REGION VIII

Introduction

The region's roots and the people who make it run

Much of the current success enjoyed by FEMA Region VIII is rooted in its past—and in its people.

Built in 1969, the Cold War bunker where the region is headquartered was added to the National Register of Historic Places on July 11, 2000.

The early regional directors came from predecessor agencies. The first, David Harrison, had previously been regional director of the Office of Civil Defense and of the Defense Civil Preparedness Agency. He was followed in 1980 by Don Eddy, who had been with the Office of Emergency Preparedness and the Federal Disaster Assistance Agency. Subsequent regional directors included Richard Gonzales, who held the office for about six months in 1981; Alton Cook (1981-1986); Marian Olson (1986-1992); Michael Armstrong (1994-1997); and Rick Weiland (appointed in 1997).

Throughout, the regional directors have been assisted by deputy regional directors, career civil servants who helped the directors learn the ropes when they started, supported them as needed at all times and served as acting regional directors when the regional director position was vacant. From 1979 to 2000, there have been only two deputy regional directors. Jerry Oakley was followed in 1995 by Doug Gore.

Region VIII Disasters, 1993-2000

Calamitous events have tested mettle, led to program refinements

The disasters that have occurred in the six states of Region VIII, along with other emergency activities, have in some cases tested the region's response strategies and led to program reforms. In 1997, the largest disaster since the region was established in 1979 occurred as flood waters, fed by a series of winter snow storms and blizzards, engulfed Grand Forks, N. D. Other disasters—in particular, those detailed below—have provided opportunities for the region to tweak its programs in order to provide better service.

Response '93 exercise in Utah
More than 5,000 participants tested their readiness for a major earthquake on the Wasatch Fault near Salt Lake City.

Great Midwest flood of 1993
North Dakota and South Dakota were among the states declared, the beginning of ongoing wet phases in both states. (DR-999-SD and DR-1001-ND)

Grand Forks, N.D., flood ('97)
After a long series of blizzards, this town on the Red River of the North was inundated during the upper Midwest flood of 1997. FEMA has relied on partnerships to help rebuild a more disaster resistant community. (DR-1157-ND and DR-1174-ND)

Fort Collins, Colo., flash flood ('97)
Though this sudden and tragic flood resulted in five deaths, there might have been even greater loss of life had the city not previously taken steps to limit flood damage. *Project Impact: Building Disaster Resistant Communities* has helped the city mitigate still further. (DR-1186-CO)

Spencer, S.D., tornado ('98)
Following a tornado that leveled much of the community, FEMA helped rebuild from the ground up. (DR-1218-SD)

Pine Ridge, S.D., tornado ('99)
This disaster was confined to the Pine Ridge Indian Reservation, where damage was severe. The event provided an opportunity for Region VIII to demonstrate the efficacy of the agency's new tribal relations policies. (DR-1280-SD)

Out-of-region disaster activities
Region VIII has often supported disaster recovery in other areas of the country, including Idaho, Oregon, Maryland, Kentucky, and California.
List of all Region VIII disasters from 1992 through 2000: Floods accounted for the majority of declarations.

And other hazards in Region VIII

Of the 28 major disaster declarations in Region VIII from 1992 through 2000, floods or flooding was listed as a cause for 21. In four, flooding was mentioned along with severe storms and, in most other cases, flooding was mentioned with woes such as high winds, rapid snow melt, ice jams, heavy spring rains, excessive soil saturation, high water tables, mud slides, and landslides. In one case, a tornado was single cause of disaster – it was the twister that struck Salt Lake City Aug. 16, 1999. The other six disasters resulted from winter storms.

The Dakotas, which never entirely dried out following the great Midwest flood of 1993, account for the majority of the declarations – South Dakota had 12 major disaster declarations in the period and North Dakota had nine. As far as other states, Montana had three disasters; Colorado, two; and Utah and Wyoming one each.

Though damaging earthquakes have not occurred recently in Region VIII, the area is subject to severe seismic activity. In particular, the Wasatch Fault, which runs through Salt Lake City, has been the site of powerful earthquakes in the past, and could be again in the future.

Response '93

Practice for an earthquake while hoping it never happens

Response '93, which took place 20 miles south of Salt Lake City, Utah, at Fort Williams Army base, involved more than 5,100 participants from the federal, state and local levels. For four days from June 7 through 10, the "players" behaved as though a major earthquake on the Wasatch Fault had devastated a five-county area of northern Utah. According to the scenario, the quake measured 7.5 on the Richter scale and severely impacted the highly populated area of greater Salt Lake City. It occurred at 7:30 on a Monday morning, while parents were on their way to work and children were on their way to school. Local-level play included groups such as the Boy Scouts, Girl Scouts and local chapters of voluntary agencies. Federal-level play included Washington, D.C., participation at the Cabinet level.

The full-scale exercise validated changes that had been made to the federal response plan and new ideas that were later incorporated into the plan. It provided the first large-scale test of new standard operating procedures for the federal information and planning function, and helped to show where the plan needed to be strengthened. Lessons learned from the exercise were put to good use approximately seven months later when the Northridge earthquake devastated the Los Angeles area.

