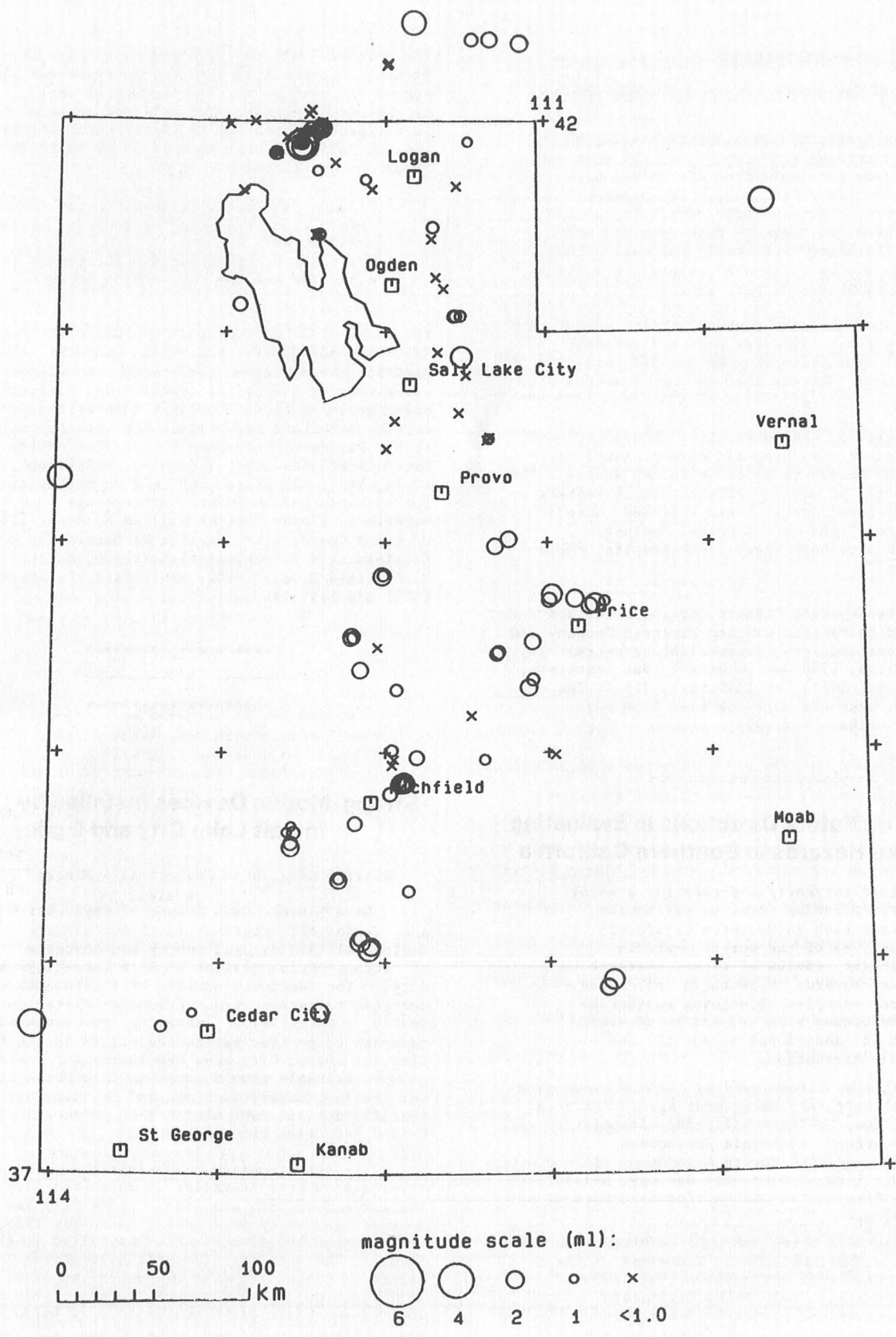


FIGURE 1. Utah Earthquakes January - March, 1985

**FROM THE BAREPP NEWSLETTER:**

***New Red Cross Earthquake Slide Show***

A new employee training package focusing on earthquake preparedness and survival in the workplace and at home is now available from the Golden Gate Chapter of the American Red Cross. The program includes a 20-minute presentation consisting of 139 slides, a synchronized cassette tape, script, and workbook. The package "succinctly emphasizes that planning is the key to earthquake safety and survival," said Red Cross spokesperson Pete Ashen.

The workbook includes a checklist for workplace preparedness, a family disaster plan and personal survival guide. The slide program realistically demonstrates common hazards that can be prevented with little effort.

