NSF/CEE-82040

Natural Hazards OBSERVER

VOLUME VI NUMBER 6 July, 1982

MITIGATING FLOOD LOSSES: TIME TO MEASURE UP

—an invited comment

Forty-five years have passed since Congress recognized flood losses as a persistent national problem and established federal responsibility for flood control. Fifteen years have passed since the benchmark evaluation of House Document 465 recognized the need for federal support of such nonstructural approaches to flood loss reduction as insurance and flood hazard evaluation of proposed federal actions. Ten years have passed since Hurricane Agnes brought about the combination of federal flood insurance and federal disaster assistance programs in the Flood Disaster Protection Act of 1973. The last decade has witnessed adoption of flood plain management policies and programs across the nation. Flood loss reduction has been integrated into flood plain management, and accepted flood plain management strategy calls for meeting flood loss problems through the best mix of structural and nonstructural approaches.

Today, the flood plain management programs of 17,000 communities, 50 states, and 25 federal agencies reinforce one another in a national effort to reduce flood losses. Almost all communities have adopted flood plain regulations. Most states now have the organizational structure, technical capability and authority to operate effective management programs. Federal authority for flood plain management activities has been established and implemented in the construction, financial and technical assistance, and regulatory areas. Federal agencies are implementing Executive Order 11988, aimed at reducing exposure to flood losses.

Without a doubt, significant progress has been made; immeasurable billions of dollars in losses have been prevented. However, the rise of annual flood losses has continued during the last 45 years and the development of flood-prone sites has not been arrested. Now is the time to reappraise flood plain management activities.

The task of reappraisal recently has been identified by detailed recommendations to Congress in the National Science Foundation's ***A Report on Flood Hazard Mitigation*** and the Water Resources Council's ***A Unified National Program for Floodplain Management.*** Two major actions are needed: there must be a national assessment of the amount and location of property exposed to high risk flooding; and this must be followed by an evaluation of the effectiveness of the flood loss reduction policies and programs of local, state, and

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federal governments. Both actions could be achieved within two years, and would provide the basis for recommending changes to strengthen flood loss reduction efforts over the next decade.

While Congress and the administration are deeply committed to the reduction of federal expenditures and to the redefinition of federal roles as part of the new federalism, neither has focused on the opportunities to reduce expenditures and strengthen nonfederal roles associated with flood loss reduction. Now is the opportune time for initiating a reappraisal of flood loss reduction activities consistent with new federalism and expenditures policy. We must not wait for the next catastrophic flood to elicit appropriate actions that could be taken now.

Frank H. Thomas
Acting Director
U.S. Water Resources Council

SPREADING THE NEWS

The Emergency Management Project of the National Governors' Association has begun publishing the ***Comprehensive Emergency Management Bulletin*** to provide information to executive aides and others who coordinate emergency management matters on behalf of state governors. The newsletter, which will appear on an occasional basis, reports new state activities and the status of ongoing ones. The first issue briefed readers on state emergency councils, coordination by state emergency offices (SEOs) of all risks faced by that state, and state vulnerability analyses, among others. Plentiful tables are helpful in giving a rapid overview of the status of the states with regard to a particular program or goal. The ***Bulletin's*** insightful commentary following each news item lends valuable perspective.

For information, contact *Hilary Whittaker, NGA Office of State Services, 444 North Capitol Street, Washington, DC 20001, (202) 624-5365.*

The exchange of information of interest to volcanologists is the mission of ***Volcano News,*** a bimonthly, nonprofit newsletter. Most of the articles, photographs, reviews, English abstracts from Japanese and Russian volcanology journals, notices of books, maps, and research comments are contributed from outside sources; any of such items or brief descriptions of little-known volcanoes would be gratefully accepted. Although not specifically concerned with the impacts of eruptions, a special issue was devoted to the Mount St. Helens disaster, and the next issue will feature a report on the El Chichón eruption.

Subscriptions for six issues are currently $7.00 in the United States, Canada and Mexico, and $12.00 for those sent abroad. Back issues are available. For more information, write *Charles Wood, Editor, Volcano News, 320 East Shore Drive, Kemah, TX 77565.*

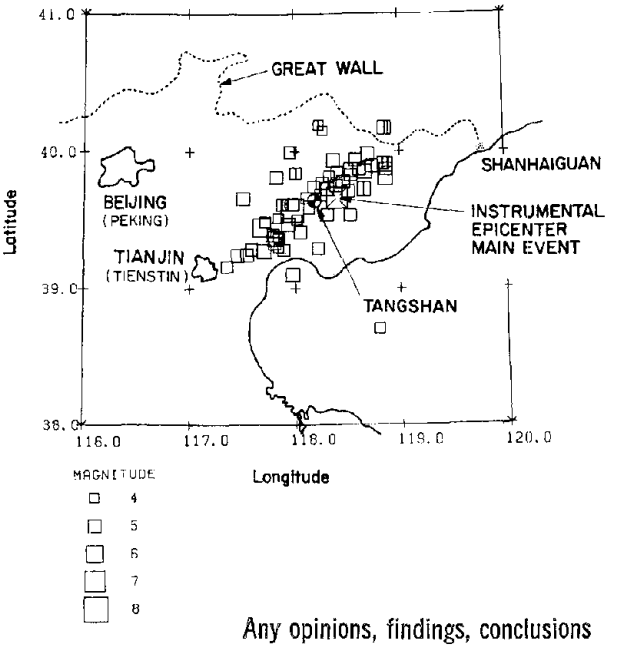
CHINA—UNITED STATES EARTHQUAKE STUDY

As one of the projects authorized in the Agreement on Cooperation in Science and Technology, made in 1979 between the U.S. and China, a delegation of 11 earthquake engineering specialists toured China in the fall of 1980. A summary of their trip and observations has been published by the Earthquake Engineering Research Institute, sponsors of the group. ***EERI Delegation to the People's Republic of China*** details what was learned about earthquake-resistant design, construction practices, and research in the PRC; additionally described are presentations given by the Americans to their Chinese counterparts on the state-of-the-art in the United States.