FEMA Region VIII Major Disaster Declarations

1993-2000

DR-999-SD
Declared July 19, 1993, for severe storms, tornadoes and flooding. Incident period: May 6 through Sept. 10. Thirty-nine counties declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1001-ND
Declared July 26, 1993, for severe storms and flooding. Incident period: June 22 through Sept. 24. Thirty-nine counties declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1031-SD
Declared June 21, 1994, for severe storms and flooding. Incident period: March 1 through July 29. Twenty-one counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1032-ND
Declared July 1, 1994, for severe storms and flooding. Incident period: March 5 through Aug. 5. Twenty-five counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1045-SD
Declared March 14, 1995, for severe winter storms. Incident period: Jan. 13 through Feb. 10. Twenty counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1050-ND
Declared May 16, 1995, for severe storms, flooding and ground saturation due to high water tables. Incident period: May 1 through July 5. Thirty-two counties declared for Public Assistance and Disaster Unemployment Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1052-SD
Declared May 26, 1995, for flooding. Incident period: March 1 through June 20. Fifty-two counties declared for Public Assistance and Disaster Unemployment Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1075-SD
Declared Jan. 5, 1996, for severe winter storm. Incident period: Oct. 22 through 24, 1995. Twenty-five counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1105-MT
Declared Feb. 23, 1996, for severe storms, flooding and ice jams. Incident period: Feb. 4 through 29. Fifteen counties for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1113-MT
Declared May 16, 1996, for severe storms, flooding, ice jams and excessive soil saturation. Incident period: March 9 through June 5. Six counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1118-ND
Declared May 5, 1996, for severe storms, flooding, ice jams and ground saturation due to high water tables. Incident period: March 12 through June 21. Thirty-three counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1156-SD
Declared Jan. 10, 1997, for snow, ice, winter storms and freezing. Incident period: Jan. 3 through 31. All (66) counties declared for Public Assistance.

DR-1157-ND
Declared Jan. 12, 1997, for snow, ice, winter storms and freezing. Incident period: Jan. 3 through 31. All (53) counties declared for Public Assistance.

DR-1161-SD
Declared Feb. 28, 1997, for severe winter storms and ice. Incident period: Nov. 13 through 26, 1996. Ten counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1173-SD
Declared April 7, 1997, for severe flooding, severe winter storms, heavy spring rain, rapid snow melt, high winds and ice jams. Incident period: Feb. 3 through May 24. All (66) counties declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1174-ND
Declared April 7, 1997, for severe flooding, severe winter storms, heavy spring rain, rapid snowmelt, high winds, ice jams and ground saturation due to high water tables. Incident period: Feb. 28 through May 25. All (53) counties declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1183-MT
Declared July 25, 1997, for severe storms, ice jams, snowmelt and flooding. Incident period: March 1 through Aug. 6. Twenty-three counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1186-CO
Declared Aug. 1, 1997, for severe storms, rain, flash floods, mud slides, landslides and severe ground saturation. Incident period: July 28 through Aug. 12. Three counties declared for Public Assistance and Individual Assistance; 10 for Public Assistance only. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1218-SD
Declared June 1, 1998, for flooding, severe storms and tornadoes. Incident period: April 25 through June 22. Nine counties declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1220-ND
Declared June 15, 1998, for flooding and ground saturation due to high water tables caused by excessive precipitation on lands already saturated by six years of disastrous flooding. Incident period: March 2 through July 18. Sixteen counties and two American Indian reservations for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1268-WY
Declared Feb. 17, 1999, for severe winter storm. Incident period: Oct. 5 through 9, 1998. Two counties declared for Public Assistance.

DR-1276-CO
Declared May 17, 1999, for severe storms, flooding, mud slides and landslides. Incident period: April 29 through May 19. Six counties declared for Public Assistance and Individual Assistance; six for Public Assistance only. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1279-ND
Declared June 8, 1999, for severe storms, flooding, snow and ice, ground saturation, landslides, mud slides and tornadoes. Incident period: March 1 through July 19. Forty-one counties and four tribal jurisdictions declared for Public Assistance and Individual Assistance; one county for Individual Assistance only. All counties and American Indian reservations in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1280-SD
Declared June 9, 1999, for severe storms, flooding and tornadoes. Incident period: June 4 through 18. One county and one American Indian reservation declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1285-UT
Declared Aug. 16, 1999, for tornado, severe thunderstorms and hail. Incident period: Aug. 11. One county declared for Public Assistance and Individual Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1330-SD
Declared May 19, 2000, for a severe winter storm, flooding, landslides and mudslides. Incident period: April 18 through 20. Five counties declared for Public Assistance. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

DR-1334-ND
Declared June 27, 2000, for severe storms. Incident period: April 5 through July 21. Twenty-six counties and two American Indian reservations declared for Individual Assistance and Public Assistance; 13 counties declared for Individual Assistance only. All counties in the state eligible for assistance under the Hazard Mitigation Grant Program.

