

Natural Hazards Observer

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Who We Are

Fear and Loathing in North Dakota

--an invited comment

Grand Forks, North Dakota, recently suffered a devastating flood that inundated 80% of the city and forced almost total evacuation of its citizens. Because of this event, the Grand Forks City Council has learned many lessons "the hard way" and is confronted with difficult and complex decisions about our city's future.

The Prediction

Despite the knowledge that Fargo, 70 miles upstream, had received the greatest snowfall in its recorded history (115 inches), and despite reports that soil in the Red River Valley was saturated from heavy moisture the year before, the National Weather Service¹ continued to predict that the river's crest at Grand Forks would be 49 feet, about the same level as the 1979 flood, the flood of record that had damaged basements within seven blocks of the Red River because of seepage, although the river had stayed within its banks. At that time, a tributary ran through town near the hospital and had seriously overflowed, but a retaining dam had been built after 1979 to prevent future overland flooding.

Since the 1979 flood, many dikes had been raised to 50 feet, and their strong bases made it possible to add sandbags or clay to increase their height to 52 feet. In January and February, when North Dakota experienced severe snow storms, city staff prepared to combat the anticipated 49-foot crest of the Red River and briefed the mayor and city council members about their ongoing activities. The staff checked gauges and flapgates and made plans for responses to specific increases in river level. We believed we were ready.

In retrospect, perhaps we should have also listened to two or three old timers in the country who walked in their fields after the seventh winter storm and told us, "Pretty wet out there. Never seen nothin' like it. It's gonna be a bad one."

We learned afterwards that some experts, including the U.S. Army Corps of Engineers, were telling individuals in Washington, D.C., that they thought a crest of 53 or 54 feet was more likely than 49. The city engineer, relying on the 49-foot estimate by the National Weather Service, stated that, had they been told of the potential for a 54-foot crest, they could have planned for and built a number of secondary dikes that would have saved much of the city from serious damage. If someone had told us that these estimates were not an exact science, or that other countries predict potential river crest heights in probabilities for various levels, we may have been better prepared.

The message for other public officials facing a potential flood and the need to make decisions is, clearly, "trust but verify." Don't put all your eggs in one basket. Get a second opinion from outside the primary system--as well as more information--because billions of dollars in property are at stake.

Flood Insurance

Only about one out of 16 structures in Grand Forks was covered under the National Flood Insurance Program (NFIP). After years of city action--improving the dike system, building the Coulee retention dam, and negotiating for years with the Federal Emergency Management Agency (FEMA) to clarify the exact line of the 100-year flood--many structures that had previously been in the 100-year floodplain no longer required flood insurance. Despite a vigorous advertising campaign by FEMA more than a month before the flood, few homeowners or businesses added coverage. Subsequently, reports have surfaced of insurance agents discouraging their clients from adding flood coverage because the event seemed unlikely and the insurance excluded so much. Many did add sewer back-up coverage to their homeowner policies, and through the goodness of many insurance companies and quick intervention by the state insurance commissioner, many of these claims were paid, even though arguments continue over whether basements (and first floors) were flooded by overland river water, individual sewer backup, sump pump failure, seepage, or citywide storm sewer overload. Who is responsible for what types of damage is still not clear from company to company and policy to policy.

One final annoyance voiced by many NFIP policyholders was that they have been paying premiums for flood insurance for years, and because of the declared national disaster and ensuing buyouts to establish a stronger dike protection line, ironically they may get full value from the buyout but nothing from their flood insurance. At the same time, their neighbors will get equal buyout value, while never having paid flood insurance premiums.

We need standardized federal language that clearly defines what flood insurance covers and what is excluded, such as overland flood, sewer backup, storm sewer failure, pump failure, seepage from river pressure, etc. Also, unhappily, more people ought to buy flood insurance whether they are in the 100-year floodplain or not, and whether or not they have a mortgage that requires this coverage.

Contamination

Soon after the waters began to recede, the papers and airwaves were full of warnings against "contaminated" river water. Grave warnings, designed to protect the public, created fear and loathing for anything touched by the river. Tetanus shots for anyone who came in contact with the river were promoted by public health officials. City inspectors and local electrical and furnace contractors insisted that any appliance that had been submerged in water be thrown out. Consequently, immense amounts of trash were created that might have been greatly reduced if more conservative cleaning procedures were used.

We subsequently learned there was strong disagreement between Minnesota and North Dakota public

health officials. Minnesota took the position that river water, by itself, was not toxic or "contaminated," and exposure did not require tetanus shots. North Dakota was more cautious.

At the same time, the local talk radio station aired a running battle between outraged callers and FEMA spokespersons over furnace replacement. FEMA's position was that, in general, furnaces could be cleaned and repaired at little cost and restored to useful service--work for which the agency was quite willing to pay. Replacement of furnaces required certification from FEMA inspectors, and if a homeowner disagreed with a FEMA inspectors' decision, he or she could appeal and request a second inspection that would be done within 7 to 10 days. However, city personnel and local electricians stated that furnaces under water for a week or more could not be safely repaired. Intense on- and off-air negotiations were held, and FEMA agreed to make appliance replacement easier so that homeowners could return to their homes more quickly.

As a local policy maker, I depend on experts to provide me with information that helps me make sound public policy decisions. I have no idea whether furnaces will work six months from now if they are carefully cleaned and repaired. I have no idea if merely touching river water exposes homeowners to life-threatening illness. But, when faced with divided opinions from experts, I lose confidence in the advice I am getting. The difference of opinions also costs money--excessive or unnecessary caution may have cost individual Grand Forks citizens thousands and the federal government millions of dollars.

The Angel

About a week after the flood, I ran into the Grand Forks mayor at the Air Force hanger that was serving as my evacuation shelter. She mentioned in passing that there would be good news soon, that she was in touch with a person who wanted to give between \$10 and \$50 million to alleviate suffering in Grand Forks. About two weeks later, while staying at a friend's home 30 miles south of the city, I saw the mayor on the evening news giving out \$2,000 checks to homeless people at the same shelter. The donating "angel" had wished to be anonymous and had specified that there was to be no bureaucratic red tape, no guidelines for applying for aid except for a simple form that only asked for a recipients' name and address.

By the next day, a new stipulation was added--only those who had evacuated their homes were allowed to receive assistance. By the third day, a more serious revision occurred. Those who needed it should apply for the money but were asked to be guided by their conscience. This new guideline caused a fight between my wife and me that lasted for three days, since I felt we did not need the aid because we were not starving, while she felt our lives were disrupted, we had financial losses, and we were generally in need. Our local talk radio mirrored the conflict, and what had started as a generous and selfless gesture turned ugly. Finally, after the fourth or fifth day, it became clear there might not be enough money to help everyone, and that the total amount available would be \$15 million, not \$50 million. Some people felt bad because they had taken the money while others received nothing. Still others had not even had the chance to apply.

I relate this story because it deepened my support for government, despite the current trend to idolize the private sector. Both as a victim and a council member, I saw the importance to the human psyche of clearly delineated rules and expectations, which may be more cumbersome but are ultimately more fair. The well-intended declaration of "no red tape" may have done more harm than good in many ways, despite the generous and decent intentions behind it.

Recovery

Soon after the water supply was restored to some areas of the city, business people returned and began deliberating the future of Grand Forks. At a meeting attended by the governor and state and local officials, they outlined necessary steps to restore the economic viability of the city, emphasizing two major elements: the immediate need for housing to bring back the work force and state economic assistance to small businesses. The strongest sentiment at this meeting was that a flood of this magnitude must never happen in Grand Forks again. There would be very little reinvestment in our community by businesses or homeowners unless they could be assured that future damage could be prevented.

As a result of this understandable pressure, the U.S. Army Corps of Engineers and the city engineer quickly drew up a plan to construct a significantly higher dike system. However, when people were informed that this would require the purchase and removal of over 1,000 homes and businesses, moving the dike further inland, and opening up the river's channel, a number of those who demanded rapid response instead called for further study.

Simple Questions, Complex Answers

In a time of unexpected disaster, people yearn for simple, decisive answers that will give them hope and encourage them to rise above the loss. Our constituents want to know where they stand, and they want to be told by a reliable source that things will be okay again. As public officials and caring members of the community, members of the Grand Forks City Council want to be able to speak with certainty, clarity, and accuracy. We do not want to lie or give false hope, but we want to speak positively lest our attitudes discourage people or convince them to leave town.

After the first euphoria of President Clinton promising 100% disaster assistance (which we later discovered is only for a small portion of the damage), as well as FEMA promising to help us "every step of the way," I began to yearn for simple guidance on how to deliver what was promised. Soon I also realized that, even with their homes destroyed, people preferred unpleasant facts to uncertain or overly complex responses.

Yet, as recovery from this disaster proceeds, I realize how difficult it is to give simple, straightforward answers, particularly to questions like "Can I rebuild my house now? Can I rebuild it permanently or are you going to buy it out? Do I have to clean out the basement if it's too damaged to repair? What if it's in the 100-year flood zone? What should I do while all of this is being decided?"

In an effort to clarify for myself and the citizens of Grand Forks the best responses available, I made up a chart (see Table 1) and offer it to others as a starting point, so that they can refine it for future use, hopefully giving their citizens some sense of closure sooner than we have been able to in Grand Forks.

Table 1--Options for Recovery

	City Demolish	Owner Clean Up	Rebuild, Plan to Live in for 1-3 Years	Rebuild, Plan to Live in Indefinitely	City Buyout
Damage over 50%, located in 100-year floodplain, on wet side of proposed dike	Only if immediate hazard	No	No	No	Almost certain
Damage over 50%, in 100-year floodplain, on dry side of proposed dike	Only if immediate hazard	No	No	No	Likely
Damage over 50%, not in floodplain, on wet side of proposed dike	Only if immediate hazard	No	Owner's choice	No	Quite likely
Damage over 50%, not in 100-year floodplain, on dry side of proposed dike	Only if immediate hazard	Yes	Owner's choice	Owner's choice	Unlikely (low priority)
Damage under 50%, in floodplain, on wet side of proposed dike	Unlikely	Yes	Owner's choice	No	Quite likely

Damage under 50%, in floodplain, on dry side of proposed dike	Very unlikely	Yes	Owner's choice	Owner's choice	Possible, but less likely
Damage under 50%, not in floodplain, on wet side of proposed dike	Very unlikely	Yes	Yes	No	Probably
Damage under 50%, not in floodplain, on dry side of proposed dike	Very unlikely	Yes	Yes	Yes	Quite unlikely

Conclusions

During the disaster, citizens were scattered throughout the region. Senior staff members with the knowledge and fortitude to act made decisions in consultation with the mayor, who worked 20-hour days for weeks. There was little structure to city government, but staff people moved ahead to repair the damage that fell under their areas of expertise. City council members were out of town and most were out of touch. This was not a problem until the third week after the flood, when it was time to make decisions about recovery and how to handle future flooding. At that time, the need for a representative council grew, since decisions had to be made, but also had to be based on public input and mediation by elected officials.

The Grand Forks City Council reconstituted itself, met once a week instead of its usual twice a month, created a special Flood Response Committee to recommend action to the council, and sent a team to meet with the Corps of Engineers prior to release of Corps recommendations for mitigating future floods. At the same time, council members became more aggressive in asking questions, voicing citizens' concerns, and in demanding more involvement in staff decisions.