The delegation visited six cities during the 18 days in the PRC: Beijing, Harbin, Tianjin, Shanghai, and Guangzhou. Tangshan was of special significance because of its destructive earthquake in 1976; 242,000 were killed and all industrial production was brought to a halt. The delegates had the opportunity to see some of the ruins and analyze the structural damage, as well as to observe the reconstruction activities and review the master plan for rebuilding the city.

Theoretical knowledge of earthquake-resistant design is quite advanced in the PRC, and is commensurate with the theory level in the U.S. Actual design and construction practices, however, are less perfected. The PRC has the universal problem of getting theory into practice, and many helpful suggestions on meeting that challenge were exchanged between the Americans and the Chinese.

Copies of the 125-page report, edited by Roger E. Scholl, are available from the *Earthquake Engineering Research Institute, 2620 Telegraph Avenue, Berkeley, CA 94704, (415) 848-0972.*

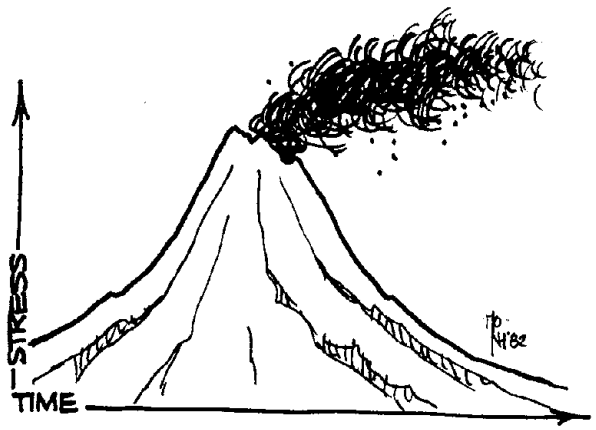


FAMILIES AFTER MOUNT ST. HELENS

Even though many families and individuals suffered personal losses and heightened anxiety following the eruption of Mount St. Helens in May, 1980, few evacuated even temporarily. Only in Longview-Kelso, Washington (closest to the volcano), did many discuss evacuating, and only a very few discussed permanently moving from the region. Most families consider it extremely unlikely that they will move in the future due to the volcano, even if it continues to erupt.

These were some of the findings from a study conducted by the Family Study Center, University of Minnesota, in which random samples of households in three communities affected by Mount St. Helens were interviewed six months after the volcano eruption, and again six months later. In addition, a smaller sample of families (defined as husband, wife, and one teenager) participated in a more thorough interview, and then in a computer simulation involving a scenario in which the Mount St. Helens threat worsened.

Evidence about the nature of stress was gathered by having each respondent chart subjective levels of anxiety



over extended time periods on a "stress graph." That procedure provided insights into the familial aspects of prolonged anxiety. The simulation game required periodic family discussions about the threat from the volcano and whether the family should move elsewhere. Those often quite lively discussions revealed the family's real concerns about the mountain.

The indication from all the data is that the May 18 eruption created considerable stress, and that the intensity of that stress decreased with distance from the mountain. Most of the coping behaviors adopted by families and individuals appeared to be positive ones, for instance, increasing social contacts and activities.

A field observation not related to the interviewing was that all three mental health clinics in the study area were already working to capacity before the eruption, and hence would have been unable to attend to an increased caseload brought about by anxiety resulting from the volcano. However, not one clinic administrator indicated that Mount St. Helens was ever discussed in staff meetings as a possible source of their clients' stresses anyway.

Some of the recommendations made as a result of the project are as follows:

- Local mental health services should have financial support, standby personnel, and a plan of action for rapid, temporary expansion of their programs after a disaster.
- Because people are reluctant to engage in diligent searches for information, local centers are needed to advise residents of ways to cope with immediate needs and problems.
- More official attention should be directed to the public's fears and reactions; FEMA's Mount St. Helens Technical Information Network bulletins could serve as a prototype for future efforts.
- Since individual respondents do not necessarily agree with other members of a household, and family decisions are not simple consensual processes, more work needs to be done to better understand how family responses are determined.

Single copies of the final report, ***Under the Threat of Mt. St. Helens: A Study of Chronic Family Stress,*** by Robert K. Leik, Sheila A. Leik, Knut Ekker, and Gregory A. Gifford, are available at no cost while they last from the *Family Study Center, 1014 Social Sciences Building, University of Minnesota, Minneapolis, MN 55455, (612) 373-2607.*

INFORMATION SOURCES ADDENDUM

There have been some telephone number and personnel changes since we published the directory in the March ***Observer*** that we pass on here because of their significance. There have been other similar changes in nearly every organization previously listed that we do not pass on because those changes are in the nature of additions to an already correct entry, and because such an expansion would allow for the list of sources to take over the newsletter like kudzu is taking over the South.

SMITHSONIAN INSTITUTION, Telephone number change: (202) 357-1511.

FEMA OFFICE OF PROGRAM ANALYSIS & EVALUATION, Telephone number change: (202) 287-0420.

FEMA OFFICE OF CIVIL PREPAREDNESS, Telephone number change: (202) 287-3911.

FEMA NATIONAL EMERGENCY TRAINING CENTER, Telephone number change: (301) 447-6771 (extensions have remained the same).

FEMA REGIONAL DIRECTORS

Region II (New York)—Frank P. Petrone
Region II (Philadelphia)—John W. Brucker
Region V (Chicago)—John T. Anderson
Region VI (Denton)—Jerry D. Stephens
Region IX (San Francisco)—Robert L. Vickers

NEW RESPONSIBILITIES FOR UNDRO

In response to a United Nations Joint Inspection Unit's suggestion that the mandate for UNDRO be modified in order that it may perform more effectively, the Secretary-General and the General Assembly moved to reconfirm UNDRO's mission as it is, and the Administrative Committee on Co-ordination assigned it some additional responsibilities. The criticism of the JIU (see ***Observer,*** Vol. VI, No. 4, p. 2) centered on the necessity for UNDRO to limit its purview to "sudden natural disasters" instead of the unspecific "other disaster situations," and for it no longer to be expected to "direct" relief activities of other organizations in the UN system, a direction the others have resisted.