One innovative, and potentially money saving precaution suggests attaching all desk or table top computers to the furniture by using velcro strips. The computer can still be moved, yet attached it resists up to one "g" of lateral force. "Had this been done at Coalinga Hospital," the script notes, "valuable equipment could have been saved...the hospital could have functioned."

"Employee Earthquake Preparedness for the Workplace and Home," produced by Pacific Gas and Electric Company and several Red Cross Chapters, is available from the American Red Cross, 1550 Sutter Street, San Francisco, California 94109. (415) 776-1500, ext. 211. The slide carousel, tape and workbook cost \$250.00; individual workbooks are \$1.00.

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**Workshop on Future Directions in Evaluating Earthquake Hazards in Southern California**

Planning is currently underway for a major scientific/planning forum on earthquake hazard reduction in Southern California. The objectives of the workshop are to summarize the results of recent research on earthquake hazards in Southern California, to present examples of ongoing earthquake hazard reduction efforts, and to determine the need for additional scientific and technical information.

The workshop will be cosponsored by the U.S. Geological Survey, Federal Emergency Management Agency, National Science Foundation, Southern California Association of Governments, Southern California Earthquake Preparedness Project, California Department of Conservation Division of Mines and Geology, California Seismic Safety Commission, and California Office of Emergency Services.

The workshop is being convened by Dr. Joseph I. Ziony and Mr. William J. Kockelman of the U.S.G.S. Office of Earthquakes, Volcanoes, and Engineering, Menlo Park, California, under the auspices of the 1977 Earthquake Hazards Reduction Act, and is part of the U.S.G.S.'s 5-year plan for hazards reduction. The goal is to assist other Federal agencies and State and local governments in utilizing U.S.G.S. research and in building their own expertise.

The workshop will be organized to achieve an effective exchange between producers and users of earthquake-hazard information through the use of oral presentations, panels, and sessions designed for participants to respond to the recommendations of work groups. All participants will be asked to focus on two important questions:

- (1) what additional scientific and technical information is needed for reducing earthquake hazards; and
- (2) which hazard-reduction strategies are most effective and how can they be improved.

THE WORKSHOP WILL INVOLVE ABOUT 300 PARTICIPANTS, INCLUDING SCIENTISTS, ENGINEERS, PLANNERS, AND DECISION MAKERS. These will be selected for knowledge and experience in producing, translating, disseminating, or using geologic and seismologic information for earthquake-hazard reduction. The workshop will be held at the Davidson Conference Center, University of Southern California, Los Angeles, California, November 12-14, 1985. To place your name on the mailing list for workshop announcements, proceedings, and other materials, please contact William M. Brown III, Workshop Coordinator, Earthquake Hazards in Southern California, U.S. Geological Survey, OEEVE, 345 Middlefield Road, MS-922, Menlo Park, California 94025, (415) 856-7112;7119

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**Strong-Motion Devices Installed by U.S.G.S. In Salt Lake City and Ogden**

William Case, Utah Geological & Mineral Survey

Dave Carver, USGS Branch of Engineering Geology and Tectonics, together with the assistance of Utah Geological and Mineral Survey has installed a network of strong-motion devices in Salt Lake City and Ogden City. The networks consist of instruments which are designed to record strong ground acceleration caused by nearby, potentially damaging earthquakes. If a moderate or greater earthquake occurs in the Salt Lake City or Ogden City area the instrument records will provide valuable ground response data which can be used for seismic hazard zonation and building design. The installation is part of the USGS National Earthquake Hazard Reduction Project (NEHRP).

Six strong-motion accelerographs and six seismoscopes were installed in Salt Lake City during the springs of 1984 and 1985. Ogden City has two seismoscopes which were installed in May 1985, other seismoscopes are planned to be installed in the near future. The sites are free-field locations selected to determine ground response of several types of sediment at various depths to basement. A free-field site is located away from tall, multi-storied buildings which may influence ground motion measurements. The geology and engineering properties of each strong-motion device will be determined as part of the NEHRP. High resolution shallow reflection seismic lines have already been run near some of the strong-motion device sites.

**PUBLICATIONS...**  
**ARTICLES OF INTEREST**

**Map Showing Slope Stability During  
Earthquakes in San Mateo County, California**

U.S. Geological Survey  
Miscellaneous Investigation Map I - 1257-E

Gerald F. Wieczorek, Raymond C. Wilson, Edwin L. Harp

Seismically induced landslides are responsible for a substantial portion of loss of life and property damage during earthquakes, so methods to identify susceptible landslide areas are important for seismic-hazard awareness. Seismic-hazard awareness is critical in the San Francisco Bay area, given the seismic history, the abundance of landslides, and the strong pressure for development. San Mateo County, in particular, has a history of seismically-induced landslides, is traversed by several active faults including the San Andreas, and is likely to experience future large earthquakes. A method to identify hazardous areas has been developed and applied here to depict relative susceptibility to seismic slope failures on a regional scale of 1:62,500.