Although many residents just want to know where to live next week and whether their business can find a place to rent before they go broke, others have taken on a utopian vision, asserting that "we can build it better." The state art museum, located in Grand Forks, is assembling and archiving all the images and stories created by the flood. Still, at this point, the only thing we know is that Grand Forks will never be the same, emotionally or financially. Will we become a new town, reborn from the soggy ground, or will we return to our solid complacency? One point is certain, without the help we have received from federal and state governments, private foundations, congregations, and aid organizations, as well as the many individuals who sent help and money, we would be lucky to recover in 20 years. As it is, I expect

us to be back in five.

Eliot Glassheim, Member, City Council, Grand Forks, North Dakota

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1. The National Oceanic and Atmospheric Administration is currently preparing a comprehensive evaluation of National Weather Service outlooks and forecast services provided during the 1997 flooding on the Red River of the North, including the Grand Forks/East Grand Forks area.

Task Force Issues Recommendations

On May 24, 1997, President Clinton announced a federal action plan for recovery for North Dakota, South Dakota, and Minnesota developed by the Long Term Recovery Task Force, an interagency group established by the president to assist in the recovery of affected states. FEMA Director James Lee Witt chaired the task force.

The *Framework for Federal Action To Help Build a Healthy Recovery and Safer Future in Minnesota, North Dakota, and South Dakota* (1997, 36 pp.) identifies three priorities for federal long-term recovery; mitigating flood hazards, ensuring housing, and re-establishing community sustainability. Working in conjunction with state and local governments, the action plan details the wide range of grants, loans, and technical assistance the federal government offers. Many of the recommendations are subject to funding approval.

Copies of the report are available via the Internet at the FEMA Web site: <http://www.fema.gov/fema/fld97.htm>. An Adobe Acrobat viewer is required.



The Internet Pages

Here are even more interesting Web sites we've encountered recently . . . is there no end?! A more extensive, annotated list of useful hazard/disaster Web pages is posted on the Hazard Center's World Wide Web page:

<http://www.colorado.edu/hazards/sites/sites.html>

<http://www.sustainable.doe.gov/freshstart/>

Operation Fresh Start is a Department of Energy initiative designed to help individuals and communities incorporate sustainable principles and technologies into their plans when they recover from a flood, earthquake, or other disaster. The Clinton Administration announced the Operation Fresh Start Web site as part of a federal aid package to flood victims in the Red River Valley area of the Dakotas and Minnesota, but the information can be of value to any community suffering a disaster. Operation Fresh Start includes case studies of successful recovery projects and is a gateway to information from a variety of federal agencies that deal with disaster recovery. The site offers a host of resources one can use to rebuild a community, business, or home--not just the way it was before the disaster, but healthier, more energy efficient, less expensive, safer, and more livable--in short, more sustainable.

<http://www.lrc.fema.gov>

The Federal Emergency Management Agency (FEMA) National Emergency Training Center (NETC) Learning Resource Center (LRC) has added its on-line card catalog to the FEMA Web site. This index will provide bibliographic access to NETC's collection of more than 50,000 books, reports, periodicals, and audiovisual materials concerning fire service and emergency management.

The LRC is NETC's on-campus library for staff and students of the National Fire Academy and the Emergency Management Institute. The center concentrates on the social and behavioral aspects of natural and technological hazards. Generally, NETC students are not scientists but practicing emergency managers and first responders, and the LRC is designed to meet their needs. While full text will not be available on-line, the listings will give users the opportunity to survey the center's wide range of material, and the general public can gain access to the LRC's collection via interlibrary loan through their local libraries. Additional information is available from the LRC Web site or by e-mailing netclrc@fema.gov.

<http://www.fema.gov/fema/trop.html>

FEMA re-launched its Tropical Storm Watch page on the World Wide Web on Friday, May 30. Usage of the site has increased greatly since its inception three years ago, with a record 400,000 hits on one day--September 5, 1996--the evening Hurricane Fran made landfall in North Carolina. The Tropical Storm Watch page offers hurricane preparedness information, fact sheets, maps, and links to other key sites offering weather satellite images and forecasts. During the hurricane season, the site is updated daily--sometimes hourly--with news releases, situation reports, tracking maps, and graphics. As a

hurricane approaches landfall, users can see its projected path and learn how FEMA is coordinating the federal government's efforts to assist state and local governments in coping with the impending disaster.

<http://www.firewise.org/pubs/online.html>

We've mentioned the excellent Firewise Web site before, but with the onset of summer and fire season, we wanted to point out this section of that site, which includes several on-line publications, such as *Protecting Your Home from Wildfires*, *Firewise Landscaping Checklist*, and the *Wildfire News & Notes* newsletter.

<http://www.fs.fed.us/land/>

This U.S. Department of Agriculture's Forest Service Web site provides links to other sites providing information on wildfire management, as well as access to the *Federal Wildland Fire Policy Final Report* and the *Federal Wildland Fire Management, Policy and Program Review, Implementation Action Plan Report* (see the *Observer*, Vol. XXI, No. 2, No. 10).

<http://nceer.eng.buffalo.edu>

The National Center for Earthquake Engineering Research (NCEER) Web site continues to grow with new features to aid the earthquake engineering and hazards mitigation community. The main menu now features background information on NCEER; a guide to services and products available from the NCEER Information Service, including an interactive connection to NCEER's Quakeline database; a list of NCEER publications and technical reports with ordering information; full-text documents, including NCEER newsletters; a comprehensive list of upcoming conferences; a guide to other data bases, software, and information sources that support earthquake engineering; and links to other useful Web sites.

<http://www.eerc.berkeley.edu/>

The Earthquake Engineering Research Center (EERC) gopher service (one of the pioneering efforts in the use of the Internet to disseminate hazards information) has been retired and the information has been moved to the EERC Web site above. Now included on that home page are links to all EERC data bases searchable on the Web, which cover: EERC's Earthquake Engineering Abstracts and Engineering Reports, computer software for earthquake engineering, protective systems, and training resources. There is also a new section called "Lessons from Loma Prieta," which includes papers on important engineering effects of the Loma Prieta earthquake, selected images, and the Loma Prieta data archive.

<http://www.eeri.org>

The Earthquake Engineering Research Institute (EERI) continues to grow impressively with the addition of brief clips, which can be viewed on-line, from the EERI videos on the Kobe, Northridge, Loma Prieta, and Armenia earthquakes. Samples from other EERI publications--including slide sets, CD-ROMs, and other resources--are also available.

<http://www.usgs.gov/themes/>

<http://www.usgs.gov/themes/hazard.html>

The U.S. Geological Survey (USGS) has identified four principal theme areas--Hazards, Natural Resources, Environment, and Information Management--in which USGS earth science information contributes to public policy, and the USGS "Themes" Web site reflects this taxonomy. After a brief introduction to USGS activities regarding hazards, this section offers information on earthquakes, floods, landslides, coastal storms and tsunamis, volcanoes, and geomagnetism, as well as hazard-related fact sheets and other information.

<http://magma.mines.edu/students/j/jcrouse/reactive/reactive.html>

Approximately half of the homes built in the United States today are constructed on reactive soils--soils that, when exposed to certain physical or geological conditions, undergo changes in shape and structure that can lead to serious foundation and structural damage to buildings. Reactive soils cause an estimated \$6-\$11 billion damage annually, making them by far the most expensive of any geological hazard. This site, created by a team of five students from the Colorado School of Mines with help from advisors and a private engineering consultant, is designed to assist homebuilders, homebuyers, and homeowners in identifying the most common forms of reactive soils. It describes the hazards these soils can pose to various structures and offers feasible mitigation techniques to undertake before or after construction.

<http://www.dir.ucar.edu/esig/socasp/weather1/>

In April of this year, the Environmental and Societal Impacts Group (ESIG) of the National Center for Atmospheric Research, along with several other public and private institutions, sponsored a "Workshop on the Social and Economic Impacts of Weather." The proceedings, now available on-line at the URL above, include an executive summary; numerous papers on specific weather-related hazards, such as extreme temperatures, hail, tornadoes, lightning, winter storms, floods, hurricanes, and debris flows; and papers addressing broader issues, such as the impacts of weather on health and the perils of weather prediction generally.

<http://www.disasters.org/emgold>

The Emergency Management Gold Web site was created by David Crews, a Certified Emergency Manager, to serve other front-line emergency management professionals in all aspects of their work. The site contains a Virtual Library page with numerous links to other resources on the Net; a What's New section to help users easily locate new information; several papers on emergency management by Crews; a section of frequently asked questions (FAQs) about emergency management, the site, the Internet, etc.; links to other sites dealing with natural and technological risks; and lists of additional resources, state emergency management agencies, and other useful URLs.

http://www.virginia.edu/~brmrg/sar_contacts

This SAR [Search and Rescue] Contacts Page lists over 118 search and rescue organizations in approximately 40 U.S. states and numerous other countries. The site authors note that SAR teams can be excellent resources in times of disaster, especially if they are incorporated into plans ahead of time. These teams are often very familiar with their community, have access to communications gear, are trained for medical aid, and want to be of assistance during an emergency. Although the principal purpose of this site is to put volunteers in contact with a local team, it can definitely help emergency

coordinators learn about the unique services offered in their area. The site includes a map of the U.S. and U.S. territories, and a person can click on any location to determine the local SAR teams active in that area.

<http://www.district.north-van.bc.ca/admin/depart/fire/ffsearch/mainmenu.cfm>

This Emergency Services Registry and Search Site provides an index of emergency service resources and personnel. The owners invite all interested emergency management professionals to browse the site and register so that it can become a comprehensive data base of colleagues and resources worldwide.

<http://www.disasterplan.com>

This site provides original information as well as numerous links to other sites that address disaster contingency and response planning. Some of the links include a sample business contingency plan from MIT, sample earthquake and tsunami response plans, an article on developing a recovery plan, and another article entitled "Crisis Communications Strategic Planning."

<http://www.mapquest.com>

Those of you who are map lovers (as are we), should definitely look at this site. Starting with the entire globe, you can begin zooming in until you actually identify, for example, a good Italian restaurant and its street location in Missoula, Montana (there is one!). Then, if you want, the program will show you the best route to get there (whether you are starting in Miami, Florida, or Elko, Nevada). Many other capabilities are available.

Managing Disasters in the Americas

Who's Who on the Net

Anyone concerned about disasters in Latin America, should take a look at <http://www.ops.org.ni/desastres-ni/>

the redesigned Web site entitled "Natural Disasters in Nicaragua." The site is maintained by the Pan American Health Organization (PAHO) country office that has served as the administrator for *desastres-ca@ops.org.ni*, a predominantly Spanish-language e-mail discussion group on general topics of interest to the disaster community. A new search engine on the Web site now allows anyone to find names, organizations, and e-mail addresses of all discussion group members. The site also offers information on disasters in Nicaragua and can serve as a model for countries interested in developing similar Web pages. For more information about this venture, or to subscribe to the discussion list, contact *Denis Rodriguez*; e-mail: desastre@ops.org.ni.

[Adapted from *Disasters--Preparedness and Mitigation in the Americas*, a PAHO newsletter]

Speaking of Latin American Disaster Discussion Groups

Based on experience with the discussion list mentioned above and other networking ventures, the Pan American Health Organization has recognized that e-mail discussion represents one of the most efficient ways to link disaster professionals. Therefore the organization is establishing another discussion group for South America. Anyone (not only South Americans) interested in joining this predominantly Spanish-speaking group should send an e-mail message to pedecu@ecnet.ec, giving their name, affiliation, mailing address, and a brief description of their disaster-related responsibilities. Subscribers will receive an e-mail message containing instructions on how to circulate messages and participate in discussions.