While in agreement with many of the JIU's points, the Secretary-General maintained that the basic framework for UNDRO's activities has stood the test of time, and that the problems with the mandate can best be solved by clarifying the functions envisaged by the General Assembly for UNDRO, and specifying implementation procedures. The Secretary-General was not in favor of restricting UNDRO's responsibilities to only natural disasters since that would too severely limit the UN's flexibility to respond to all types of disasters.

When called upon to act upon the JIU's and the Secretary-General's reports, the General Assembly decided to approve UNDRO's original mandate and, in fact, to strengthen its capabilities. Subsequently, the Administrative Committee on Co-ordination, which holds the executive heads of all organizations in the UN system, defined the role of the lead entity and assigned UNDRO new and central responsibilities in relation to "exceptional and complex" disasters.

Queries about the policies or programs of UNDRO should be directed to *Hans Einhaus, Officer in Charge of UNDRO, Office of the Disaster Relief Co-ordinator, Palais des Nations, CH-1211, Genève 10, Suisse, (022) 31 02 11 34 60 11.*

WASHINGTON UPDATE

COMMITTEE APPROVES BARRIER ISLAND BILL

By a vote of 13-0, the Senate Environment and Public Works Committee in May approved S. 1018, the Coastal Barrier Resources Act. The measure should save taxpayers nearly $11 billion over the next two decades by prohibiting federal expenditures which tend to encourage construction and growth on undeveloped barrier islands and beaches, according to Senator John H. Chaffee, chairman of the subcommittee that developed the bill (see ***Observer,*** Vol. V, No. 3, p. 4). The protection of those fragile landforms will preserve habitats of fish and other wildlife along the Gulf and Atlantic coasts.

The bill also provides $1 million to the Secretary of Interior to conduct a three-year study of how the ecosystems are managed, and to obtain state and public comments and recommendations for improvement of the system. The Senate is expected to vote on the bill this summer.

COASTAL ZONE MANAGEMENT PROGRAMS

The Coastal Zone Management Act of 1972 requires a continuing review of the performance of each coastal state in the implementation of its coastal management program. Accordingly, evaluations have been made for the Virgin Islands, Hawaii, Delaware, Massachusetts, California and Maine, and the findings are available. The states examined were found to be adhering to their programs and their budgets, and to be making progress on grant tasks and significant improvements.

The National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, Office of Policy, Evaluation and External Relations—charged with conducting the evaluations—is now in the process of assessing the programs in Guam, Puerto Rico, Wisconsin, Michigan, Connecticut, Pennsylvania, Florida, Mississippi and American Samoa.

Copies of all the state findings can be obtained from *Harriet Knight, Chief of Program Evaluation, Office of Coastal Zone Management, Page Building 1, 3300 Whitehaven Street, N.W., Washington, DC 20235, (202) 634-4245.*

ASSISTANCE REQUESTS STANDARDIZED

In response to a recent U.S. General Accounting Office report, ***Requests for Federal Disaster Assistance Need Better Evaluation*** (see ***Observer,*** Vol. VI, No. 5, p. 5), the Federal Emergency Management Agency will publish a proposed rule to update and clarify the policies and procedures to be followed by governors and state and local officials in requesting a presidential declaration of a major disaster. Standard forms and language are suggested for state governors' petitions for emergency or disaster declarations; regional summaries of the type of incident, its extent, severity and impacts; and assessments of the abilities of state, local and private resources to meet the needs of the affected area.

Notice of the proposed rulemaking appears in the ***Federal Register,*** *Vol. 47, No. 80, pp. 17961-17965.*

CHANGES IN THE WIND

Problems related to wind loads on buildings and structures, the societal impacts of hurricanes and tornadoes, and the dispersal of urban and industrial pollution have been the concern of the Wind Engineering Research Council (WERC) since 1970. Recently, the WERC was reorganized to form a nonprofit corporation, enabling it to continue its work with financial support from membership dues rather than grants from the National Science Foundation.

Besides continuing to stimulate and direct research and promote the use of research results in professional practice, the WERC also advises government agencies about wind engineering problems and publishes a newsletter. Future activities include sponsoring the Fifth U.S. National Conference on Wind Engineering Research. Further information about WERC is available from *Jon Peterka, WERC, Inc., Room B109, Engineering Building, Colorado State University, Fort Collins, CO 80523, (303) 491-6696.*

DAMS BREAK CORPS

The U.S. Army Corps of Engineers, the nation's oldest and largest water resource development agency, has enjoyed huge success in the past years. Despite this accomplishment, the activities of the Corps appear to be decreasing at a time when water problems and needs are increasing in number and complexity.

A study undertaken by a Corps economist has yielded evidence that the Corps of Engineers' water resource development projects lessened significantly over the past 30 years. The investigation consisted of quantitative analyses of authorizations, appropriations, and new dam construction starts; identification of trends in the formulation and direction of federal water policy, and Congressional coalitions of support and opposition to onmibus bills; and a survey of Congressional committee members (which proved unfruitful), and division and district engineers of the Corps of Engineers.

Some of the evidence of the Corps' decreasing participation is that

- new construction starts have declined in number and value—the average value of new construction starts from 1977 to 1981 was less than one-tenth that of a five-year period in the 1960s;
- three of the last five Congresses have failed to pass omnibus authorization acts;
- water supply is regarded by the Corps leaders surveyed as the most important water problem in the nation today, but it is not one of the traditional cornerstones of the Corps' program; and
- Corps leaders surveyed perceive the Corps' role in navigation and flood control activities to be declining.