With the 1999 declaration, DR-1268-WY, Wyoming received its first major disaster declaration under the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 20 years after FEMA was formed. The remaining 49 states each had at least one, or multiple disaster declarations, since 1979. It also was the first disaster response in Region VIII during which a new national emergency management information system was used.

Out-of-Region Disasters

Lending a Helping Hand
When other regions – particularly IX and X, which are geographically close to Region VIII – have multiple disasters, they often turn to Region VIII for assistance. In some cases, the region has managed the entire recovery, while in others it has taken on only some functions, such as human services or public assistance.
For example, after the 1994 Northridge, Calif., earthquake (DR-1008-CA), Region VIII operated a telephone "applicant helpline" for several months. Following the 1995 Oklahoma City bombing (DR-1048-OK), Region VIII provided support to the disaster field office in information and planning, operations, and urban search and rescue. In 1998, in Kentucky ((DR-1216-KY), the region managed field operations and participated in the first field test of the new Public Assistance program.
Other disasters in which Region VIII played a major role included:

DR-1044-CA, 1995	DR-1102-ID, 1996	DR-1139- MD, 1996
DR-1069-FL, 1995	DR-1149-OR, 1996	DR-1160-OR, 1997

In addition, individual employees from the region, including reservists, have supported recovery efforts throughout the nation.

Great Midwest Flood of 1993

The beginning of years of inundation
Damages in the Dakotas were not nearly as great as they were in some other states during the great Midwest flood of 1993. However, the floods there signaled the start of years of inundation,

which in some instances led to innovative responses. The first example of such innovation was the multi-objective flood mitigation plan for the Vermillion River basin in South Dakota.

Taking a Multi-Objective Approach to Mitigation

Vermillion River Basin, S.D.

Following the great Midwest flood of 1993, FEMA Region VIII collaborated with the National Park Service and other agencies to bring together a broad coalition of participants to develop a basin-wide mitigation plan for the Vermillion River in southeast South Dakota. It was the first time the region led a consensus-building project on a river basin scale,

From June 20 through 24, 1994, citizens sat next to government officials and community leaders as they talked about ways to prevent future disaster damage in the basin, while still addressing environmental, recreational and commercial objectives. Discussions continued over lunch and dinner during the week-long workshop, which was held in the small town of Parker.

At the end of the week, workshop coordinators presented a draft document that was later refined into the *Multi-Objective Flood Mitigation Plan: Vermillion River Basin, South Dakota, 1994.* The plan provided the basis for development of mitigation projects and it led to the formation of a river basin commission. the plan's greatest value may have been the process it established, whereby people throughout the river basin were given a forum to discuss their concerns with government officials and with each other.

Flash Flood Took Lives in Fort Collins, Colo.

But many were spared due to mitigation measures

On Monday, July 28, 1997, a storm stalled over Fort Collins, Colo., dumping more than 8 inches of rain in four and one-half hours. The sudden deluge, which was the heaviest 24-hour precipitation ever recorded in Fort Collins, resulted in flow rates double those of the statistical 500-year flood in many areas. The usually placid Spring Creek became a powerful torrent that raged downstream, causing a moving freight train to derail, destroying two fully occupied residential mobile home parks and taking five lives. In the days that followed, flooding led to evacuations in nearby counties.

On Aug. 1, President Clinton declared a major disaster for Colorado. Larimer County, where Fort Collins is located, along with Morgan and Logan counties, were eligible for aid through individual and public assistance programs. Ten other counties were later added to the declaration for Public Assistance and all Colorado counties were eligible for aid through the Hazard Mitigation Grant Program.

While the losses were extensive due to the severity of the storm, officials estimate that the loss of life would have been far greater had the city not taken preventive measures prior to the flood. Pre-storm mitigation included the removal of approximately.86 structures from the 100-year floodplain, including 41 that were acquired by the city. Among the structures moved were 60 mobile homes from the area that subsequently became Creekside Park.

Following the disaster, Fort Collins, already a leader in terms of emergency management, continued to engage in myriad activities to decrease vulnerability to disaster. The city became a

Project Impact community and some of its mitigation measures received financial support from that source.
It is estimated that improvement projects, particularly the Creekside Park acquisition, saved upward of 100 lives during the 1997 flood.
The 1997 flood may have been the best-documented urban flash flood ever.