[Adapted from *Disasters--Preparedness and Mitigation in the Americas*]

A New E-Mail List

DisastMH -- Disaster Mental Health Professionals On-line

The DisastMH e-mail discussion forum was established as an ongoing conference for disaster mental health (DMH) professionals. Through DisastMH, colleagues can discuss mental health issues in disaster preparedness, response, and recovery. Topics could include but are not limited to:

- Planning, development, and operations in DMH
- Use of volunteers
- DMH and coordination with agencies, schools, government, etc.
- Construction of protocols for disaster response
- Handbook preparation and records maintenance
- Training
- Risk management (referral systems, liability, safety, etc.)
- Ethics
- Media and public relations
- Debriefings and interventions for disaster response
- Communication trees
- DMH leadership at local, state, national levels
- Clinical issues for disaster response
- Clearinghouse for material available on disaster psychology
- Peer consulting for disaster mental health services
- Communication regarding DMH during an ongoing disaster.

Mental health professionals and associated professionals in disaster psychology are welcome to join this forum. To subscribe, send the following message to listserv@maelstrom.stjohns.edu:

subscribe DisastMH [firstname] [lastname]

For additional information, contact the list owner/moderator, *Denruth Lougeay*, via e-mail at deneelou@znet.com.



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A Survey

Emergency Management and Internet Applications

Disaster researchers Eve Grunfest and Marc Weber of the University of Colorado-Colorado Springs are studying how the Internet may be influencing emergency management and would like specific information on the nature and extent of Internet use by professionals in the discipline. They ask that emergency management professionals take a few moments to examine and fill out their survey on the World Wide Web:

<http://www.uccs.edu/~ecg/haz-sur.htm>

Persons without access to the World Wide Web can request the survey by e-mailing mweber@mail.uccs.edu.



Water--Too Much . . . Too Little

The Leading Cause of Natural Disasters

World Disaster Reduction Day -- October 8, 1997

Without water, life is not possible. Yet, too much water is dangerous and too little water can be devastating. Indeed these two extremes are the most common feature of natural disasters. Coastal and river floods, for example, are the most frequent natural disasters and are increasing more rapidly than any other disasters. At the same time, drought still affects more people than any other disaster. Hence the International Decade for Natural Hazards Reduction (IDNDR) World Disaster Reduction Day 1997 is dedicated to examining the relationships between water, disasters, and development, as well as demonstrating the steps that individuals, communities, and nations can take to reduce hardship due to floods and drought.

Some people believe that natural disasters, including floods, cyclones, and drought, are "acts of God," but the recent steep rise in losses due to natural disasters suggests a more worldly cause. Economic damage from natural disasters has quadrupled in the last 30 years, and the 1995 costs were at least

double those of 1994. Humankind is clearly contributing to the rise in disasters. Floods, for example, are not uniquely determined by storm tides, heavy rains, or melting snows. The increase in floods worldwide can also be seen as a result of environmentally damaging development practices or overdevelopment in coastal zones and along river corridors, where human habitation is obviously dangerous. In addition, widespread development has simply decreased the amount of land and wetland available to absorb precipitation and runoff.

Similarly, drought is clearly not merely the result of too little rain. Overgrazing, deforestation, poor water and soil management all contribute to drought, as do social and economic circumstances that circumscribe and define the lives of people in drought-prone areas.

Just as clearly, reducing the social and economic impacts of floods and drought is possible if disaster mitigation is linked to development. Vulnerability to hazards is the result of human decisions and policies that could have been made differently, that can be altered, and that can be approached differently in the future.

To support this end, the United Nations IDNDR Secretariat is undertaking several activities and offering much information to encourage disaster mitigation at all levels. They are preparing a Second IDNDR Internet Conference to be held September 15-October 15 (details will be available in the next issue of the *Observer*); posters and guidelines for the creation of local exhibits and materials; information for inclusion in national media press kits that emphasizes feasible, collective measures for risk management; and guidelines, materials, and information for developing local events (conferences, roundtables, etc.). For more information about World Disaster Reduction Day 1997 and the resources available from the U. N., contact the *IDNDR Secretariat, United Nations Department of Humanitarian Affairs, Palais des Nations, CH-1211 Geneva 10, Switzerland; tel: (41-22) 798 68 94; fax: (41-22) 733 86 95; e-mail: idndr@dha.unicc.org*.

RISK & Society: A Schools Project

Too often, a single sectoral approach to risk decisions has prevented us from developing a complete picture or realizing our full potential to avert risk. Only by working toward solutions that acknowledge the interests of all segments of society can we realize a sustainable culture; there is a real place for a multidisciplinary, multisectoral, multigenerational approach to the reduction of unacceptable risk.

RISK & Society: A Schools Project is a multilateral research, education, awareness, and communication project currently moving into its second year. Endorsed by the Canadian Committee for the International Decade for Natural Disaster Reduction (IDNDR), this initiative has numerous partners and supporters from all levels of government, NGOs, associations, and the private sector. The project is design to promote the objectives of the Decade and create a robust multidisciplinary ethic by strengthening the links among research, policy, mitigation, and practice concerning disasters.

The project was launched in schools in Aylmer, Quebec, and Perth-Andover, New Brunswick, where research teams studied young people who had lived through natural disasters, their views on their own place in nature, and their perceived responsibilities for preparing for and responding to disaster. Subsequently, a multidisciplinary, intergenerational National Roundtable on Risk was held to discuss directions the project should take and to examine disaster priorities in the contexts of Canada's social, economic, and environmental conditions.

One of the results of that meeting was the development of a "RISK & Society Youth Survey" that was used to obtain information on what influences young Canadians in their risk perceptions; who they trust; how they pay attention to the weather, environment, and geography around them; and what role they believe the government has in their safety. This information is now being used to develop a curriculum based on the risk interpretations of youth.

A communication strategy has also been developed for this project that targets special groups with an interest in risk policy, research, mitigation, and reduction, as well as higher levels of the education community. Information about the project will be disseminated through the Internet via various news groups, listserves, and networks, such as Canada's School Net and UNICEF's Young Leaders.

RISK & Society projects planned for the near future include:

- catalytic projects, including a roundtable on risk, research into the recent floods in western Canada, and youth risk retreats;
- curriculum development, including an educators conference;
- policy research and practice evaluations, including the use of new technologies;
- goal setting for research related to public policy and research;
- intergenerational consulting; and
- network development.

For more information about the RISK & Society Schools Project, contact *Kate White or Venus Victor, Black & White Communications, Inc.*; (613) 730-5804; fax: (613) 730-0197; e-mail: black&white@ottawa.com or vvictor@magi.com.

The Leadership Coalition for Global Business Recovery

In 1996, IBM Global Services joined with the United Nations, the International Federation of Red Cross and Red Crescent Societies, and others to improve disaster preparation, prevention, and recovery worldwide. The global task force that resulted--the Leadership Coalition for Global Business Recovery--defined its principle goal as securing public- and private-sector assistance in preparing for, mitigating, and recovering from natural and human-caused disasters.

The objectives of the Leadership Coalition are to encourage leaders to prepare for disasters; develop global guidelines, standards, and best practices for disaster recovery; and encourage public- and private-sector cooperation and strengthen partnerships in disaster management. The group is currently working to establish standards for risk management, response, and recovery; disseminate business protection guidelines; develop and implement a communications strategy; and enhance formal disaster networks.

Member organizations include the Business Council for the United Nations, the United Nations Secretariat for the International Decade for Natural Disaster Reduction, IBM Global Services, Civil Service Commissions of the Philippines and India; Deloitte & Touche; the Office of the Mayor of Mexico City; the Office of the Mayor of New York City, the International Federation of Red Cross and Red Crescent Societies; AT&T; and Texas Instruments Corporation.

For further information on the Leadership Coalition for Global Business Recovery, contact *Randy Johnson, IBM Global Services, 611 12th Avenue, Union Grove, WI 53182; (414) 878-9342; e-mail: rhjohns@us.ibm.com*.

Growing Smart at the State Level

As part of its Growing Smart planning statute reform project (see the *Observer*, Vol. XXI, No. 2, p. 13), the American Planning Association (APA) has prepared summaries of the planning statutes of all 50 states. Researched by law students at the Illinois Institute of Technology Chicago-Kent School of Law in Chicago and the Washington University School of Law in St. Louis, the summaries were prepared to assist governments and other interested parties in reforming state planning statutes and to provide citizens with information on the planning laws of their states.

Each summary includes an overview and describes the legal authority and implementing agencies involved in planning; state development; regional and interstate planning authority; special purpose regional agencies; regional development initiatives; local planning structures and authorities; local development programs; specialized adjudicatory procedures; state environmental policy acts; financing requirements, including impact fees; and specialized taxation and tax relief devices.

The Federal Emergency Management Agency (FEMA) is participating in this effort to ensure that appropriate authorities exist within state law to provide the tools necessary for state and local governments to identify and manage their unique hazards and risks. The Growing Smart project has produced a Phase 1 Interim Edition *Legislative Guidebook* that provides legislative models for planning professionals to use when considering land-use and development decisions. It contains chapters on initiating planning statute reform, purposes and grant of power, definitions, state planning, state land-use control, regional planning, and a partially completed chapter on tax equity devices and tax relief programs. Other chapters are forthcoming.

Copies of the statutes and the *Legislative Guidebook* are available from the Growing Smart Web site: <http://www.planning.org/plnginfo/growsmar/gindex.html>. For more information on the Growing Smart project, contact the APA, 122 South Michigan Avenue, Suite 1600, Chicago IL 60657; (312) 431-9100; fax: (312) 431-9985; e-mail: research@planning.org.

California Maps Earthquake Hazards

A critical tool for all levels of government in reducing the impacts of natural hazards is risk mapping, and in April, California began using this tool to safeguard residents from improper development in areas of seismic hazard. According to the California Department of Conservation, the official maps, mandated by the California Seismic Hazards Act of 1990 (Public Resources Code 2690-2699.6) and produced by the Seismic Hazard Zoning Mapping Program, are to be used by cities and counties to regulate development in seismically hazardous areas. The first five of 38 official maps were issued on April 8, 1997. The maps will assist building departments in requiring developers to conduct geotechnical studies in hazardous areas and to submit plans for reducing those hazards when they build.

In fact, local governments can withhold development permits unless developers meet the mitigation requirements. However, most single-family homes built by individuals are exempt from the requirements, and the state has been given no authority to coerce local officials into implementing uniform standards; nevertheless, the state is publishing guidelines for these standards.

Although in the past local governments and other parties created their own maps for special purposes, these new maps differ in three key aspects:

- the maps were generated with the most up-to-date geotechnical information and technology available,
- the state used a standardized method of hazard assessment that was consistent for the entire state, and
- the maps are drawn at a more detailed scale than is commonly available.

The five maps that are currently available show approximately 60-square-mile areas of possible quake-induced liquefaction and landslides in the Simi Valley, parts of Orange County from Anaheim to Newport Beach, and a large section of San Francisco (see the *Observer*, Vol. XXI, No. 5, p. 9). Maps of most other urban areas of Los Angeles and Orange counties and part of Ventura County will be released by mid-1998.

The maps can be purchased from California county building departments or can be viewed and purchased through the Internet: <http://www.consrv.ca.gov/dmg/shezp>. For more information on the

Seismic Hazard Zone Mapping Program, contact the *California Department of Conservation, Division of Mines and Geology, 801 K Street, MS 12-31, Sacramento, CA 95814; (916) 323-1886.*

A New Twist in Disaster Recovery

Much of America's cultural heritage is in the care of museums, libraries, art institutions, and other organizations, and protecting these valuable resources can be difficult under the best of conditions. In a disaster, collections that have been carefully built over many years can be damaged, endangering national treasures.