Criteria used in producing the map includes slope steepness, average material properties and estimated seismic ground motions. Criteria for evaluating seismic slope stability at the scale of this map were developed by combining a static slope-stability analysis with a dynamic numerical analysis developed by Nathan Newmark of the University of Illinois. The slope-stability analysis utilizes regional geologic, hydrologic, and slope information to evaluate slope stability under static conditions. Strong-motion records from several California earthquakes were used to choose hypothetical (or "design") earthquakes large enough to trigger landslides in San Mateo County. These "design" earthquakes were used in the dynamic analysis to calculate movement of potential landslides. These movements were then used to categorize the geologic map into four degrees of susceptibility.

ANDERSON, R.E. (abstract)

Strike-slip faults associated with extension in and adjacent to the Great Basin, in Abstracts with Programs - Geological Society of America, v. 16, no. 6, September 1984, p. 429

ANDERSON, R.E. AND BARNHARD, T.P. (abstract)

Late Cenozoic fault and fold patterns in Sevier County, Utah and their relationship to seismicity in the area, in Abstracts with Programs - Geological Society of America, v. 16, no. 6, September 1984, p.430

BOATWRIGHT, J. AND SEMBERA, E.(abstract)

Digital recordings of the aftershocks of the Borah Peak earthquake, Earthquake Notes, v. 55, March 1984, p. 29

BORCHERDT, R.D.

Strong-motion networks in the United States, a review, in Proceedings of the Golden Anniversary workshop on strong motion seismometry, Los Angeles, California, University of Southern California, Dept. of Civil Engineering, 1983, p. 87-103

HAYS, W.W. AND KING, K.W.

The ground shaking hazards along the Wasatch fault zone, Utah. Proceedings of the World Conference on Earthquake Engineering, v. 8, no.1, 1984, p. 7-14.

RICHINS, W.D. and others (abstract)

The 1983 Borah Peak, Idaho, earthquake; a progress report on the relationship of aftershocks to the mainshock, surface faulting, and regional tectonics. Earthquake Notes, v. 55, March 1984, p. 29

WALLACE, R.E.

Patterns and timing of late Quaternary faulting in the Great Basin Province and relation to some regional tectonic features, JGR, Journal of Geophysical Research b, v.89, no.7, July 10, 1984, p. 5763-5769

WALLACE, R.E. (abstract)

Variations in slip rates on faults in the Great Basin Province, Earthquake Notes, v. 55, March 1984.

See Page 9

**A NOTE FROM**

**GAIL E. CORDY, USGS,**  
Water Resources Division, Salt Lake City

"It may be of interest to your (FORUM) readers that the local chapter of the Association of Engineering Geologists is currently preparing a series of "Engineering Geology Guidelines" for Utah based on similar guidelines prepared for the State of California. Topics of the guidelines include hazards due to surface fault rupture, liquefaction, and seismic ground shaking, flooding, landslides/slope stability, waste disposal, shallow groundwater and expansive collapsible soils. These guidelines are meant to provide a checklist for 1) professionals investigating and preparing reports on these topics, and 2) local, state, and federal officials reviewing such reports. "

Thanks Gail, we'll hope to hear more about this in future issues of the FORUM.

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**OCTOBER 23-26, 1985**

**AMERICAN BAR ASSOCIATION  
INTERNATIONAL SYMPOSIUM ON URBAN  
REDEVELOPMENT AFTER NATURAL DISASTERS**

An international symposium on Housing and Urban Redevelopment After Natural Disasters: Mitigating Future Losses, will be held October 23-26, 1985 at the Sheraton Bal Harbour Hotel in Miami, Florida.

The symposium is sponsored by the American Bar Association's Special Committee on Housing and Urban Development Law. Its aim is to identify the critical elements of legislation and institutions for post-disaster reconstruction that can save lives and property from future disasters.

The agenda is designed for cross-fertilization of ideas and experiences between types of disasters, between levels of government and between developed and redeveloping countries. Government personnel in emergency management, housing, economic development or environmental protection programs; voluntary agency leaders in disaster relief and development; researchers

and consultants in these fields and attorneys advising or representing any of these groups are encouraged to participate.