Spencer, S.D., Tornado

Rebuilding from the ground up
On the morning of May 30, 1998, Spencer, S.D., was a close-knit community of slightly more than 300 people on the wide open prairie of southeast South Dakota. By the time the day ended, the town was in shambles after a tornado blasted through, taking six lives.
The nearest intact infrastructure with housing for those displaced by the tornado and those working on the recovery was about 25 miles away in Mitchell, S.D. But few Spencer residents moved into the hotels there. Instead, the population dispersed, moving in with friends and relatives throughout the area.
In the meantime, the outpouring of assistance from volunteers was outstanding. When a request went out for weekend help with debris removal, authorities expected about 1,000 to show up. Instead, there were 5,000 volunteers. Sympathizers throughout the nation, who had seen news of the devastation on television, sent enough clothing and household goods to fill a gymnasium.
Rebuilding presented opportunities as well as challenges. Federal, state, local and voluntary agencies worked together in support of a coordinated comprehensive rebuilding plan. The plan emphasized new, disaster-resistant building and prohibited mobile homes and travel trailers. At its center was a multi-use community center that now houses municipal services ranging from the fire station and city hall to the library and gathering spaces. The center, which was built to exceed the new code, also incorporates tornado-safe areas.
Gov. Bill Janklow provided prison labor to assist following the disaster. To clean up in the immediate aftermath of the storm, inmates aided other agencies with debris removal and they helped residents salvage what they could and dispose of the rest. Prisoners helped meet the housing needs through the Governor's Affordable Housing Program. The new town became home to about 15 two-bedroom homes, which are manufactured by prisoners and delivered to each purchaser's own land for about $20,000.
Since the population scattered to several nearby communities, FEMA, state and local officials and voluntary agencies, utilized a newsletter to publicize recovery information. In addition to program information, the *Spencer Recovery News* addressed such topics as where to get tetanus shots, how to replace important documents, and the locations of shelters and donation centers.

A twister's legacy: building a safer future
The tornado damaged or destroyed nearly every home and business in town. More than half of the town's residents were injured. Six people were killed.
The tornado packed winds of up to 200 mph. After the storm passed, emergency personnel were shocked at the sight of the destruction. Among the non-residential structures destroyed by the tornado were the post office, a bank, a state transportation facility, a fire station and the library.
The tornado dealt the community a devastating blow, but today Spencer is bouncing back and building back smarter, and safer. While many of the lots that were in the tornado's path are still empty, the community has rallied to replace several of the buildings taken by the storm including the church, library, post office, bank, community center, and city hall.

Clearly the tornado left an indelible mark on Spencer, but the pride and determination of the town's residents is bringing about another transformation which is no less dramatic.
The first thing you see as you approach town in the new water tower. It is sky blue and stands several stories high. In large black letters it says, "Spencer."
There are new homes scattered throughout town. There are also large areas where clusters of homes once stood, but are still empty.
Local officials make sure these lots are mowed and weeded, ready for the next family that wants to call Spencer their hometown.

Pine Ridge, S.D., Tornado

A disaster on the reservation

A series of tornadoes struck the Pine Ridge Reservation, home of the Oglala Sioux Tribe, July 4 and 5, 1999, killing one person and injuring 40 others.
Emergency response operations involved unusual cultural challenges. One was a language barrier, as many of the elderly spoke only Lakota, their native tongue. Others were a lack of communication and transportation assets. Yet another problem was the rural nature of the reservation, with homes located far apart.
Tribal community relations teams helped solve many of these problems. The teams included representatives of FEMA and the tribe, as well as people hired locally who were fluent in both Lakota and English. The teams went door-to-door to inform residents about the assistance that was available to them and to explain the application process. In addition, tribal interpreters accompanied the inspectors as they surveyed the damage to homes.
Another challenge was a lack of automobiles and other transportation assets on the reservation. To help fill that need, a shuttle service was provided to bring applicants to the disaster recovery centers.
Rebuilding also presented challenges, due largely to the lack of infrastructure. To help meet the housing need created by the tornado, a field was converted into a 40-acre manufactured housing park, with the addition of all utilities. Other housing was provided through the Governor's Affordable Housing Program, which moved about 15 structures to the reservation
In meeting the challenges of disaster recovery on the reservation, FEMA was involved in unusual partnerships. Both the South Dakota Department of Emergency Management and FEMA provided services to the sovereign government of the tribal nation. In addition, the Indian Health Service and the Bureau of Indian Affairs, which are not typically involved in disaster response, provided technical and contracting assistance.

Embracing Innovation

Emphasis on solutions and services yields better results

Region VIII is reluctant to do things a certain way simply because they've been done that way in the past. Instead, workers take a solution-oriented approach through which they constantly strive to deliver better services.
Project Impact: Building Disaster Resistant Communities*: Region VIII led the agency with the first signing ceremonies in the nation for post-pilot Project Impact communities. The region also took the first steps in other aspects of the initiative introduced by Director Witt.*
Project Impact in one community: Fremont County, Wyo.

Building on a Foundation of Strong Partnerships

Both internally and externally, Region VIII has sought to build strong partnerships as a foundation for its many activities.

- Improving interpersonal relationships
- Strengthening partnerships with states
- Safe schools initiative demonstrates partnership with the community
- Taking a new approach to tribal relations

Other Innovations

Region VIII has interpreted Director Witt's emphasis on customer service in many ways. Click to:

- Public affairs expands mission
- Striving for excellence in community relations
- Extending HAZUS services to technical assistance
- Leading the way in urban search and rescue
- Re-mapping for better flood protection
- Dealing effectively with closed basins, prairie potholes and ground saturation

Internal Reinvention

The following were among the steps the region took to become a function-based organization.