The National Task Force on Emergency Response, a partnership of 29 government agencies and national service agencies, is sponsored by the Federal Emergency Management Agency (FEMA), the National Endowment for the Humanities (NEH), the Getty Conservation Institute (GCI), and the National Institute for the Conservation of Cultural Property (NIC). This group recently created a useful tool to guide caretakers in protecting and salvaging their collections--the *Emergency Response and Salvage Wheel* (1997)--which outlines steps to take in preparing for, responding to, and recovering from disasters. It discusses creating disaster plans, working with emergency management agencies in the community, and obtaining assistance from national conservation organizations.

The wheel also provides information on responding to a disaster warning; taking protective action during a disaster; initiating recovery activities away from the site; stabilizing a building and its environment; handling documentation; retrieving and protecting artifacts; assessing damage; prioritizing salvage activities; revitalizing historic buildings; and restoring photographs, books and papers, electronic records, textiles, furniture, ceramic, stone, metal, organic materials, natural history specimens, and framed artwork. The wheel can be purchased for \$9.95 for single copies, and 10 or more copies can be purchased for \$8.45 each. Nonprofit and government organizations can purchase the wheel for \$5.95 each, or for \$4.95 each for 10 or more copies. For orders outside North America, add \$1.75 per wheel for international air postage.

To obtain an *Emergency Response and Salvage Wheel*, contact the *National Task Force on Emergency Response, 3299 K Street, N.W., Suite 602, Washington, DC 20007; (202) 625-1495; fax: (202) 625-1485.*

Educational Opportunities in Disaster Management

CSEM Offers On-Line Masters Program

An accredited Master of Science in Management, concentrating on crisis and emergency management, is now available on-line. The Center for the Study of Emergency Management (CSEM) in San Luis Obispo, California, (formerly the Pacific Emergency Management Center) administers this program, in cooperation with the California Specialized Training Institute (CSTI), the National Interagency Counterdrug Institute (NICI), and Hope International University (formerly Pacific Christian College). Some courses require attendance at one-week seminars in San Luis Obispo. The degree program, as well as certificates in Emergency Management and Crisis Communications, are open to anyone internationally with access to e-mail. The degree is accredited by the Western Association of Schools and Colleges (WASC) as part of Hope's international development program. More information on this new program is available via the World Wide Web at <http://www.simeon.org/msm.html>; interested persons can also contact *Wes Balda, Center for the Study of Emergency Management, 1241 Johnson Avenue, Department 160, San Luis Obispo, CA 93401; (805) 782-6787; fax: (805) 782-6730; e-mail: wbalda@simeon.org.*

OSU Offers Master's of Political Science with Fire/Emergency Emphasis

Oklahoma State University offers a Masters of Political Science degree with emphasis in fire and emergency services administration. The program is designed to provide a sound educational foundation for anyone serving, or desiring to serve, as a manager or administrator in fire protection or emergency services. For details, contact *Michael Hirlinger, Graduate Director, OSU, Department of Political Science, 516 Math Sciences, Stillwater OK 74078; (405) 744-5574; e-mail: mhirlin@okway.okstate.edu.*

QC Offers Undergraduate EM Program

Quincy College, Quincy, Massachusetts, recently developed a program in emergency management that has now been approved by its college curriculum committee. The school will begin accepting students into the program in September 1997. The program will lead to an Associate of Science Degree with a concentration in emergency management and will include courses in fire science and emergency medical service. For more information on this new academic program, contact *David T. Williams, Quincy College, 34 Coddington Street, Quincy, MA 02169; (617) 984-1600.*

EMI Seeks ICS Curricula

The Federal Emergency Management Agency's Emergency Management Institute (FEMA/EMI), in cooperation with the National Emergency Management Association (NEMA), is developing additional courses for the EMI Incident Command System (ICS) curriculum. With more and more state and local agencies adopting ICS as a standard, there is a growing need for training in the system. Because several state and local agencies have already developed ICS courses, EMI and NEMA are asking those agencies to send copies of any noncopyrighted ICS training materials to EMI to aid the development of additional courses.

Anyone with materials they are willing to share should send them to the EMI ICS course manager, *Stephen M. Borth, National Emergency Training Center, Emergency Management Institute, 16825 South Seton Avenue, Emmitsburg, MD 21727*. Questions about the ICS curriculum or this project, can be directed to Borth at (301) 447-1249, or e-mail: steve.borth@fema.gov.

EERI Announces Hazards Reduction Fellowship

Under a cooperative agreement established with the Federal Emergency Management Agency, the Earthquake Engineering Research Institute (EERI) is offering a professional fellowship for 1998 that will enable a practicing professional to gain greater skills and broader expertise in earthquake hazards reduction. The fellowship is designed to bring together an experienced practitioner with professionals conducting significant research and provides a stipend of \$30,000, commencing January 1998, to cover tuition, fees, relocation, and living expenses for a six-month period. The fellowship is not intended to fund work toward a degree. The deadline for applying is September 5, 1997. For more information and an application form, contact *EERI, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeri@eeri.org; WWW: <http://www.eeri.org>*.

USGS Establishes Liaison with Insurance Industry

The Insurance Institute for Property Loss Reduction (IIPLR) has formed a private-public partnership with the U.S. Geological Survey (USGS) to develop better ways to protect people and property from earthquakes. Under the agreement, IIPLR and the USGS will work together to improve earthquake loss computer modeling, develop earthquake education programs, and sponsor research. Regarding this partnership, USGS Chief Geologist Patrick Leahy said, "Over the last few years, annual losses from natural disasters have cost the U.S. billions of dollars each year. This new agreement will enable us to cut this 'disaster tax' on all citizens." On its part, IIPLR will assist in identifying the needs of insurers for ground-shaking maps and historic and current earthquake information and will distribute earthquake information developed by the USGS to insurers and the general public. The agencies' overall goal is to ensure that earthquake hazard mitigation becomes a salient public goal. For more information on this partnership, contact *IIPLR, 73 Tremont Street, Boston, MA 02108-3910; (617) 722-0200; fax: (617) 722-0202*.

The U.N. Global Programme for the Integration of Public Administration and the Science of Disasters

Established in January 1996 by the United Nations Department for Development Support and Management Services (UN/DDSMS), the U.N. Global Programme for the Integration of Public

Administration and the Science of Disasters is an effort to strengthen the capacity of communities to assess and mitigate the risk of natural disasters by reinforcing public administration systems that provide the backbone for community preparedness and disaster mitigation. To show how public administrators have adapted scientific information to improve disaster preparedness, the program recently issued *A Best Practice Case of Earthquake Preparedness in China*, a paper detailing the efforts of public administrators of Qinglong County, China--the site of the Great Tangshan Earthquake of 1976 that killed at least a quarter of a million people. To obtain copies of this paper or more information about the U.N. Global Programme for the Integration of Public Administration and the Science of Disasters, contact the *Division for Governance, Public Administration and Finance, UN/DDSMS, DC1-986, New York, NY 10017; (212) 963-8377; fax: (212) 963-2916; e-mail: col@un.org*.

Introducing CRID . . .

PAHO/IDNDR Disaster Documentation Center Expanding

For several years, the Pan American Health Organization (PAHO) Regional Disaster Documentation Center in San José, Costa Rica, has served as one of the western hemisphere's principal repositories of information, in both Spanish and English, on hazard and disaster management. In addition, in recent years, the center has doubled as a regional center for the United Nation's International Decade for Natural Disaster Reduction (IDNDR).

The center is now expanding even further; plans are underway to make the center a multiagency project. Several donor agencies and international organizations recently agreed to establish a partnership to transform the center into a multidisciplinary Regional Disaster Information Center (CRID). Already participating in this project are PAHO, the U.N. Department of Humanitarian Affairs/IDNDR, the International Federation of Red Cross and Red Crescent Societies, Doctors without Borders, the Center for the Prevention of Natural Disasters in Central America (CENAPRED), the National Emergency Commission of Costa Rica, and LA RED--the Network of Disaster Prevention Social Studies.

Under their plan, the member organizations will create a cooperative regional disaster information system with CRID serving as the coordinating center. To learn more about this project, contact the *PAHO Regional Disaster Information Center, Apartado 3745-1000, San José, Costa Rica; fax: (506) 231-5973; e-mail: cddcor@nx.netsalud.sa.cr*; or the *Editor, Disasters--Preparedness and Mitigation in the Americas, PAHO, 525 Twenty-third Street, N.W., Washington, DC 20037-2895; e-mail: disaster@paho.org*.

[Adapted from *Disasters--Preparedness and Mitigation in the Americas*, a newsletter of the Pan American Health Organization]

Introducing REC . . .

Rescue Engineering Council Formed

The Rescue Engineering Council (REC) was recently formed to recruit engineers and construction personnel to train and prepare for responding to disasters. (Many of the engineers involved in this effort were members of search and rescue teams established by the Federal Emergency Management Agency around the country to provide hands-on expertise during disaster response and recovery.) REC recently held its first meeting, and additional information is available from *Dean Tills, REC, P.O. Box 290, Germantown, MD 20875; e-mail: Rescueeng@aol.com*.

Upcoming on EENET

The Federal Emergency Management Agency's Emergency Education Network recently released the following schedule of upcoming broadcasts:

<i>Date/Time [Eastern Time]</i>	<i>Title</i>
July 31, 1:00-4:00 p.m.	Emergency Food and Shelter Program (EFSP) Training Workshop
August 7, 1:00-4:30 p.m.	Consequences of Terrorism: Emergency Response to Chemical Agents-- Medical Staff
September 11, 1:00-4:30 p.m.	Consequences of Terrorism: Emergency Response to Biological Agents-- Medical Staff
October 2, 1:00-5:00 p.m.	Emergency Response to Terrorist Incidents

These broadcasts are in addition to regularly scheduled **National Alert** broadcasts that occur on the third Wednesday of each month, 2:00-3:30 p.m. (see the *Observer*, Vol XXI, No 5, p. 18). For more information, including satellite broadcast specifics, or to be placed on the EENET mailing list, call (800) 527-4893 or (301) 447-1068; fax: (301) 447-1363.

Washington Update

FEMA Looks at the Costs and Benefits of Mitigation

A long-standing question for those who work to reduce the impacts of natural hazards is whether or not mitigation is worth the time and expense. Specifically, are the costs required to reduce or eliminate the impacts of natural hazards substantially less than the benefits they provide? In an effort to answer this question, FEMA recently published a *Report on Costs and Benefits of Natural Hazard Mitigation* (1997, 60 pp., free).

The report reviews the benefits that can accrue to different segments of society from mitigative measures, the costs that can be incurred by undertaking mitigation activities, and the analyses needed to evaluate the cost-effectiveness of these measures. In addition, the report reviews the tools of mitigation and how they are implemented.

This document contains 16 case studies that were implemented in various locations across the U.S. and demonstrates their efficiency against several types of natural hazards, as well as the effectiveness of other mitigation tools. The studies include seismic retrofitting of lifelines in Tennessee, reinforcement of highway bridges in California, historic preservation and community development in Wisconsin, mitigation in hospitals in California, reduction of business interruption costs in Iowa, seismic retrofitting in Los Angeles public schools, wind shutter protection in Florida, acquisition and relocation of floodplain structures in Missouri, regulation of unreinforced masonry buildings in Los Angeles, land-use and building regulation along the coasts of Florida, land-use and building requirements in floodplains, and seismic retrofitting to avoid business disruption. The cases include both public- and private-sector initiatives.