FOR MORE INFORMATION, CONTACT MARY ELLEN VOLLBRECHT, AMERICAN BAR ASSOCIATION, 1800 M STREET NW, SOUTH LOBBY - 2ND FLOOR, WASHINGTON D.C. 20036, 202-331-2277.



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**IEMIS**  
**Integrated Emergency Management Information System**

FEMA is currently developing an Integrated Emergency Management Information System (IEMIS) as part of the National Emergency Management System (NEMS) to aid emergency managers at all levels of government in planning, training and actually conducting emergency operations. FEMA is developing both a hardware network and software to enable managers anywhere in the U.S. to use the system.

The IEMIS software contains four major elements; The first is a collection of maps of varying detail of the entire country that form the core of the system and link various data bases. The second element is a set of programs that allows users to model hypothetical disasters before they happen. The third element is a series of management data bases containing specific information about various types of hazards. The final element is an Exercises Evaluation and Simulation Facility (EESF) that can be used to monitor, manage, and evaluate training exercises.

FOR FURTHER INFORMATION, CONTACT THE OFFICE OF NATURAL AND TECHNOLOGICAL HAZARDS, FEDERAL EMERGENCY MANAGEMENT AGENCY, 500 C STREET SW, WASHINGTON D.C. 20472 (202) 287-0225



(San Mateo county continued)

This map of slope stability during earthquakes for San Mateo County, California identifies potentially hazardous areas by indicating zones which have VERY LOW, LOW, MODERATE, or HIGH susceptibility to seismically induced landsliding; its purpose is to provide county officials and others with information that could be used to minimize loss of life and damage. For example, density of development could be reduced in areas where landslide damage during earthquakes is expected to be severe or critical facilities like hospitals, fire stations and other emergency response units could be built in areas where the potential for landsliding is low.

Susceptibility is evaluated from a technique which utilizes lithologic, hydrologic, slope, and seismic data. Because the estimated susceptibility of each zone is based on limited data within each geologic unit; the map is not adequate or valid for determination of susceptibility at any specific site. However, the map does delineate areas where the probability of landsliding during a major earthquake is greatest and where special attention is required when considering general land-use planning. This map is designed to aid planners, building officials, engineers, geologists, and interested private citizens concerned with identifying areas susceptible to landsliding during earthquakes in San Mateo County.

The 40" x 52" five-color map is for sale by the U.S. Geological Survey, Branch of Distribution, P.O. Box 25286, Federal Center, Denver, Colorado 80225. The cost is \$3.10 plus \$1.00 mailing and handling charge for orders under \$10.00.

The map is also available at the following U.S.G.S. Public Inquiries Offices:

U.S. GEOLOGICAL SURVEY  
Rm. 122, Building 3  
345 Middlefield Road  
Menlo Park, California 94025

U.S. GEOLOGICAL SURVEY  
504 Custom House  
555 Battery Street  
San Francisco, California 94111

U.S. GEOLOGICAL SURVEY  
8105 Federal Building  
125 South State Street  
Salt Lake City, Utah 84138

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## ADDITIONAL U.S. GEOLOGICAL SURVEY PUBLICATIONS

Information on obtaining the following USGS publications is available from the USGS, Public Inquiries Office, 8105 Federal Building, 125 South State Street, Salt Lake City, Utah 84138-1177, 801-524-5652

- PP 837 The logic of geological maps, with reference to their interpretation and use for engineering purposes. D.J. Varnes, 1974 (reprint) \$2.25
- B. 1462 Basic concepts of computerized digital image processing for geologists. Condit, C.D. and Chavez, P.S.(reprint) \$2.75
- B. 1642 Computer programs for common map projections, Newton, G.D. \$2.25
- Cir.900 GUIDE TO OBTAINING USGS INFORMATION, Dodd, K. and others. No charge
- Cir.965 Strong-motion program report, January-December 1982, Porcella, R.K. editor. No charge
- Cir.1000 Organization, programs, and activities of the Geologic Division, USGS. R.E. Davis, 1985. No charge
- I-1430-C Complete Bouguer gravity anomaly map on a geologic base map of the TUSHAR MOUNTAINS and adjoining areas, Marysville volcanic field, Utah. K.L. Cook and others. \$3.10
- I-1430-D Aeromagnetic map on a geologic base map of the TUSHAR MOUNTAINS and adjoining areas, Marysville volcanic field, Utah. D.L. Campbell and others. \$3.10

### PRELIMINARY DETERMINATION OF EPICENTERS

. . . . .single copies of monthly issues may be purchased only from the Eastern Distribution Branch, Text Products Section, USGS, 604 South Pickett Street, Alexandria, Virginia 22304, for \$2 domestic, \$2.50 foreign.