Restructuring training

Harnessing technology

To increase efficiency, performance and service

During the 1990s, FEMA Region VIII truly entered the technological age.

At the regional office, by the year 2000 each workstation was equipped with a personal computer and e-mail was heavily used for communications and transferring documents. Phones were equipped with voice mail and, in some cases, caller identification.

In the field, a Geographic Information System (GIS) provided data-laden maps. Details about the value of GIS are included in the attached memo, which ultimately led to the implementation of the system.

Since 1969: Technologies Evolve

FEMA's predecessor agencies relied on HF radio for potential communications in case of nuclear attach. Now, Region VIII, with its 10,000-watt transmitters, utilizes HF radio to support communications during catastrophic disasters, such as hurricanes, tornados and earthquakes. And, HF radio was the agency's primary back-up system in the event of communications disruptions during the transition to the year 2000.

HF radio remains viable, because it's not as vulnerable as other technologies, which rely on such hardware as satellites, microwave relay towers and telephone lines. In contrast, HF needs only a radio, antenna and skilled operator on each end.

Over time, HF radio has become easier to use. Computers have made it much simpler for operators to send and receive messages and, in 2000, HF radio has just begun to be used for the automatic exchange of Internet e-mail, requiring no operators.

Restructuring Training

Into the field and onto campuses

Advances that Region VIII has made since 1993 include the establishment of a disaster field training organization and development of college degree programs in emergency management.

Field Training

Region VIII was the first in the nation to develop a Disaster Field Training Organization (DFTO).

During the summer of 1996, the region recruited six training reservists and presented a two-day orientation for them. By 1999, the cadre had grown to 15 and in August the region hosted a week-long orientation, where approximately 20 trainers from throughout the nation joined Region VIII participants.

The trainers' go-kits include 48 different one- to two-hour courses that are currently available as expedient training.

The kits are carried by mobile emergency response system vehicles to all disasters where the disaster field training unit is activated, so that all the trainers need is a quiet space to present the courses and, in the case of on-line courses, computers.

A Matter of Degree

Emergency management is increasingly becoming a career that attracts young people. To help prepare people for such careers, Region VIII is well on the way to meeting the national goal of having programs in emergency management offered by at least one college or university in each state by the end of 2001.

Red Rocks Community College in Golden, Colo., took the lead in 1998, when it began offering certificate and associate degree programs. By 2000, seven emergency management courses were available at the college via the Internet. Shoemaker chaired the advisory committee to develop the curriculum.

Among emergency management programs offered by three institutions in Utah is the master's in geography with a minor in emergency management offered at the University of Utah in Salt Lake City.

North Dakota State University expects to begin classes in emergency management in fall 2000, while Laramie County Community College in Laramie, Wyo., has hired a coordinator to develop its program.

Region VIII is working toward programs with universities in Montana and South Dakota and with the region's tribal colleges.

Partnerships with States

Execs Perform Liaison Function

During the mid-1990s, Region VIII began doing business with the states in a new way that puts state emergency management directors on a fast, direct pipeline to the regional director.

Along with the rest of FEMA, Region VIII began in 2000 to utilize emergency performance grants, which consolidated five previous grant programs.

The new documents supported more equitable and balanced relationships with states,

In addition, in Region VIII the state liaison function was moved from staff to executive level. All Region VIII state liaisons are division heads or other high-ranking officials, meaning that states have a fast, direct pipeline to the regional director.
Liaisons also stay involved with the states on a proactive basis. They attend statewide meetings of county emergency managers. And, each week the liaisons call the state directors then report on their status at the senior staff meeting.

Improving Interpersonal Relationships

Adopt-an-Applicant Improves Customer Service
Grier would randomly select someone who had applied for assistance. It could have been anyone – an employee at a convenience store, a fast-food server or a victim he saw interviewed on television. He would follow that person's application all the way through the recovery process. When all went smoothly, not only did he observe the process in action, but he could speak more knowledgably about how quickly the different steps in the recovery process were taking place. When there were problems, he became aware of them sooner and could take immediate action to address them. For example, one time the applicant Grier was tracking was not contacted by an inspector in a timely fashion. Looking more closely, he found that several others were affected in the same way. Thus, he was able to correct the problem for everyone.
Grier is no longer a federal coordinating officer, having retired in 1999 as director of the Response and Recovery Division after more than 38 years in public service. However, he continues to work as a reservist for FEMA and has found that others also make a practice of "adopting" an applicant.

Partnerships with the Community

Initiative Strives to Make Schools Safe
Among the most tangible ways that FEMA Region VIII has sought to strengthen its partnerships with communities is through the pilot program "Building Disaster Resistant, Safe Schools." In conjunction with regions VII and X, Region VIII has committed to working with the federal interagency community to assist and support states and local jurisdictions.
The pilot consists of five main components:

Partners for Assuring Safe Schools (PASS):
In 2000, a regional memorandum of understanding is being developed to outline a "toolkit" of federal resources, called the Partners for Assuring Safe Schools (PASS) initiative. Through this PASS memorandum, communities that participate in FEMA's Project Impact, with assistance from state agencies, voluntary agencies and the private sector, will be better able to identify and access federal resources that are available to them as they seek ways to improve and maintain safe school environments.