Copies of the report are free and can be ordered from the *FEMA Distribution Center, 8231 Stayton Drive, Jessup, MD 20794; (800) 480-2520 or (202) 646-3484; fax: (301) 497-6378.*

NAPA Looks at Disasters (Again)

In 1993, the National Academy for Public Administration (NAPA) examined the federal government's shared system of powers in responding to major disasters, such as Hurricane Andrew in 1992. In that report, *Coping with Catastrophe* (see the *Observer*, Vol. XVII, No. 5, p. 14), NAPA concluded that National Guard units, the Department of Defense, and state governors "must devote more attention to the need for a more extensive role for state guards in emergency management, particularly disaster response."

Recently, NAPA released a report that examines this issue: *The Role of the National Guard in Emergency Preparedness and Response* (1997, 135 pp., \$20.00).

The report notes that public expectations for rapid intergovernmental response to natural disasters continue to rise, despite no corresponding increase in federal funds to meet these expectations. Given this quandary, Congress asked NAPA to determine how the National Guard could further its dual mission of protecting the nation and serving states in need. Specifically, NAPA was charged with recommending ways for the Guard to enhance its disaster relief capabilities without compromising its role within the nation's "total force structure."

The NAPA panel found that the National Guard is affected by several factors, including the downsizing of all U.S. armed forces, the emergence of a highly professional civil emergency management field, the public's growing expectations, and the immediacy of modern communications, which tend to magnify crises. In its report, the panel concludes that the Guard's greatest potential for improving disaster response lies at the state and local levels.

The panel also recommends that:

- FEMA integrate National Guard resources into state emergency plans when developing Performance Partnership Agreements;
- FEMA promote the use by states of interstate compact resources in emergencies and disasters that are not of the magnitude of a presidential disaster declaration; and
- a joint training task force be formed to foster more training for Guard officers in emergency management, a short course or briefings for senior officials on procedural issues be created, and joint exercises and simulations be developed.

Copies of *The Role of the National Guard in Emergency Response and Preparedness* can be ordered from NAPA Publications, P.O. Box 351, Annapolis Junction, MD 20701; (301) 617-7801; fax: (301) 953-2838; WWW: <http://relm.lmi.org/napa>.

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Conferences And Training

These are the most recent conference announcements received by the Hazards Center. A comprehensive list of hazard/disaster meetings is posted on our World Wide Web site:

<http://www.colorado.edu/hazards/conf.html>

Society for Risk Analysis (SRA) Forum: "Risk of Extreme and Rare Events." Washington, D.C.: August 25-26, 1997. This forum will focus on rare and extreme events within the overall risk-based decision-making process, where trade-offs among costs, benefits, and risks can be generated and evaluated. Participants will undertake actual analyses of problems in natural and human-caused hazard mitigation. For details, contact SRA, 1313 Dolley Madison Boulevard, Suite 402, McLean, VA 22101; (703) 790-1745; fax: (703) 790-2672; e-mail: sraburkmgmt@aol.com; WWW: <http://www.sra.org>.

Using Geographic Information Systems (GIS) for Disaster Management. Offered by: University of Wisconsin-Madison, Department of Engineering Professional Development. Madison, Wisconsin: September 3-5, 1997. This course will present innovative GIS approaches to emergency management. Topics include: basics of GIS, international and domestic emergency management issues, GIS applications in emergency management, Global Positioning System (GPS) technology, and hands-on exercises with GIS. For more information, contact Katie Peterson, Department of Engineering Professional Development, University of Wisconsin-Madison, 432 North Lake Street, Madison, WI 53706; (800) 462-0876; fax: (602) 263-3160; e-mail: custserv@epd.engr.wisc.edu; WWW: <http://epdwww.engr.wisc.edu/>.

Sixth Regional International Decade for Natural Disaster Reduction (IDNDR) Disaster Management Meeting. Sponsors: Australian IDNDR Co-ordination Committee and others. Brisbane, Australia: September 8-12, 1997. This regional IDNDR meeting will be held in conjunction with the South Pacific Disaster Reduction Programme (SPDRP) Tripartite Review and the European Union (EU) "Upgrading Tropical Cyclone Warning Systems" Project meetings. For more information, contact Emergency Management Australia; tel: 61 +6 266 5408; fax: 61 +6 266 5029; e-mail: ema@ema.gov.au; or United

Nations Department of Humanitarian Affairs--SPPO; tel: (679) 303239; fax: (679) 304942; e-mail: undha@is.com.fj.

National Coordinating Council on Emergency Management (NCCEM) 1997 Annual Conference and Exhibit. Tempe, Arizona: September 13-16, 1997. The NCCEM annual meeting is one of the premier events in the United States through which emergency managers from all levels of government and the private sector learn of the latest issues and innovations in emergency management and discuss these matters with peers. For a complete conference brochure, contact NCCEM, 111 Park Place, Falls Church, VA 22046-4513; (703) 538-1795; fax: (703) 241-5603; e-mail: NCCEM@aol.com.

Second World Assembly of Nongovernmental Organizations (NGOs) for Disaster Reduction. Sponsor: Joint Assistance Centre of India and others. Phoenix, Arizona: September 13-17, 1997. Held in conjunction with the National Coordinating Council on Emergency Management Annual Conference (see above), this meeting will bring together representatives of nongovernmental organizations involved in disaster management from around the world to discuss common issues and goals, to determine new ways to coordinate their efforts, and to learn about the latest methods for preparing for and responding to disasters. For details, contact the Joint Assistance Center, G-17/3, Qutab Enclave-1, Gurgaon-122002, Haryana, India; tel: 0091-124-352141, or 0091-124-353833; fax: 0091-124-351308; e-mail: nkjain@jac.unv.ernet.in; or Krishna Gopalan, Secretariat WANDR II, P.O. Box 14481, Santa Rosa, CA 95402; (707) 573-1740; fax: (707) 528-8917; e-mail: jacusa@juno.com.

1997 International Public Works Congress and Exposition. Sponsor: American Public Works Association (APWA). Minneapolis, Minnesota: September 13-17, 1997. The APWA congress includes an entire track on emergency management, with sessions on "Natural Disasters: The Public Works Role," "Planning Effective Special Events," and "GIS in Emergency Management." For details, contact APWA, 2345 Grand Boulevard, Suite #500, Kansas City, MO 64108-2625; (816) 472-6100; fax: (816) 472-1610; WWW: <http://www.pubworks.org>.

Second Colorado Wildland Fire Conference. Sponsors: Colorado State Forest Service and others. Lakewood, Colorado: September 26-28, 1997. Open to anyone concerned about wildland fire, the Colorado Wildland Fire Conference will focus on planning, mitigation, and operational issues facing agencies dealing with this hazard. The first two days will be devoted to conference presentations; the final day will involve field exercises. For a conference brochure, contact the Colorado Wildland Fire Conference, P.O. Box 3733, Evergreen, CO 80437-3733; (303) 674-3145; fax: (303) 674-8701.

Australian Earthquake Engineering Society (AEES) 1997 Conference. Brisbane, Queensland, Australia: October 2-3, 1997. The theme for this year's AEES meeting is "Earthquakes in Australian Cities--Can We Ignore the Risks?" This conference is intended not only for engineers, but also for local government planners, insurance industry representatives, and emergency services personnel. Presentations will cover all aspects of seismic hazards in Australia. Additional information is available from Barbara Butler, P. O. Box 829, Parkville, Victoria 3052, Australia; tel: +61 7 9344 6712; fax: +61 7 9348 1524; e-mail: Barbara_Butler@muwayf.unimelb.edu.au; WWW: <http://QUAKES.earthsciences.uq.edu.au/AEES.html>.

Second National Conference of the Australian Risk Engineering Society and Industry Exhibition. Canberra, Australia: October 2-3, 1997. The theme of this conference will be "Aligning Risk Perception," and it will include five sessions on "Communicating Technological Risk," "Communicating Risks to the Community," "Individual and Group Perceptions of Risk," "Risk Communication in Management Decisions," and "The Role of Mass Media in Controlling Risk Perceptions." Further information and a conference brochure can be obtained from *National Convention and Management Services, P.O. Box 3683, Weston, ACT 2611, Australia; tel: +61 6 288 2884; fax: +61 6 287 1937; e-mail: Conference@ncms.com.au; WWW: <http://www.ieaust.org.au/society.htm>, or <http://www.bit.net.au/ncms/>.*

69th Annual Meeting of the Eastern Section of the Seismological Society of America. Ottawa, Canada: October 5-8, 1997. This meeting will feature special theme sessions on seismic hazard assessment in intraplate North America, earthquakes in eastern Canada, seismicity related to industrial activity, the role of seismologists in earthquake emergencies, and other topics. Papers dealing with all aspects of seismicity and earthquakes--particularly in eastern North America--are invited. Abstracts are due August 29. For more information, contact *G. Atkinson, Carleton University, Department of Earth Sciences, 304 Tory Building, 1125 Colonel By Drive, Ottawa, Canada K1S 5B6; (613) 520-2600, ext. 1399; e-mail: esssa@ccs.carleton.ca; WWW: <http://www.seismo.nrcan.gc.ca/esssa97>.*

Second Annual Conference for Crises and Disasters Management. Sponsor: Crisis Research Unit, Ain Shams University. Cairo, Egypt: October 25-26, 1997. The major topics addressed at this conference will be crises faced by different kinds of organizations and communities; case studies from different environments; the economic aspects of crises and disasters; psychological, social, and environmental impacts; the role of communications and media in crisis/disaster management; and the role of decision support systems and information systems. The deadline for submission of papers for presentation is July 31. Persons interested in participating should contact the *Crisis Research Unit, Faculty of Commerce, Ain Shams University, Cairo, Egypt; tel: (202) 2619509; fax: (202) 4025905.*

PPR '97--Prevention, Preparedness, and Response to Major Industrial Accidents. Presented by: Major Industrial Accidents Council of Canada (MIACC). Toronto, Ontario, Canada: October 28-31, 1997. The theme of PPR '97 is "Balancing Technology and People," reflecting the conference goal of examining how technological advances have created new hazards and also created new technologies to deal with those risks. The meeting will include presentations on process safety and loss management; preparedness measures; response and recovery; human factors in all aspects of accident management; marine emergency response issues; financial concerns; communications and information; medical, psychological, and social aspects of major incidents; and legislative, code, and other legal issues. For additional information, contact *Linda Huskins, Manager of Events, MIACC, 265 Carling Avenue, Suite 600, Ottawa, Ontario, Canada K1S 2E1; (613) 232-4435; fax: (613) 232-4915; e-mail: miacc@globalx.net; WWW: <http://hoshi.cic.sfu.ca/miacc/>.*

Western States Seismic Policy Council (WSSPC) Tsunami Hazard Mitigation Symposium. Victoria,

British Columbia, Canada: November 4, 1997. This day-long symposium (held in conjunction with the WSSPC 1997 Annual Conference, November 4-7) will include sessions on warning and guidance, the Tsunami Hazard Mitigation Implementation Plan, and local mitigation efforts. Information about both the symposium and the WSSPC conference is available from WSSPC, 121 Second Street, Fourth Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: wsspc@wsspc.org; WWW: <http://www.wsspc.org>.

Seventh National Convention on Disaster Reduction. Sponsor: Joint Assistance Centre of India and others. Bhopal, India: November 7-9, 1997. This Indian national convention is intended for all persons and institutions involved in any way in mitigating disasters. The meeting will concentrate on developing a national policy for disaster management, creating and demonstrating already existing community-based disaster preparedness programs and plans, examining human rights in disasters, and exploring other issues. More information is available from N.K. Jain, Joint Assistance Center, G-17/3, Qutab Enclave-1, Gurgaon-122002, Haryana, India; tel: 0091-124-352141 or 0091-124-353833; fax: 0091-124-351308; e-mail: nkjain@jac.unv.ernet.in; or S.C. Saxena, Centre for Rural Development, T.T.T.I., Western Region, Shamlu Hills, Bhopal-462002, Madhya Pradesh, India; fax: 0755-540996.