### PRELIMINARY DETERMINATION OF EPICENTERS, MONTHLY LISTING FOR AUGUST 1984..20 p.

Also available by subscription, \$21 domestic (annually); \$26.25 foreign (annually) from SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON D.C. 20402

### USGS OPEN FILE REPORT 84-683

Geology of the CRICKET MOUNTAINS, Millard County, Utah. L.F. Hintze, 16 pages, 9 plates, 1:24,000. Paper copy...\$18.25; micro-fiche...\$8.00

# NOTES AND LAST MINUTE ADDITIONS.....

## GRANTS

USER-ORIENTED ARTIFICIAL EARTHQUAKE SIMULATION PROGRAM,  
U.S. Army Corps of Engineers, \$17,000, six months,  
Principal Investigator: Moh-Jiann Huang, Department of  
Civil Engineering, University of Colorado, Denver, 1100  
14th Street, Denver, Colorado 80202 (303) 629-2629

THE NATURAL HAZARDS RESEARCH AND APPLICATIONS  
INFORMATION CENTER IS ESTABLISHING A COLLECTION  
OF SYLLABI OF COLLEGE LEVEL COURSES ON HAZARDS.  
PERSONS TEACHING CLASSES IN THE FIELD ARE ASKED  
TO SEND THEIR COURSE DESCRIPTIONS AND SYLLABI TO  
SUSAN TUBBESING, c/o Natural Hazards Observer,  
Campus Box 482, University of Colorado, Boulder,  
Colorado 80309.

The State of California passed a new  
law, effective January 1, 1985, that  
intends to clarify the meaning of  
homeowners and tenants insurance  
policies with respect to earthquake  
coverage. The law, California State  
Assembly Bill AB 2865, basically  
states that those policies NOT  
SPECIFICALLY INCLUDING EARTHQUAKE  
COVERAGE will NOT cover losses or  
damage resulting from an earthquake.  
This applies provided that the  
policyholder is notified and given  
thirty days to elect coverage. The  
law was passed in response to court  
decisions that in the past have  
allowed homeowners to collect on  
earthquake damage even though they

had not obtained earthquake  
insurance. BAREPP observes that  
"the new law appears to be a double-  
edged sword. While clarifying  
coverage and possibly increasing the  
numbers of new earthquake riders and  
policies, there is concern that if  
too many homeowners opt for  
coverage, companies might find  
themselves short on reserves in the  
event of a major temblor."

Copies of the law, certain to be  
tested following California's next  
major earthquake, may be obtained  
from the CALIFORNIA LEGISLATURE,  
STATE CAPITOL, SACRAMENTO,  
CALIFORNIA 95814.



## SOME LAST MINUTE ADDITIONS.....

### SEISMIC DESIGN WORKSHOP

A SEISMIC DESIGN WORKSHOP  
supported by FEMA, National Science  
Foundation, American Institute of  
Architects and USGS, will be held  
August 2-3 at the Sheraton Hotel in  
Salt Lake City, Utah. For  
information, contact Don Geis,  
American Institute of Architects,  
Washington D.C.....202-626-7409.

### CORRECTION

Please make note that the last issue of the *FORUM* was  
listed as MARCH 1984. It should have been shown as  
MARCH 1985.

Sorry!

## THE UTAH GEOLOGICAL AND MINERAL SURVEY

HAS JUST PUBLISHED MAP 53 - A "GEOLOGY OF THE NORTHERN WASATCH FRONT." THIS MAP, COMPILED BY FITZHUGH D. DAVIS IS ONE OF THREE GEOLOGIC MAPS PREPARED AT A SCALE OF 1:100,000. THE OTHER TWO MAPS ARE:

MAP 54 - A...Geologic Map of the Central Wasatch Front, compiled by Fitzhugh D. Davis.

MAP 55 - A...Geologic map of the Southern Wasatch Front, compiled by Fitzhugh D. Davis.

The maps are available from the Utah Geological and Mineral Survey, 606 Black Hawk Way, Salt Lake City, Utah 84108 for \$5.00 plus tax and mailing charges.

### "1984 PUBLICATIONS OF THE U.S. GEOLOGICAL SURVEY"

THE 1984 "PUBLICATIONS OF THE U.S. GEOLOGICAL SURVEY" has just been released. The list contains 151 pages of new publications, thematic maps and references to articles by USGS authors in outside publications. In addition, there is an extensive index by subject, area and author. The list is available free of charge from any of the Public Inquiries Offices listed:

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## ***Wasatch Front Forum***

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**Utah Geological and Mineral Survey**  
606 Black Hawk Way  
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**Address correction requested**

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