Project Impact Augmentation Grants
FEMA Region VIII is awarding $50,000 in augmentation grants to promote safe schools in communities participating in fiscal 2000 in Project Impact. Many projects fit under the broad category of building disaster-resistant, safe schools. While not an exhaustive list, the following are examples of potential projects:

- Develop a multi-hazard school safety plan:
- Exercise the multi-hazard school safety plan and carry out related drills.
- Develop and/or implement a mitigation plan for schools and incorporate the plan into a longer-term capital improvements plan.
- Compile school safety data, such as contact information, year school was built, type of construction, site floor plans, and so on.
- Place safety film on school windows.
- Develop in-place sheltering plans and/or evacuation plans.

While the type of project submitted for consideration will be left to each community, FEMA has developed minimum standards that potential applicants should address within their project proposal. Proposals that do the following will be given first consideration:

Training

FEMA has developed and delivered a few school-safety related courses for state and local emergency management personnel, as well as school officials and law enforcement representatives. As part of this initiative, FEMA plans to target to *Project Impact* communities its school-safety offerings, especially "Multi-Hazard Program for Schools."

Mentoring

As in *Project Impact*, mentoring by the *Project Impact* communities that participate in FEMA's Disaster Resistant, Safe Schools initiative is, by itself, a critical component of the program. These mentoring activities began in 2000 at a September conference organized by the Jefferson County, Colo., school district and a District of Columbia *Project Impact* summit in December.

Safe School Responder System

Pierce County, Wash., a 1998 *Project Impact* community, and Littleton, Colo., have developed a school safety responder system to provide school safety/crisis plans within fire, police, sheriff and emergency medical system vehicles. Among the items the system addresses are lock-down instructions, evacuation routes, locations of command posts, designated staging areas, digital photos of buildings and facility maps.

In 2000, Regions VIII and X are planning to work with Pierce County and Littleton to enhance this system and distribute the template, in a pilot effort, to select communities within a specified geographic area. A task force will be formed to determine software needs, production and marketing plans, and associated costs. Once implemented, an evaluation will be conducted and a decision made concerning whether to market the system nationally.

Public Affairs Expands Mission

Using new media, providing technical assistance

During the tenure of FEMA Director James Lee Witt, the public affairs team in Region VIII expanded its mission, utilizing new media to communicate the agency's messages and extending services in the form of technical assistance to impacted communities and federal partners.

Along with all the other regions, Region VIII began using the *Recovery* newsletter, originally known as *Recovery Times*, as a vehicle to disseminate useful information to disaster victims during recovery operations.

Technical Assistance

In addition, a specific new area that Region VIII public affairs entered was technical assistance. Following the 1997 flood that devastated Grand Forks, N.D. (DR-1174-ND), FEMA public affairs officers supported the city's public information activities in a variety of ways, including the following:

Providing personnel to serve as city of Grand Forks public information officers in the immediate aftermath of the disaster.

Providing staff to assist a publications class at the University of North Dakota in producing a monthly newsletter aimed at residents of FEMA-provided manufactured homes.

Developing a pamphlet on flood recovery for the local arts council.

Providing satellite time and organized media pool activities during the critical days at the onset of the disaster.

Providing video specialists to develop products that document the devastation suffered in the community.

Developing talking points for several city officials, including the mayor, who were deluged by speaking requests throughout the country.

In South Dakota, Region VIII provided public affairs technical assistance following tornadoes at Spencer in 1998 (DR-1218-SD) and at the Pine Ridge Reservation in 1999 (DR-1280-SD). In Colorado, FEMA public affairs officers helped local public information officers in the aftermath of the April 1999 shooting tragedy at Columbine High School in Littleton.

In 2000, Region VIII administered several fire suppression declarations, which provided funds to states to help cover firefighting costs. In addition, members of the Region VIII public affairs cadre assisted the U.S. Forest Service in disseminating public information, providing photographic support, fielding media inquiries or participating in multi-agency coordination. Three Region VIII cadre members completed basic firefighter training in order to be able to better assist in such efforts.

Harnessing the power of the web

Another innovation made by Region VIII public affairs was the use of the Region VIII web site, www.fema.gov/reg-viii, as an integral component of its information dissemination strategy. Since September 1999, an electronic newsletter has been produced each month with a full slate of multi-media features, including a message from the regional director, news of the region, and sections on *Project Impact* and tribal relations. In addition to articles, photos and short videos, the site includes extensive links. After a new slate of stories is posted, more than 6,000 people are notified via email with a message and link to the site, which also includes the newsletter. Throughout the month, the web site is updated as events occur and in 2000 it began to be used as a channel for disaster-specific information. During the recovery following the North Dakota floods (DR-1334-ND), timely information of use to disaster victims was posted in both English and Spanish. Community relations workers and local officials promoted the site and several North Dakota media provided links to it.

The web, however, remains just one of many tools that Public Affairs uses to get out the FEMA message.