Improving Local Emergency Management. Offered by: Disaster Management Center, University of Wisconsin. Madison, Wisconsin: December 4, 1997. This course will provide emergency managers in the public and private sectors hands-on experience and an opportunity to learn about and apply the elements of a simplified Integrated Emergency Management System (IEMS). Participants will develop an action plan tailored to their community. A complete course description is available from the Disaster Management Center, c/o Department of Engineering Professional Development, College of Engineering, University of Wisconsin in-Madison, 432 North Lake Street, Madison, WI 53706; (800) 462-0876; fax: (800) 442-4214; e-mail: custserv@epd.engr.wisc.edu; WWW: <http://epdwww.engr.wisc.edu/>.

Third International Conference on the Management of Droughts. Sponsors: Iberdrola Institute of Technology and others. Valencia, Spain: December 4-5, 1997. In many countries of the arid and semi-arid zones, recent droughts appear more severe than past ones because of tensions created by increased demands for water. At the same time, innovative technologies and changes in societal attitudes have all contributed to the mitigation of detrimental effects of droughts. Experiences acquired in management of droughts should not be overlooked in normal years, since they are useful for water planning in areas where water shortages are becoming chronic. The Third International Conference on the Management of Droughts will provide an opportunity for presenting and reviewing such recent experience in drought management in the agricultural, industrial, urban, and hydroelectric power sectors. For more information, contact the Iberdrola Instituto Tecnológico, Seminario Permanente 'Ciencia y Tecnología de Agua, Edificio Albia-2, 7° E-48001 Bilbao, Spain; tel: 34-4-424.2400; fax: 34-4-424.9648; e-mail: intec@iderdrola.es.

Earthquake Engineering Research Institute (EERI) 1998 Annual Meeting. San Francisco, California: February 4-8, 1998. 1998 is the 50th anniversary of the founding of EERI. This meeting will mark the occasion with surveys of the past, present, and future of earthquake engineering and tributes to the

individuals who have furthered the discipline. More information is available from *EERI*, 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: eeeri@eeri.org; WWW: <http://www.eeri.org>.

29th Annual Conference and Trade Exposition of the International Erosion Control Association (IECA). Reno, Nevada: February 16-20, 1998. The annual IECA conference provides a venue for examining new technologies and discussing effective practices in erosion and sedimentation control. The conference will include papers on wind erosion, flood and stormwater management, slope erosion and mass earth movement, and other issues of interest to hazards managers. More information is available from *IECA*, P.O. Box 774904, Steamboat Springs, CO 80477-4904; (800) 455-4322 or (970) 879-3010; fax: (970) 879-8563; e-mail: ecinfo@ieca.org.

CPM '98--Contingency Planning and Management Conference and Exhibition. Sponsor: **Contingency Planning and Management** magazine. San Jose, California: March 4-5, 1998. The CPM '98 conference and trade show is designed for any decision maker involved in any aspect of business continuity planning--from safeguarding the physical, informational, and communications aspects of a business to ensuring the safety of employees and the public. For specifics, contact *Jennifer Liobis*, Conference Administrator, CPM '98, Witter Publishing Corporation, 84 Park Avenue, Flemington, NJ 08822; (908) 788-0343, ext. 147; fax: (908) 788-3781.

Modern Prediction and Response Systems for Earthquake, Tsunami, and Volcanic Hazards. Sponsors: *International Association of Seismology and Physics of the Earth's Interior (IASPEI)* and the *International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)*. Santiago, Chile: April 27-28, 1998. This meeting is a contribution of the two sponsoring organizations to the International Decade for Natural Disaster Reduction (IDNDR) and will examine all aspects of monitoring, prediction, warning, and response to seismic events and volcanic eruptions. Additional information is available from *Bruce A. Bolt*, Department of Geology and Geophysics, University of California, Berkeley, CA 94720; fax: (510) 845-4816; e-mail: boltuc@socrates.berkeley.edu; or *J. Gutierrez*, Instituto Geografica Militar, Santiago, Chile: fax: 56-2-698-8278; e-mail: igm@reuna.cl.

Watershed Management: Moving from Theory to Implementation. Sponsor: *Water Environment Federation (WEF)*. Denver, Colorado: May 3-8, 1998. This conference will offer the latest information on watershed planning, protection, restoration, and education. Real-life experience and lessons will be covered, including issues related to western and arid lands, such as water rights, water quantity and scarcity, mining, watershed crisis, and water re-use. For more information, contact *WEF*, 601 Wythe Street, Alexandria, VA 22314; (800) 666-0206; fax on demand (request document #48): (800) 444-2933.

Public Risk Management Association (PRIMA) 1998 Annual Meeting. Minneapolis, Minnesota: June 7-10, 1998. The theme of the 1998 PRIMA meeting is "Navigating the Changing Currents," reflecting the ever-changing professional concerns of public risk managers. The conference will include sessions on most of the various risks confronting public entities, as well as the tools available to deal with them. For more information, contact: *PRIMA*, 1815 North Fort Myer Drive, Suite 1020, Arlington, VA 22209;

(703) 528-7701.

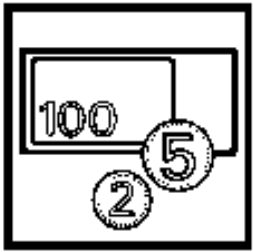
"*Gender in Disaster Research: Are the Experiences of Women Really Different?*" XIV World Congress of Sociology--Session of the Research Committee on Disasters, International Sociological Association. Montreal, Canada: July 26-31, 1998. The Research Committee on Disasters meeting will include this special session on gender and disasters as well as several other sessions addressing societal aspects of disaster. Abstracts are due October 1, 1997; papers are due December 1, 1997. Abstracts for this special session should be sent to *Betty Hearn Morrow, Department of Sociology and Anthropology, Florida International University, Miami, FL 33199; (305) 348-3217; fax: (305) 348-3605; e-mail: morrowb@solix.fiu.edu*. Additional information on the entire Research Committee program is available from *Joseph Scanlon, 117 Aylmer Avenue, Ottawa, Ontario, Canada K1S 2X8; (613) 730-9239; fax: (613) 730-1696; e-mail: jscanlon@ccs.carleton.ca*.

Journal Seeks Authors, Readers

The Journal of Contingencies and Crisis Management is an important source of information on all aspects of crisis management in both the public and private sectors. It focuses on the threats and opportunities facing organizations by presenting analyses and case studies of crisis prevention, planning, and recovery. It covers such topics as technological failures and crises, risk assessment, organizational conflicts, natural disasters, environmental crises, crowd disasters, terrorism, and civil disorder.

The journal has recently reduced its subscription price to make it more affordable to a wider range of readers. In addition, the editors are currently soliciting articles. Interested authors should contact *Alexander Kouzmin, Foundation Chair in Management, Faculty of Business, University of Western Sydney, P.O. Box 10, Kingswood, NSW 2747, Australia: tel: +61-2-9852 5634; fax: +61-2-9852 5636; e-mail: a.kouzmin@nepean.uws.edu.au*.

The *Journal of Contingencies and Crisis Management* is published quarterly and costs \$55.00 for individual subscriptions and \$178.00 for institutional subscriptions. To subscribe, contact *Blackwell Publishers Journals, P.O. Box 805, 108 Cowley Road, Oxford OX41FH, U.K.; tel: +44 (0) 1865 244083; fax: +44 (0) 1865 381381; WWW: <http://www.blackwellpublishers.co.uk>*.



Contracts and Grants

Research Planning for Spatial Evaluation of Geotechnical Earthquake Hazards, National Science Foundation, \$17,774, 12 months. Principal Investigator: *Ronaldo Luna, Civil Engineering Building, Room 214, Tulane University, 6823 St. Charles Avenue, New Orleans, LA 70118-5665; (504) 862-3252; e-mail: ronaldo.luna@tulane.edu.*

A geographic information system (GIS) is an ideal platform to analyze spatial data and information that can aid in decision making regarding land-use and construction. At the same time, agencies that respond to catastrophes produced by natural hazards have implemented disaster response systems that also use this technology. This project will work to integrate these two approaches, incorporating engineering analyses into the procedures for mitigation of and response to earthquake damage, injuries, and deaths.

Putting Ethics at the Heart of Environmental Design, National Science Foundation, \$126,484, 36 months. Principal Investigators: *Michael E. Gorman, Patricia H. Werhane, and William T. Schere. For information, contact Michael Gorman, Division of Technology, Culture, and Communication, School of Engineering and Applied Science, A 237 Thornton Hall, University of Virginia, Charlottesville, VA 22903; (804) 924-3425; fax: (804) 924-4306; e-mail: meg3c@virginia.edu.*

Ethics cases are of growing use in engineering courses, although few include design and environmental issues. Yet, all designs have ethical implications, including those related to the environment. This project will create a collection of cases that focuses on ethical considerations in the early stages of the design process, particularly those that encourage students to consider designs as they relate to the environment. These cases will be divided into two sets: those that illustrate the need for moral imagination and those that demonstrate the challenges involved in designing products that are both environmentally and politically sustainable.

Evaluating the Effectiveness of Drought Response Strategies: A Knowledge-Based Approach, National Science Foundation, \$18,000, 18 months. Principal Investigator: *Anne Shepherd, Georgia Technical Research Corporation, College of Architecture, Georgia Institute of Technology, Atlanta, GA 30332; (404) 894-4885; e-mail: anne.shepherd@arch.gatech.edu.*

This project will undertake the initial phases of developing a knowledge-based model to evaluate the effectiveness and reliability of water shortage response plans during a drought. It will formalize the expertise of water agency personnel to evaluate drought response strategies, determine the timing and phasing of drought response plans to minimize adverse impacts from water shortages, and develop a model for testing and refining plans for drought and water shortages.

Investigation of Building Damages of the 1997 Arkansas Tornado and Ways to Mitigate in the Future, National Science Foundation, \$24,835, six months. Principal Investigator: *R. Panneer Selvan*, Department of Civil Engineering University of Arkansas, Fayetteville, AR 72701; (501) 575-5356; e-mail: rps@engr.uark.edu

On March 1, 1997, an unusual series of tornadoes developed in nine counties in Arkansas, killing 25 persons, injuring more than 200, and destroying a large number of buildings. This study will gather data on structural damage, meteorological conditions, and other pertinent characteristics from all available local, state, and federal resources to identify relationships between damage, construction practices, code implementation, and structural design.

Organizations-Based Post Disaster Sheltering and Housing of Low Income and Minority Groups, National Science Foundation, \$278,860, 36 months. Principal Investigators: *Brenda D. Phillips*, Women's Studies Program, P.O. Box 425887, Texas Woman's University, Denton, TX 76205; (940) 898-2117; fax: (940) 898-2069; e-mail: F_Phillips@venus.two.edu; *Benigno Aguirre*, Texas A&M University; Department of Sociology, Campus MS 4351, College Station, TX 77843; (409) 845-0813; e-mail: aguirre@tamvm1.tamu.edu; and *Dennis E. Wenger*, Department of Urban and Regional Planning, Texas A&M University, College Station, TX 77843-3406; (409) 845-7813.

This project is a cooperative effort between Texas Woman's University and the Hazards Reduction and Recovery Center at Texas A&M. Researchers will identify how various actors handle sheltering and housing following a disaster, particularly examining conditions that influence the process (e.g., community policies) and their consequences. Through the use of interviews, focus groups, document collection, and observations, the researchers will chronicle local level viewpoints, including those of victims, groups, organizations, and community policy makers.