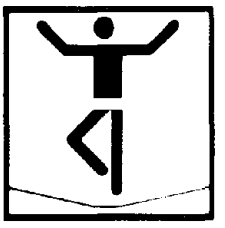
A general weakening in the historical rationale for the Corps' programs is the main explanation offered by the study for the decline. This weakening has been influenced by changes in national values and priorities, popular movements for improved environmental quality, the emergence of a national urban majority, the fact that needed federal development (mostly in the West) has largely been accomplished, and the emergence of state action as a viable alternative to federal development.

The Declining Role of the U.S. Army Corps of Engineers in the Development of the Nation's Water Resources, by Charles Yoe, is available from the *Colorado Water Resources Research Institute, 203 Administration Building, Colorado State University, Fort Collins, CO 80523, (303) 491-6198. Information Series No. 46. $7.00.*

OBSERVER MAIL SURVEY

Results from the survey we sent to ***Observer*** subscribers are coming in and we are in the process of analyzing them. Since the post card warned you all that failure to return it would result in your being purged from the subscription list, we mention that again by way of fair warning. Those of you who did not return the card, or never got one, should notify us immediately that you wish to continue your subscription. If you are (or suspect you are) one of the more than 350 people who—despite warning to the contrary—detached one part of the card from the other and returned it, you also should contact us since we have no way of knowing who you are after the aforementioned detachment. We really don't want to lose you.

ON THE LINE



WHAT HAPPENED TO THE TOTAL EMERGENCY RESPONSE SYSTEM?

If you are an EMT; a helicopter pilot; a representative of a state, local or federal emergency office; a civil defense planner; a member of the Civil Air Patrol, the Coast Guard, a Sheriff's Reserve, a jeep possee; or even part of a volunteer mountain rescue group, you are a responder to emergency human distress. As such, you are a part of the overall emergency response system in the United States. But does this country really have a "Total Emergency Response System?" We have all those emergency resources to which you belong, but how do those fit into a multi-mission, cost-effective, system which deals with death and disability?

Sometimes, either because of great need or small profit, systems grow and proliferate to assume necessary responsibilities. What we come up with is, to quote Mr. Spock of ***Star Trek,*** "illogical." We get emergency ambulance responders, aircraft crash-locator responders, burn trauma centers, disaster workers—apples, oranges, and bananas—each responding to his or her special emergency.

If, for example, the emergency is an aircrash, caused by extreme air turbulence in tornado conditions over the metropolitan area of Oklahoma City, and involving fire on impact, then the apples, oranges and bananas all respond together. When there are a lot of people, it's called a "disaster." Here our total emergency response starts to unravel.

Where is a system to make a fruit salad of all our different responders—each one with its own communications frequencies, chain of command, and operation plan? From rescue to disaster is an escalation in numbers, quantity, proportion and stress—stress on people, equipment and resources. A disaster is an escalation of human need which overtaxes the response capability of the routine systems to deal with that emergency. Our present emergency *systems* do not provide for a smooth escalation to suit the degree of the emergency. In fact, we have illogically evolved entire separate systems to deal with different *sizes* of the same problem. Where is the line that differentiates between a multi-rescue and a mini-disaster?

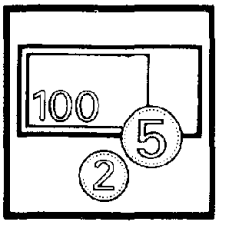
And to which head of our Hydra-headed emergency response animal do we talk? To the search and rescue head, who operates routinely; to our medical emergency head, operating around the clock; to the law enforcement head, who operates 24 hours a day, everyday; or to our fourth head, who, in some areas, rises into action occasionally as the "disaster" head? Interestingly enough, we are all the same emergency responders, talking to all those different heads.

In order to lessen death and disability, we need to rethink the present emergency response systems—or even the lack of same—and pursue the following tasks:

- Identify the need, type and occurrence of the mission;
- Establish the operational communications that hold the system together;
- Identify the resources and responders within the system and the level of activity and use of those responders; and
- Assign the responsibilities.

Actually, there would be nothing very difficult about developing such a *total* emergency response system from the expertise already routinely displayed by those apples, oranges and bananas—something that would bind the fruit salad together. Total emergency response planning is good sense and good politics, and we need to get on with it.

Lois Clark McCoy
National Association of
Search and Rescue



GRANTS

Tsunami risk. "Tsunami Hazard Assessment," U.S. International Development Cooperation Agency, Agency for International Development, $196,084, 15 months. Principal Investigator: *Gerald T. Hebenstreit, Ocean Physics Division, Science Applications, Inc., 1710 Goodridge Drive, P.O. Box 1303, McLean, VA 22102, (703) 821-4300.*

Growing out of an earlier study (see ***Observer,*** Vol. V, No. 3, p. 6) to estimate the threat to various locales in the Pacific Basin from tsunamis generated by earthquakes off the coasts of Chile and Peru, this project will examine in detail areas found to be especially at risk. A localized assessment of run-up potential and patterns will be done in the Philippines, New Guinea, and the coastal areas of Peru and Chile. The South American analysis will test its methods and findings against a simulation of the 1979 tsunami in Ecuador.

DON'T LET THE EARTHQUAKE BRING YOU DOWN

So you've put down earnest money on your dream house, and the next day you discover you're one inch west of the Calaveras Fault? Or, worse yet, you knew about the fault, but you just couldn't get that house out of your mind? Don't despair; pick up the March, 1982, ***Sunset Magazine*** and find out how to prepare your house to withstand shaking and rocking and settling.

"Getting ready for a big quake" (pp. 104-111) is a helpful guide to structural considerations before and after buying, the pros and cons of earthquake insurance, and the organization of neighborhood preparedness groups. By means of photos and illustrations, the piece presents a catalogue of problem areas, ranging from soil type and foundation construction, to shutting off the gas and bracing the water heater. Simple but effective ways to brace walls are given, should their strength be found wanting.