Remapping for Better Flood Protection

Region VIII communities cooperate with agency on map modernization

With the ultimate goal of providing greater protection, the National Flood Insurance Program and FEMA's Mitigation Division began an effort in the late 1990s to update the nation's flood maps.

Two complementary aspects of the effort are the FEMA Mitigation Directorate's Technical Services Division map modernization initiative and the Cooperating Technical 1ommunities initiative. For its part, FEMA establishes and updates flood-risk zone data in floodplain areas. FEMA is authorized to consult with, receive information from, and enter into agreements or other arrangements with state or local agencies to identify flood-risk zone data. With the CTC initiative, participating communities agree to use their technical expertise in the collection, development, and evaluation of flood hazard data that otherwise would have been completed by FEMA.

Among the Region VIII entities that have joined the cooperative effort are the Denver-Area Urban Drainage and Flood District, the Montana Department of Natural Resources and Conservation, and the North Dakota State Water Commission.

Denver-Area Urban Drainage and Flood Control District Joins FEMA in Flood Map Modernization Effort

Washington, May 18, 1999 -- The Urban Drainage and Flood Control District of Denver Monday became one of the first groups to join the Federal Emergency Management Agency (FEMA) in a new partnership initiative designed to help individuals and communities protect themselves from flooding by updating and modernizing flood maps.

The cooperating technical communities initiative is part of FEMA's plan to update the nation's flood maps. The plan calls for conversion of maps into a more accessible digital format. Flood maps identify areas at risk of flooding and help set insurance rates used by the National Flood Insurance Program.

Under the cooperating technical communities initiative, the local partner enters an agreement with FEMA that affirms its commitment to protecting the community through flood hazard identification, flood insurance and floodplain management. The local partner and FEMA then work together to identify and create agreements to perform specific flood-mapping tasks.

The Urban Drainage and Flood Control District serves 32 communities in the Denver metro area.

Urban Search and Rescue

Region assists others, holds major exercise

Region VIII is home to two of the 28 national urban search and rescue task forces, Colorado Task Force-1 and Utah Task Force-1. Although neither task force has deployed as a unit, certain components and individuals from both have been deployed to:

- Oklahoma City bombing
- Hurricane Fran
- Hurricane Marilyn
- Hurricane Floyd
- Kansas City silo collapse
- 1997 Fort Collins flood

At the Oklahoma City bombing, Peter J. Bakersky, the Region VIII urban search and rescue program leader, provided overall management for the search and rescue assets deployed. He also offered technical assistance in setting up the multi-agency coordination center that tracked resources involved in the response. After the center was operational, Bakersky became the night operations manager at the Murrah Federal Building.
In addition, the region's task forces have been involved in the management committees of national task forces in developing US&R procedures and guidelines.
In 2000, five of the nation's 28 forces participated in a major exercise held in conjunction with the demolition of Denver's McNichols Arena.

Technical Assistance: Taking Action on HAZUS

Utah officials gear up for inspections

FEMA would not be able to prevent a large earthquake from occurring on Utah's Wasatch fault, but Region VIII is helping communities there prepare to respond to such an event.
HAZUS (Hazards, U.S.) is a computer estimation model that enables emergency managers across the nation to gauge the damage that would result from a variety of potential disaster scenarios. In Utah, for example, they can learn the approximate number of structures that would be impacted and the degrees of impact—in earthquakes of varying magnitudes.
But FEMA is helping Utah communities go a step further. Members of the Utah HAZUS data users group, which is supported by FEMA, are analyzing the information and taking action. For example, some have determined the number of inspectors that would be needed following a large earthquake to green-, yellow-, and red-tag structures to indicate whether occupancy is allowed. The officials then endeavor to train enough inspectors to do the job.
One way Region VIII supports the data users group is by helping to develop and disseminate maps and table-laden reports that clearly show estimated degrees of vulnerability. One such report is the attached "Earthquake Planning Scenarios for Provo, Utah."

Earthquake Planning Scenarios for Logan City, Using HAZUS –The FEMA Software Tool for Estimating Earthquake Losses

Introduction

This report summarizes an analysis of the earthquake hazard vulnerability of Logan City using HAZUS. Five scenario events were used to obtain a comprehensive test of a Level 1 HAZUS analysis. The results from these five loss estimates are presented in tabular form and provide information to augment emergency planning efforts in Logan.

What is HAZUS

HAZUS is shorthand for HAZards United States. It is the standardized methodology, based on a geographic information system (GIS), which can be used to estimate earthquake losses. The methodology was developed by the National Institute of Building Sciences with support form FEMA. Nearly 140 earthquake experts have provided input and review of the methodology. Further, the software has been calibrated with data from several actual earthquakes and it has been pilot tested in Portland, Ore., and Boston, Mass.

Using the default data, which is provided with the software, a Level 1 analysis can be performed. To obtain a more accurate Level 2 analysis, one will need to provide detailed information on local geology, an inventory of buildings in the community, and data on utilities and transportation infrastructure. A Level 3 estimate requires detailed engineering and geotechnical input to customize the methodology to the specific conditions in the community.