Recent Publications

All Hazards

NCCEM 4th Annual Conference and Exhibit: Presentation Summaries. 1997. 67 pp. \$10.00. Copies can be purchased from the National Coordinating Council for Emergency Management (NCCEM), 111 Park Place, Falls Church, VA 22046; (703) 538-1795; fax: (703) 241-5603; e-mail: nccem@aol.com.

As the title suggests, this document contains summaries of presentations made at the annual NCCEM conference held October 19-22, 1996, in Anchorage, Alaska. Topics include mutual emergency materials support for water and wastewater facilities, jurisdictional partnerships, hospital incident command, mitigation, technology-driven exercises, disaster evacuation by tourists and other transients, airport emergencies, search and rescue, incident command, earthquake mitigation in the workplace, business recovery, emergency operations center information management, and human resource issues.

Regions of Risk: A Geographical Introduction to Disasters. Kenneth Hewitt. 1997. 311 pp. \$26.95,

plus \$5.00 shipping. Order from Addison Wesley Longman, One Jacob Way, Reading, MA 01867-3999; (800) 447-2226; fax: (617) 944-9338; WWW: <http://www2.awl.com/corp/>.

Regions of Risk looks at the dichotomy of a modern world torn between its ability to control and its vulnerability to Nature, particularly as both relate to risks, disasters, and human vulnerability to catastrophic events. Within this context, recent research has analyzed risks that seem to lie beyond or overwhelm existing arrangements for public safety. Hewitt examines the relationship between danger and modernity, approaches to risk and disaster, risk and damaging events, the geographic connection to disasters, natural hazards, technological hazards, social hazards, vulnerability, adjustments to risk, communities at risk, earthquake hazards as "unnatural" disasters, mountain land hazards, risk in urban areas, and war.

Manufacturing Assistance Program and Disaster Recovery Manual. 1996. 64 pp. \$21.50, plus \$4.00 shipping. Publication No. PB96-186259. Available from the National Technical Information Service (NTIS), Springfield, VA 22161; (703) 487-4650; fax: (703) 321-8547.

This report describes the Manufacturing Assistance Program of the Department of Commerce, created to help victims of natural disasters, particularly small and medium-sized manufacturing companies. It covers the purpose of the program, the floods that devastated the Midwest in 1993 and their impact on small businesses, the project data base, demonstrations and training activities, the development of a disaster planning and decision tree for business recovery following a natural disaster, and a case study of a company that suffered damage in the floods.

Research on Social Work and Disasters. Calvin L. Streeter and Susan A. Murty, Editors. 1996. 172 pp. \$14.95, plus \$3.00 shipping. Purchase from Haworth Press, Inc., 10 Alice Street, Binghamton, NY 13904-1580; (800) 429-6784; fax: (800) 895-0582; e-mail: getinfo@haworth.com; WWW: <http://www.haworth.com>.

This volume contains a collection of social work research on disasters that illustrates a variety of risks as well as various social science theoretical approaches, methods, and levels of analysis. The papers focus on the interaction of the individual with his or her environment, social problems at multiple levels, the individual and the family, organizational and interorganizational networks, communities, and societal and policy interactions. **Research on Social Work and Disasters** includes papers on disaster research, predictors of rural community survival after a natural disaster, social action following Hurricane Andrew, chronic technological disasters, social vulnerability to toxic risk, and interagency collaboration and hazards education.

Women and Emergencies. Bridget Walker, Editor. 1994. 64 pp. \$12.95, plus \$4.00 shipping. To obtain copies, contact Humanities Press, 165 First Avenue, Atlantic Highlands, NJ 07715-1289; (908) 872-1441.

Many professionals who deal with development issues now believe that gender must be considered to advance effective and equitable programs. Still, gender perspectives are not well incorporated into disaster response and remain relatively unresearched and undocumented. This volume includes papers that address gender in disaster and development, putting policy into practice, gender strategies in disaster preparedness, the effects of drought on women, emergency food distribution, the 1993

earthquake in India and the problems it created for women, disaster preparedness efforts in Pakistan, problems encountered by Sudanese refugees, and women refugees in Bangladesh.

Fundamentals of Risk Analysis and Risk Management. Vlasta Molak, Editor. 1997. 500 pp. \$69.95. Available from CRC Press, Inc./Lewis Publishers, 2000 Corporate Boulevard, N.W., Boca Raton, FL 33431-9868; (800) 272-7737; fax: (800) 374-3401; e-mail: orders@crcpress.com; WWW: <http://www.crcpress.com>.

This book attempts to create a common information base and language for all risk analysis practitioners, risk managers, and decision makers. It discusses the theoretical background of risk analysis; its applications; risk management; and risk perception, law, politics, and risk communication. The book covers toxic chemical noncancer risk, epidemiology and cancer risk assessment, the basic economics of risk analysis, risk analysis of global climate change, risk perception and trust, the insurability of risks, comparative risk analysis, seismic risk management, sustainable management of natural disasters in developing countries, and risk analysis and sustainability.

How to Hire a Contractor Without Getting Ripped Off. Norman G. Reid. 1996. 40 pp. \$7.50, plus \$3.00 shipping. Copies can be purchased from Norman Reid, P.O. Box 1294, Clemson, SC 29633; (800) 916-0484 or (864) 654-5777; fax: (864) 654-5777; e-mail: wmproduction@ftc-i.net; WWW: <http://www.west-main-productions.com>.

Norman Reid wrote ***How to Hire a Contractor*** to educate the public about the specifics of hiring a building and/or specialty contractor to perform work on personal property. Difficulties with contractors following disasters are common, and this guide includes a special section on hiring contractors following such events. It provides tips on how to tell if a contractor is qualified; questions to ask before hiring; investigating work histories; when and how to pay for services; things a contractor should never be allowed to do to your property; guarantees and warranties; how to avoid getting ripped off; what to do if you are; how to protect yourself from "fly-by-nighters" after a natural disaster; and specifics a homeowner should know about roofing, plumbing, remodeling, painting, and electrical work, and carpet and floor coverings.

Rights to Nature: Ecological, Economic, Cultural, and Political Principles of Institutions for the Environment. Susan S. Hanna, Carl Folke, and Karl-Göran Mäler, Editors. 1996. 228 pp. \$29.92. Copies can be purchased from Island Press, Box 7, Department 2PR, Covelo, CA 95428; (800) 828-1302; WWW: <http://www.islandpress.com/islandpress/press/PR/hanna.html>.

One of the most vexing and contentious issues surrounding land-use regulation is the balancing of individual property rights with the greater public good. The problem is central to such issues as removing structures from floodplains, limiting development in environmentally sensitive areas, and preserving habitat. ***Rights to Nature*** is an interdisciplinary introduction to the systems of rights, rules, and responsibilities that guide and control human use of our environment. Following a brief overview of the relationship between property rights and the natural environment, the contributors consider ecological systems and how they function; the effects of culture, values, and social organization on the use of natural resources; the design and development of property rights regimes and the costs of their operation; cultural factors that affect design and implementation of property rights systems; and system

coordination across geographic and jurisdictional boundaries.

Tornadoes

1992-1995 Update to Significant Tornadoes. Thomas P. Grazulis. 1997. 118 pp. \$15.00. Free to those who purchase the 1993 volume, ***Significant Tornadoes--1680-1991*** (1,340 pp., \$95.00, plus \$4.00 shipping). Copies can be purchased from the Tornado Project, P.O. Box 302, St. Johnsbury, VT 03819; e-mail: tornproj@plainfield.bypass.com; WWW: <http://www.tornadoproject.com/>.

This volume updates and appends the 1993 publication that cataloged every known significant tornado to strike the U.S. since the pilgrims landed at Plymouth Rock. It provides information on tornado outbreaks, other natural vortices like waterspouts and dust devils, tornado forms and types, downbursts, and hurricane-spawned tornadoes. Both volumes include maps, photos, diagrams, and illustrations, and the entry for each event provides information on location, date, Fujita Scale measurement, and a brief description of damage. Both books also list lightning events of particular interest.

Floods

Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America. John M. Barry. 524 pp. \$27.50. Call for shipping charges. Order from the Information Super Library, MacMillan Publishing U.S.A., Order Processing Department, 201 West 103rd Street, Indianapolis, IN 46290; (800) 716-0044; fax: (800) 882-8583; e-mail: orders@superlibrary.com; WWW: <http://www.simonandschuster.com>.

In 1927, the Mississippi River flooded the Midwest from Illinois to the Gulf of Mexico, forcing one out of 12 Americans from their homes, killing thousands, and requiring the American Red Cross to feed over 700,000 displaced refugees for months. ***Rising Tide*** chronicles this event, traces its influences on presidential politics, particularly the treatment of black Americans who were affected by the floods, and examines the decision to dynamite a levy before the waters reached New Orleans. Herbert Hoover was appointed to head the massive rescue and rehabilitation effort, enhancing his ability to win the Republican presidential nomination and the White House. At the same time, black leaders broke their historic link with the Republican Party, marking the beginning of a black shift to the Democratic party that helped bring Franklin Roosevelt to power. The flood also accelerated the great migration by African Americans to the northern U.S. The book also looks at subsequent legislation that dealt with the massive flooding and resulted in the construction of the levees that were watched nervously in 1993 as massive flooding again struck the region.

1993 Midwest Floods and Water Quality Best Management Practices. Transportation Research Record No. 1483. 1995. 135 pp. \$30.00. Prepayment is required. Copies can be purchased from Kari Peterson, Publications Department, Transportation Research Board, National Research Council, Box 289, Washington, DC 20055; (202) 334-3214; fax: (202) 334-2519; WWW: <http://www2.nas.edu/trbbooks/>.

This volume contains 15 papers, most of which were presented at the 1995 Transportation Research Board annual meeting. They cover the magnitude and frequency of flooding in 1993, the effects of federal levees and reservoirs on the 1993 flood stages in St. Louis, impacts on highway systems, effects

on bridges, evaluation of flood-estimation models, best management practice guides for water quality, the national evaluation of water quality issues for highway planning, runoff of deicing chemicals, contaminant removal in stormwater detention basins, and stormwater regulations.

California Rivers and Streams: The Conflict Between Fluvial Process and Land Use. Jeffrey F. Mount. 1995. 385 pp. \$22.50, paperback; \$55.00, clothbound; plus \$3.75, shipping. Prepayment is required. Available from CPFS, P.O. Box 7780-4721, Philadelphia, PA 19182-4721; (800) 777-4726; fax: (800) 999-1958; e-mail: orders@cpfs.pupress.princeton.edu; WWW: <http://pup.princeton.edu>.

Over the last 150 years, the rivers in California have been dammed, diverted, lined, and leveed to meet the needs of an expanding population and economy. In spite of these many changes, the rivers and waters they transport remain one of California's most significant natural hazards and most contested resources. In the first section of this book, Mount provides an overview of the physical and biological processes that shape the state's rivers and watersheds; discusses hydrology, sedimentation, and sediment transport; and explains the concepts of watersheds, discharge, drainage, climate, and tectonics. His second section addresses land use and the state's rivers within the context of the past 200 years of the state's history; mining, logging, and food production impacts on rivers; flooding; urbanization; damming; and global climate change.

River Ice Jams. Spyros Beltaos, Editor. \$58.00, plus \$4.00 shipping. Colorado residents, add 3.8% sales tax. Available from Water Resources Publications, LLC, P.O. Box 260026, Highlands Ranch, CO 80163-0026; (303) 741-9071 or (800) 736-2405; fax: (303) 741-9073; e-mail: wrpllc@qwest.net; WWW: <http://www.wrpllc.com>.