The shorter discussions of insurance and the forming of neighborhood groups are supplemented by indications of where to turn for more detailed information. Copies of this excellent article can be had at a modest cost from ***Sunset Magazine, Earthquake Report, Menlo Park, CA 94025.***

Government response to natural hazards. "Hazards Management Project for the Government of Jamaica," Agency for International Development, $105,466, 18 months. Principal Investigator: *Ralph M. Field, Ralph M. Field Associates, Inc., 68 Church Lane, Westport, CT 06880, (203) 226-3785.*

The project's aim is to assist the Jamaican Office of Disaster Preparedness in establishing a sound hazards management program which will reduce damages and loss of life from disasters. The study will examine the nature and risk of extreme natural events, particularly hurricanes and earthquakes, and identify strategies for coping with them, including mitigation programs.

Flood design. "Pilot Workshops for Architects on Designing for Flood Hazard Mitigation," Federal Emergency Management Agency, $149,937, 12 months. Program Director: *Donald Geis, American Institute of Architects Foundation, 1799 New York Avenue, N.W., Washington, DC 20006, (202) 626-7409.*

Concepts and techniques introduced in ***Design Guidelines for Flood Damage Reduction*** (see ***Observer,*** Vol. V, No. 4, p. 8) will serve as the basis for a two-day workshop on designing buildings to mitigate damage from riverine flooding. A similar meeting will be held for areas subject to coastal floods, and both are planned for late fall, 1982. To provide architects with an overview of flood hazard mitigation efforts, speakers and discussions will address the physical and hydrological aspects of flooding, structural and nonstructural design approaches to the problem, regulation of hazardous zones, and insurance. Field trips and case studies will complement the meetings. AIA hopes to expand these pilot projects into a nationwide series of similar workshops.

Siting facilities. "Natural Hazard Risk Evaluation for Major Industrial Facilities," National Science Foundation, $99,630, 24 months. Principal Investigator: *Anne S. Kiremidjian, Department of Civil Engineering, Stanford University, Stanford, CA 94305, (415) 497-3074.*

The study will develop a method for evaluating the risk to major industrial facilities from earthquakes. Structural failures and monetary losses resulting from seismic ground motion will be estimated. The validity of the evaluation methods will be tested by applying them to an oil refinery.

DISASTER HISTORY FILM

A retrospective on many of the United States' greatest disasters is given in the American Red Cross' latest film, "Ready for the Worst." Some of the events covered in vivid detail are part of our disaster lore; others, equally as destructive (and instructive) have been lost to memory, for instance, the Peshtigo, Wisconsin, fire in which 1,200 people died on the same day as the Chicago fire. The film traces the sequence of events that led to the Johnstown flood, explains how it was that 6,000 people perished in the Galveston hurricane, and recreates the earthquake in San Francisco.

The film also looks into the future to examine the enormous consequences of an earthquake the size of that in New Madrid in 1811 striking the area today. Because the region is now populated and part of it urbanized, the destruction would be great and terrible.

Copies of the 45-minute film are available in 16mm, ¾ inch videocassette, and ½ inch VHS format. To obtain it, contact the *American Red Cross, National Headquarters, 17th and D Streets, N.W., Washington, DC 20006, (202) 857-3512.*

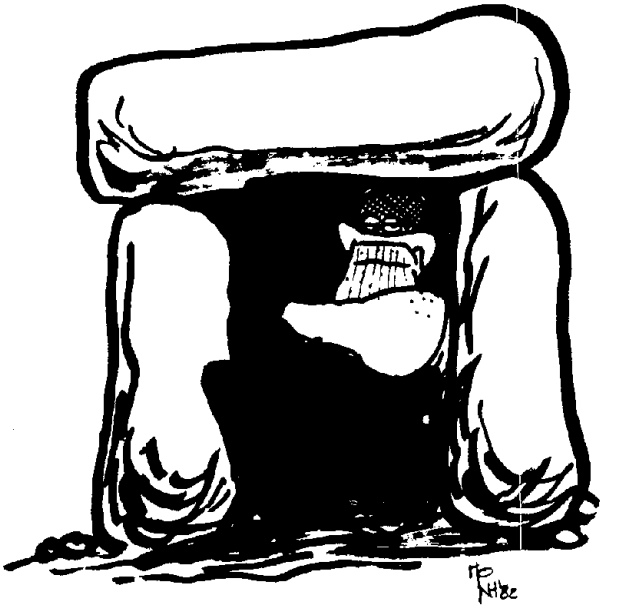
EMERGENCY SHELTER AND HOUSING

The many problems associated with providing shelter and housing to disaster victims begin with imprecise language and hazy notions about the meanings of the terms emergency sheltering, temporary sheltering, temporary housing, and permanent housing. Small wonder that the planning and coordination for shelter and housing is usually done poorly, if at all, since those responsible for it may not even share the same concept of what it is they are trying to do.

This is one of the findings from a recent study done by Ohio State's Disaster Research Center for the Federal Emergency Management Agency and reported in ***Sheltering and Housing After Major Community Disasters: Case Studies and General Observations,*** by E. L. Quarantelli. The study's first step was to review the scarce literature on the topic and analyze some available data on post-disaster sheltering; subsequently, the researchers compiled case studies on the experiences with sheltering in three American disasters: the Wilkes-Barre flood, the Xenia tornado, and the Grand Island tornado.

Among the conclusions reached during the study are the following:

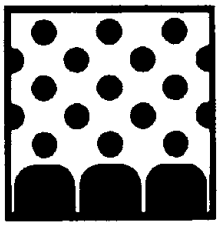
- There is very little planning in American communities for disaster housing and sheltering, and what there is is frequently included—unadvisedly—in civil defense, crisis relocation plans.
- The planning there is usually is fragmented among various emergency organizations and incomplete; there is no consensus on what organizations should be involved and what should not.
- There is a tendency for agency personnel to perceive the evacuees as the problem, for the evacuees to perceive the personnel as the problem, and for no one to correct the organizational provisions and inter-



organizational coordination, which really are the roots of most of the difficulties.