River Ice Jams addresses a hazard that has significant socioeconomic impacts, but has only recently been studied in depth. It reviews the occurrence of ice jams and identifies their main effects, provides an overview of river ice processes in general and ice jam processes in particular, discusses prediction, explains numerical modeling, summarizes the state of the art in design and use of physical models to study ice-jam-related problems, outlines methods to mitigate the impacts of ice jams, considers field data collection requirements, and presents a case study of ice jams on a large Canadian river.

Earthquakes and Other Geological Hazards

Why the Earth Quakes: The Story of Earthquakes and Volcanoes. Matthys Levy and Mario Salvadori. 1997. 215 pp. \$13.00. Call for shipping charges. Copies can be purchased from W.W. Norton, c/o the National Book Company, 800 Keystone Industrial Park, Scranton, PA 18512-4601; (800) 233-4830; fax: (800) 458-6515; WWW: <http://www.wwnorton.com>.

Why the Earth Quakes was written by two structural engineers to teach others about the impacts of geological events on the human race. It describes ancient beliefs about the causes of earthquakes and volcanic eruptions and recounts major disasters related to these phenomena. The authors also discuss techniques for measuring earthquakes, structural impacts, areas of seismic risk in the U.S., tsunamis, precursors and predictions, seismic base isolation, building codes and public policy, and risk and preparedness.

Seismic Safety Manual: A Practical Guide for Facility Managers and Earthquake Engineers. Donald G. Eagling, Compiler and Editor. UCRL-MA-125085. 1996. 477 pp. \$50.00. Copies can be purchased from Dawn S. Francis, Lawrence Livermore National Laboratory, Mail Stop L-224, P.O. Box 808, Livermore, CA 94551; (510) 423-9340; fax: (510) 423-2163.

This ***Seismic Safety Manual*** provides managers of U.S. Department of Energy (DOE) facilities with practical guidelines for administering a comprehensive earthquake safety program. The manual contains information on natural hazards, site planning, evaluation and rehabilitation of existing buildings, design of new facilities, operational safety, emergency planning, special considerations related to shielding, nonstructural elements, lifelines, fire protection, emergency facilities, and management of risk and facility liability. It provides broader discussions of principles and concerns of earthquake safety than those that apply to DOE facilities alone and can be used as a guide by other facility managers. A contribution to the International Decade for Natural Disaster Reduction, the ***Seismic Safety Manual*** discusses the facility manager's role in earthquake safety, types and assessment of damage, seismic design and evaluation requirements for DOE facilities, site-use planning and evaluation, soil-structure interaction, seismic retrofit, emergency planning, lifelines and fire potential, risk management, and building codes.

A Guide to Swelling Soils for Colorado Homebuyers and Homeowners. David C. Noe, Candace L. Jochim, and William P. Rogers. Special Publication 43. 1997. 82 pp. \$7.00, plus \$3.50 shipping. Order from the Colorado Geological Survey, Publications Department, 1313 Sherman Street, Room 715, Denver, CO 80203; (303) 866-3340; fax: (303) 866-2461; e-mail: orletta.fairchild@state.co.us; WWW: <http://www.dnr.state.co.us/geosurvey/>.

Swelling soils are a common and costly problem in Colorado and many other states. This book was created to assist homebuyers and homeowners in avoiding or reducing damage caused by swelling soils and includes information on the geology of swelling soils, the hydrologic cycle, the role of subsurface moisture, droughts and shrinking soils, construction techniques for mitigating impacts, landscaping, home maintenance, disclosure and other buyer considerations, checking a property for swelling soils, and suggestions for further reading.

Chemical Hazards, Mitigation, and Preparedness in Areas of High Seismic Risk: A Methodology for Estimating the Risk of Post-Earthquake Hazardous Materials Release. H.A. Seligson, R.T. Eguchi, K. J. Tierney, and K. Richmond. Technical Report NCEER-96-0013. 1996. 146 pp. \$15.00. To obtain copies, contact the National Center for Earthquake Engineering Research, State University of New York-Buffalo, Red Jacket Quadrangle, Buffalo, NY 14261; (716) 645-3391; fax: (716) 645-3399; e-mail: nceer@ubvm.cc.buffalo.edu; WWW: <http://nceer.eng.buffalo.edu>.

The first step in developing a seismic response and mitigation program for chemical facilities is to quantify the risk of hazardous materials releases and their impacts on surrounding communities. This report provides a method for local jurisdictions to use to identify areas most susceptible to earthquake-induced hazardous-materials releases, including inventory development, hazard analysis, component vulnerability assessment, regional vulnerability evaluation, and population risk analysis. It also provides information on developing and employing earthquake scenarios, plume modeling, using population data, and other aspects of managing risk.

Western States Seismic Policy Council Eighteenth Annual Conference Proceedings and Report. 1997. 270 pp. \$15.00. Copies can be obtained from the Western States Seismic Policy Council, 121 Second Street, Fourth Floor, San Francisco, CA 94105; (415) 974-6435; fax: (415) 974-1747; e-mail: wsspc@wsspc.org; WWW: <http://www.wsspc.org>.

This proceedings volume contains sections on the implementation of the Federal Emergency Management Agency's national earthquake loss estimation tool, HAZUS (see the *Observer*, Vol. XXI, No. 2, p. 11); earthquake information providers and the EQNet information network; impacts of seismic threats in the western U.S. on transportation infrastructure; community education; tsunami hazard mitigation; mapping; earthquake information on the World Wide Web; hazard insurance; postearthquake information management; earthquakes and public utilities; the Cascadia Region Earthquake Workgroup (see the *Observer*, Vol. XXI, No. 3, p. 5); and local efforts in preparedness and mitigation.

Movers and Shakers. 80-page teachers' guide; 22-minute VHS video; and 15"x22" two-sided poster. Free to schools. To obtain a kit, send request to ***Movers and Shakers***, State Farm Insurance Company, Public Relations Department (E-8), One State Farm Plaza, Bloomington, IL 61710-0001.

This teaching package was developed by State Farm Insurance to help educators integrate information about earthquakes and earthquake preparedness into a wide range of curricula. The package includes a teacher's guide that explains the program as well as how to use the video and poster to aid discussion. It also contains preparedness and safety lesson plans for specific age groups from kindergarten through high school. Another segment provides lesson plans for understanding earthquakes, while a separate section provides artwork that can be copied and distributed to students, including a home hazards checklist and home earthquake kit checklist; handouts on what to do during and after an earthquake and conducting a home hazards hunt; and a letter to parents.

Earthquake Country: How, Why and Where Earthquakes Strike in California. Fourth Edition. Robert L. Jacopi. 1997. 176 pp. \$14.95. Copies can be obtained from Fisher Books, 4239 West Ina Road, Suite 101, Department S97, Tucson, AZ 85741; (800) 255-1514; fax: (800) 324-3791 or (520) 744-0944; WWW: <http://www.fisherbooks.com/home.html>.

This new edition of *Earthquake Country* reflects the significant changes that have occurred over the last 30 years in geology and seismology. It discusses California's international reputation as an earthquake-prone region, describes the reasons why California has earthquakes, explains earthquake mechanics and how they are measured, chronicles the history of major earthquakes in that state, discusses the future earthquake potential and the increasing risk that has taken place due to urbanization, and outlines tips for earthquake preparedness.

Wildfires

Fire Officer's Handbook on Wildland Firefighting. William C. Teie. 1997. 623 pp. \$49.95, plus \$4.50 shipping. California residents add 7¼% sales tax. Copies can be purchased from Deer Valley Press, 5125 Deer Valley Road, Rescue, CA 95672; (800) 455-1950 or (916) 676-7401; fax: (916) 676-7418; e-mail: firebook@el-dorado.ca.us; WWW: <http://www.el-dorado.ca.us/~firebook>.

This handbook was written for first- or second-level supervisors or firefighters interested in increasing

their skills and knowledge concerning wildland fires. It provides insights from interviews with recognized professionals in wildland firefighting. The **Handbook** contains sections on leadership, fire weather, topography and fuels, fire behavior prediction, extreme fire behavior, fireline safety, the incident command system, jurisdictional coordination, the role of the fire officer, strategy and tactics, and firefighting situations.

Developing a Cooperative Approach to Wildfire Protection. 1997. Report and companion VHS. 1997. Free. Copies are available from Clare Slayton, National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; (617) 984-7486; fax: (617) 984-7056; e-mail: cslayton@nfpa.org. The complete text is also available via the Internet: <http://www.nfpa.org>.

Many wildfire experts realize that one of the most effective tools for combating fires in the wildland/urban interface is cooperation among local agencies, particularly since wildfires have no respect for political boundaries. They also recognize that rapid urban expansion challenges land and resource managers, urban planners, governing entities, and emergency service providers. Agencies are now faced with an increased number of homes in the wildland area, while their municipal counterparts are grappling with multiple ignitions from fast-burning vegetative fires. ***Developing a Cooperative Approach to Wildfire Protection*** provides tips for identifying partners in wildfire management and obtaining agreements, defining current risks, defining roles and responsibilities, setting goals and objectives, documenting and implementing plans, and evaluating and revising a plan.

Development Strategies in the Wildland/Urban Interface. Second Edition. 1996. 228 pp. \$23.45. Available from the International Association of Fire Chiefs, Finance Department, 4025 Fair Ridge Drive, Fairfax, VA 22033; (703) 273-9815; fax: (703) 273-9363; e-mail: iafcmic@connectinc.com; WWW: <http://www.iafc.org>.

One of the nation's growing fire problems is the wildland/urban interface, where many homes are being constructed so that people can enjoy the peaceful contrast to fast-paced urban life. Contributors to increased losses in fires in these areas include poor access for emergency vehicles, sloping topography, weather conditions that increase fire potential, considerable buildup in wildland vegetation, lack of defensible space, and use of combustible construction materials. The IAFC and the Western Fire Chiefs Association created this guide to increase knowledge about recommended practices for reducing fire-loss potential. It provides an overview of wildfire behavior and conditions that increase the potential for damaging fires, offers operational strategies for preparing for fighting wildland fires, and recommends community strategies for teaching the public and policy makers about ways to reduce risks.

Slides

Kobe V: Recovery and Reconstruction. 1997. 40 annotated slides. \$60.00, EERI members; \$70.00, nonmembers.

Kobe VI: Repair and Reconstruction of Historic Landmarks. 1997. 20 annotated slides. \$30.00, EERI members; \$35.00, nonmembers.

Both slide sets can be purchased from the Earthquake Engineering Research Institute (EERI), 499 14th Street, Suite 320, Oakland, CA 94612-1934; (510) 451-0905; fax: (510) 451-5411; e-mail: skt@eeri.org; WWW: <http://www.eeri.org>.

Kobe, Japan, was devastated by the Great Hanshin Earthquake of January 17, 1995. Today, the city is undergoing a recovery that demonstrates this community's vitality; trains are running, traffic is heavy, and the skyline is full of major buildings undergoing reconstruction. The slide set **Kobe V** documents the rebuilding effort, depicts the repair process over time for several large buildings, and illustrates various aspects of the recovery, including the use of temporary buildings for shelter and commerce. **Kobe VI** documents damage to and repair of various temples, shrines, and cultural landmarks, as well as houses in the Katano District. EERI also offers other slide sets, available at the above address, on the Kobe quake--**Kobe I: Overview** (\$90.00, EERI members; \$105.00, nonmembers); **Kobe II: Liquefaction** (\$30.00, members; \$35.00, nonmembers); **Kobe III: Performance of Steel Bridges** (\$80.00, members; \$95.00, nonmembers); and **Kobe IV: Engineered Buildings** (\$75.00, members; \$90.00, nonmembers).

The Hazards Center

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