The study concludes with suggestions for appropriate activities and expectations for each of the four sheltering possibilities mentioned earlier. Appended is an annotated bibliography of the three dozen publications that constitute the bulk of the social science literature on the topic.

Copies of the 98-page report are available *@$7.50 from the Disaster Research Center, 128 Derby Hall, The Ohio State University, Columbus, OH 43210, (614) 422-5916.*



CONFERENCES

International Conference on Physics and Mitigation of Natural Hazards. The Tsunami Society, International Tsunami Information Center, Pacific Tsunami Warning Center, Hawaii Institute of Geophysics, and the East-West Center. Honolulu, Hawaii: August 15-21, 1982. This is the first of a series of conferences to be held in alternate years that will aim to improve communication between those knowledgeable about the physical aspects of natural hazards and those whose goal is the mitigation of their effects on human systems. Among the topics to be covered are warning systems, instrumentation, beach erosion, tsunamis, volcanoes, hurricanes and storm surge. Paper abstracts are invited, and should be submitted by July 30, 1982. Request more information from *W.M. Adams, University of Hawaii, HIG 238, 2525 Correa Road, Honolulu, HI 96822, (808) 948-7797.*

26th Annual Meeting, Florida Shore and Beach Preservation Association. Captiva Island, Florida: September 29-October 1, 1982. The theme of this largest annual meeting in the U.S. on erosion control and beach preservation will be "New Deal for Beach Preservation." Subjects will include new developments in controlling erosion, preservation of barrier islands, and the hurricane threat to coastal development. More information can be had from *Stan Tait, Executive Director, Florida Shore and Beach Preservation Association, 325 John Knox Road, Tallahassee, FL 32303, (904) 386-6410.*

U.S. Civil Defense Council Annual Conference. Hosted by Multnomah County Office of Emergency Management. Portland, Oregon: October 10-14, 1982. The agenda features speakers and topics pertinent to the concerns of all emergency managers. Among the issues covered in simultaneous sessions over the four days are the following: search and rescue, legal implications of emergency management, stress during emergency responses, hazardous materials, a Mount St. Helens case study, FEMA, media relations, Emergency Planning Canada, and public officials and emergency management. For further information, contact *Myra Lee, Conference Manager, Office of Emergency Management, Multnomah County, 12240 N.E. Glisan, Portland, OR 97230, (503) 255-3600, x207.*

Landslides and Flooding in the San Francisco Bay Region: Preparing for the Future Using the Lessons of 1982. U.S. Geological Survey, National Academy of Sciences/National Research Council Committee on Natural Disasters, and Stanford University. Stanford, California: August 23-26, 1982. The conference will combine technical presentations on the federal, state and local responses to the hazards in the winter of 1982. Participants will examine the value of scientific information in predicting and mitigating landslide and flood hazards, and evaluate the processes by which such information is translated into public policy. The San Francisco Bay Area will be the focus of discussion, but the problems and findings are applicable to most urban areas. For additional information, contact *William M. Brown III, U.S. Geological Survey, 345 Middlefield Road, MS 22, Menlo Park, CA 94025, (415) 323-8111, x2312.*

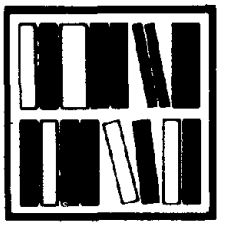
Computer Simulation in Emergency Planning. Simulation Councils, Inc. San Diego, California: January 27-29, 1983. Computer simulation promises to be an integral part of future planning for comprehensive emergency management at all levels of government and in the private sector. This international conference will feature papers, panel discussions and tutorials on the use of this technology in training for response to all types of disasters. Contributions are invited on the following areas: methods for simulating threat and human responses to it; software systems for emergency planning; practical applications of computer simulation to training programs; and problems in the collection, synthesis, and validation of data for modeling. Registration information is available from *John M. Carroll, Department of Computer Science, University of Western Ontario, London, Ontario, Canada N6A 5B9, (519) 679-2111, x3577.*

Coastal Zone 83: Third Symposium on Coastal and Ocean Management. American Society of Civil Engineers, U.S. Office of Coastal Zone Management, California Coastal Commission, Coastal States Organization, and the U.S. Naval Facilities Engineering Command. San Diego, California: June 1-4, 1983. Professionals, citizens and decision makers will participate in interdisciplinary discussions on the uses, protection, and development of coastal regions and ocean resources. Abstracts for papers are invited on any aspect of managing coastal development, environmental quality, access to the shore, governmental regulation, impacts of energy development, and new trends in marine and coastal zone management. Deadline for submission of abstracts is August 15, 1982. Selected papers will be published in a proceedings volume. For more information, contact *Orville T. Magoon, COASTAL ZONE 83, Code A, P.O. Box 26062, San Francisco, CA 94126.*

Water—Are We Running Out? Eighteenth Annual Conference. American Water Resources Association. San Francisco: October 10-14, 1982. Contributed and invited papers will be presented on the following topics: availability of water; water rights, issues, and problems; adequacy of data collection storage and retrieval of information on water; public water policy; roles of the Bureau of Reclamation, the U.S. Geological Survey, and the Corps of Engineers; and the geographic distribution of water. Abstracts for papers must be submitted by March 15, 1982. For further information, contact *Dave Stephenson, Woodward-Clyde Consultants, Three Embarcadero Center, Suite 700, San Francisco, CA 94111. (415) 956-7070.*

Annual Meeting of the Great Plains/Rocky Mountain Division of the Association of American Geographers. Laramie, Wyoming: September 24-25, 1982. Local officials, consultants and planners are invited to share their experience in natural hazards management. Although the meetings will cover all aspects of geography, a special session will be devoted to an examination of natural hazards issues. The deadline for submission of papers will not be until midsummer, but expressions of interest or requests for more information should be directed at once to *Nicholas Helburn, Department of Geography, Campus Box 260, University of Colorado, Boulder, CO 80309, (303) 492-6975.*

RECENT PUBLICATIONS



NOTE: The publications listed below should be obtained from the author, organization or publisher cited. They are not available from the *Natural Hazards Observer.*

"Establishing the Risk and Priority for Mitigation Under Disaster Conditions for Kingston, Jamaica." Patrick W. Naughton, Department of Geography, Memorial University Regional College, Corner Brook, Newfoundland. Presented at the 1981 meetings of the Association of American Geographers. 22 pp. Available from the Natural Hazards Research and Applications Information Center for the cost of photocopying—$2.50.

With risk data from a natural hazard assessment of Kingston, the study determines mitigation priorities by using the measures of population density and housing structure type. The priority ratings are expressed in relational terms in order to allow government, insurors, businesses and individuals to know which areas should be redeveloped first and last after a disaster. With a 1980 population of nearly one million, Kingston is subject to earthquakes, hurricanes, floods, tsunamis and landslides. The findings from the study were, in fact, used as the basis for the disaster plan recently developed by the Jamaican government.

Flood. Champ Clark and the Editors of Time-Life Books. The third volume in the Planet Earth series. Available from Time-Life Books, 541 North Fairbanks Court, Chicago, IL 60611. 1982. 176 pp. $9.95 plus $2.03 shipping costs.

After an introductory chapter on the universality of floods and their dynamics, this volume treats at some length China's Yellow River, taming the Mississippi, flash floods in various locales, dam burstings and their attendant destruction, and the Aswan High Dam with its many influences—both good and bad—on Egyptian life. Five excellent photo essays detail the damages wrought by the River Arno in Florence, the efforts of the Chinese to survive frequent flooding on the Yellow River, Japan's project to model different watersheds at Tsukuba Science City, the flash flood at Putnam, Connecticut, in 1963, and India's life with Mother Ganges. The photographs are, as might be expected, superb.

Earthquake Data Service and Publications (including Tsunami). Key to Geophysical Records Documentation #15. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Environmental Data and Information Service. 1981. 14 pp. Available free from National Geophysical and Solar-Terrestrial Data Center, 325 Broadway, Boulder, CO 80303, (303) 497-6472.

The NGSDC acts as a focal point for disseminating historical earthquake data to technical and general users. The NGSDC refines the primary seismic data provided by the U.S. Geological Survey into a wide variety of formats. The agency prepares seismic histories of local and regional areas, answers public inquiries on all aspects of historical earthquakes, and publishes compilations of seismic activity. Also available from the NGSDC is Data Announcement #81-EHB-06, "Earthquake Data File (Retrieval and Plotting Services)." The flyer explains the Center's 80-column card image format and indicates some of the services and uses to which the file can be put.

Assessment of Tsunami Hazard Presented by Possible Seismic Events: Near-Source Effects. Gerald T. Hebenstreit and Robert E. Whitaker. 1981. 265 pp. For availability, contact Paul Krumpe, Office of Foreign Disaster Assistance, Agency for International Development, U.S. Department of State, 1062 NS, Washington, DC 20523, (202) 632-1834.

Part of a systematic, long-range study of tsunami threat in the Pacific Ocean, this report examines three facets of the research and development program as it pertains to the Peru-Chile Trench along the coast of South America. First, earthquake zones capable of generating tsunamis are identified by combining historical seismicity patterns with seismic gap theory. Second, tsunami generation is simulated to examine how waves reach both near-source and far-field coastal zones. Third, coastal areas most threatened by tsunamis generated by earthquakes occurring in this zone are identified. The ultimate goal of the program is the reduction of tsunami hazard through education, evacuation plans, and an improved tsunami warning system.

"The Legal Implications of Coastal Erosion in Louisiana." Louisiana Coastal Law 43 (December, 1981):1-5. Louisiana State University, Sea Grant Legal Program, 52-60 Paul M. Hebert Law Center, Baton Rouge, LA 70803, (504) 388-5931. Single copies are available free upon request.

Erosion presents considerable legal problems for land owners along the coast; this paper examines the consequences for owners in Louisiana. There is a discussion of how erosion changes the relationship between an individual property owner and the state. The relationship of the state and the federal government is also explained, with specific reference to changes in legal ownership caused by erosion. In addition to sea front erosion, the paper covers lakeshores and bank erosion on rivers, streams and bayous.

***The 1980 Eruptions of Mount St. Helens, Washington.** Peter W. Lipman and Donal R. Mullineaux, Editors. U.S. Geological Survey Professional Paper #1250. 844 pp. $35.00. Order from the Branch of Distribution, USGS, 604 South Pickett Street, Alexandria, VA 22304. Also available over the counter at USGS Public Inquiries Offices in Spokane, San Francisco, Los Angeles, Salt Lake City, Denver, and Reston, VA.*

This handsomely illustrated publication summarizes the 1980 activity of Mount St. Helens and presents the initial results of wide-ranging scientific research touched off by the eruptions. The anthology contains more than 60 separate articles by authors from the USGS for the most part, but also includes contributions by researchers from industry, academic institutions, and other government agencies. Although most of the articles focus on chemical, geological, and geophysical aspects of the eruptions, 12 studies are closely related to the social effects of the blasts and to the potential hazards still posed by the mountain. The volume contains 470 figures, 117 tables, and a geologic map showing proximal deposits and features of the eruptions. Nontechnical introductions to each major section, in conjunction with the extensive illustrations, make the volume useful for readers lacking formal geologic training.

"A Major Earthquake Zone on the Mississippi." Arch C. Johnston. Scientific American 246 (April, 1982): 60-68.

In recent years, earth scientists have accelerated research into the geological phenomena that caused the powerful New Madrid earthquake of 1811-12. This informative article summarizes the findings to date and comments upon their implications for the planners and designers of critical facilities such as nuclear power plants. It is hypothesized that the recurrence frequency of a major New Madrid earthquake is on the order of once every 600 to 1,800 years, a time window which should allow planners and policy makers adequate opportunity for necessary preparations and precautions. The article stresses the fact that the area, which includes St. Louis, is seismically active, with more than 1,000 tremors of magnitude 1 or greater recorded since mid-1974.

"Managing the Recovery from a Natural Disaster." Claire Rubin. Management Information Service Report 14 (February, 1982). 14 pp. Reprints are available (@$7.00 per issue) from the International City Management Association, 1140 Connecticut Avenue, N.W., Washington, DC 20036, (202) 626-4600.

To acquaint planning officials with a community's experience of a major natural disaster, two scenarios present the effects of a flash flood and a hurricane on the organizations and agencies that will be expected to cope with the situation. The four phases of both disasters are analyzed: pre-disaster mitigation planning, preparedness, response, and recovery. The article provides a checklist that indicates the warning signs of insufficient preparation, and also includes a brief discussion of the realities and limitations of intergovernmental relations whenever a long-term recovery effort must be initiated. The scenarios were part of a larger study conducted by the Academy for Contemporary Problems to examine disaster recovery in six localities around the country (see ***Natural Hazards Observer***, Vol. VI, No. 3, p. 8).

How to Survive an Earthquake: Your Guide and Handbook for Home, Family, and Community Preparedness. Libby Lafferty. 1982 (revised). 32 pp. $3.75. Order from Creative Home Economics Services (CHES) of California, P.O. Box 1026, La Canada, CA 91011. Special prices are available for bulk orders.

Arguing that the chances of surviving an earthquake are greatly increased if one knows how to prepare for and respond to a seismic event, this revised edition of the 1978 booklet offers the most current survival information together with expanded, more graphic "how to" instructions. The publication provides life-saving suggestions both for the actual duration of the tremor and for the period immediately following. Emergency medical procedures and the storage of food and water receive special attention. The checklists devised for personal and family preparedness are thorough and clear.

A Guide to Obtaining Information from the USGS, 1982. Compiled by Paul F. Clarke, Helen E. Hodgson, Gary W. North. Geological Survey Circular #777. 1982. 42 pp. Free on request to the Eastern Distribution Branch, Text Products Section, U.S. Geological Survey, 604 South Pickett Street, Alexandria, VA 22304-4658.

This newly revised and updated guide has three parts: 1) a description of the offices from which information is available about publications as well as other subjects; 2) a list of the types of USGS maps, reports and other studies, and the places from which they are available; and 3) a list of the sources of the maps and reports, and their addresses and commercial and government telephone numbers. There is also a section with general instructions for purchasing USGS books and maps by mail.

*"Mapping of Mountain Hazards." Jack D. Ives. **Impact of Science on Society 32 (1981):79-88.***

Recreational demands in the developed nations, and fuel-wood and agricultural demands in the developing regions have contributed to a marked increase of landslides, floods, and avalanches in mountainous zones. The author explains the concept of multiple hazard mapping, how this discipline has evolved, and the uses its products have for planners and government administrators who are trying to stem the degradation of Alpine environments. Preliminary findings from the field work on a United Nations University project in Nepal indicate that land is being lost much faster than local people can reclaim it, and that a considerable body of local knowledge exists about mountain hazards and their control.

A Study of the Motion of Floating and Submerged Bodies in the Chattachoochee River. David R. Dingle and Edward R. Johnson. 1981. $3.00. Copies are available from David Dingle, H.E.R. Consultants, 2298 Desmond Drive, Decatur, GA 30033, (404) 325-3945.

With funds provided by the National Park Service, the authors used mannequins in conducting experiments to examine the downstream movement of drowning victims. Findings indicated that floating objects near a bank of the river tended to remain along that bank as they moved downstream even through bends in the river. Submerged mannequins moved downstream only with very high river flows due to a tendency to remain stationary after reaching the bottom of the waterway. The research results and accompanying discussion of river bottom topography, flow rates, and hydraulics should aid search and rescue operations for drowning victims.

***Seismic Design Guidelines for Highway Bridges.** Report #ATC-6. Applied Technology Council, 2150 Shattuck Avenue, Suite 806, Berkeley, CA 94704, (415) 540-0223. 1982. 200 pp. $20.00. Order from the ATC.*

The comprehensive guidelines, published under contract with the Federal Highway Administration, embody several concepts which depart significantly from existing design provisions. The draft guidelines were tested on the seismic redesign of 21 bridges to assess their practicability and cost. Subsequent changes and a discussion of the redesign results are included in the report. The American Association of State Highway and Transportation Officials is considering adopting the guidelines as part of its Standard Specifications for Highway Bridges.

The NATURAL HAZARDS RESEARCH AND APPLICATIONS INFORMATION CENTER is intended to strengthen communication between research workers and the individuals, organizations, and agencies concerned with public action relating to natural hazards. Please let us know of any research or research needs or other information which should be brought to the attention of the Center. The Center is funded by the Federal Emergency Management Agency, the National Oceanic and Atmospheric Administration, the U.S Geological Survey, and the Corps of Engineers, acting through the National Science Foundation.

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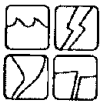

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16. Abstract (Limit: 200 words)

This issue cites the annual rise in flood losses as a reason for reappraising flood management activities. The need for two major actions is emphasized: a national assessment of the amount and location of property exposed to high risk flooding, and an evaluation of the effectiveness of the flood loss reduction policies and programs of local, state, and Federal governments. Articles include studies on stress in families living near Mount St. Helens and a joint China-United States earthquake program. Grants awarded for studies on such topics as tsunami risk, flood design, and government response to natural hazards are listed. Lists of conferences and publications are provided.

17. Document Analysis a. Descriptors

Hazards
Disasters
Floods
Risk
Earthquakes
Grants
Tsunamis
Local government
State government
Government policies

b. Identifiers/Open-Ended Terms

Mount St. Helens
G.F. White, /PI

c. COSATI Field/Group

18. Availability Statement	19. Security Class (This Report)	21. No. of Pages
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