Logan City by the Numbers

The power of HAZUS software is the databases. Logan is located in northern Utah, in Cache County. Logan comprises all or part of eight census tracts, with an approximate population of 42,000 residents. According to the default databases, Logan has one hospital, the Logan Regional Hospital, with 127 beds. The city has a police station and several fire stations. There are also 26 schools (public and private) listed in the default database.

The inventory is divided by occupancy. Most buildings are residential units. These would include all single family dwellings; mobile homes; multi-family dwellings; and temporary lodgings such as hotels, motels, dormitories, jails and nursing homes.

Scenario Events

Five earthquake scenarios were used in this analysis. Two scenarios were probabilistic estimates based on ground motion maps compiled by the U.S. Geological Survey. Probabilistic ground motion is calculated by estimating the maximum ground motion from all possible sources for a given time window. A 1500-year return period and a 500-year return period were run for Logan.

The other three scenarios were deterministic, in other words, the user selected the location and magnitude for each event. The first was the size and location of the 1962 Richmond earthquake. The second is a 7.1 Richter magnitude event centered around Hyrum, Utah. The third is a 7.5 Richter magnitude event centered around Brigham City, Box Elder County.

More information on the categories and items will be given following the table in discussion of the scenarios.

Casualties are based on four levels of severity: Severity 1 –injury requires no medical assistance; Severity 2 –medical assistance needed but injury is not life-threatening; Severity 3 –medical

assistance is urgently needed for life safety; Severity 4 –mortally wounded or deceased. Severity 1 and 2 can be grouped together as Minor with Severity 3 and 4 classified as Major. Casualty estimates are calculated for three different times of day; nighttime (2 a.m.); daytime (2 p.m.); and commute time (5 p.m.). The three times were selected to show the maximum hazard and/or benefit of the population being at home (nighttime), at work and school (daytime) and on the transportation infrastructure (commute).
Shelter needs are based on calculations of the number of persons who would be homeless due to dwelling failure. These numbers do not include the percentage of those persons who would leave their residences due to utility outages.

Building Damage by County
Building damage is classified by HAZUS in five damage states: none, slight, moderate, extensive and complete. The largest percentage of damaged buildings, relative to the number of buildings in the inventory, is in the commercial category. This is because, on average, the commercial sector is largely composed of unreinforced masonry structure, ones that perform poorly in earthquakes.

Facility Functionality
Following an earthquake, damages can be looked at both in terms of monetary losses as well as in loss of function. Table 6 shows an average functionality for nine classes of vital facilities and infrastructure. The numbers after each entry are the numbers of facilities in each class.
The HAZUS software estimates functionally for essential facilities and infrastructure at several times from immediately following the event (Day 0), one day after (Day 1), three days, seven days, 30 days and 90 days later. The functionality is based solely on the estimated level of damage. Utility outages are not considered.

Utility Outages
The HAZUS results suggest that water availability is not an issue, however, the program does not consider the quantity of water, which is moved through a distribution system by electricity. Many users draw water from private wells or through the treatment system. This means that power restoration could be the most important issue in the recovery of vital services.
Significant power outages are expected following many of the scenario events. Most of the power is anticipated to be restored in two to three days. In the case of the Northridge, Calif., earthquake in 1994, 98 percent of the power was restored in one week to more than 7 million people. Still, a very small percentage of residents were without power and used alternative methods of illumination. The American Red Cross reports that 114 people died from home fires which were started by candles in the weeks following the earthquake. This suggests that it is important to continue an emphasis on fire safety in all earthquake preparedness information.

Bridges to Inspect (16 bridges)
The previous table lists the damage states for the highway bridges. Following any damaging earthquake, a high priority will be placed on the rapid assessment of the existing infrastructure. The results from HAZUS can be used in planning such an emergency response.

Buildings to Inspect (9,060 total in stock)

Another issue following an earthquake is the need to perform building safety inspections. This is not the same as a damage assessment to determine the need for a possible presidential disaster declaration.
The Applied Technology Council (ATC) has prepared both a methodology and a guidebook (ATC – 20 –Procedures for Post-earthquake Safety Evaluation of Buildings) which is used for this purpose. This methodology has been used after many earthquakes and FEMA and the state Division of Comprehensive Emergency Management provide funding to conduct training in these procedures. Inspections are conducted by two or three person volunteer teams, which could be comprised of structural engineers, building inspectors, firefighters, architects, civil engineers or engineering school students.

Supposing that inspection teams consisting of two persons can inspect a building in 20 minutes it would take as little as 440 man hours to inspect damages from the 6.2 Richter magnitude event up to 5,155 man hours for the 7.1 event, centered in Hyrum, Utah. If the city had 50 inspection teams it would take nearly five 12-hour workdays to inspect all buildings following the 7.1 event.

Earthquake Planning Issues

What is the next step? What is the HAZUS estimate good for? The application of this loss estimation methodology will assist local jurisdictions in emergency preparedness and response planning. HAZUS can be used in education and awareness. Logan is in earthquake country. Prior to the next earthquake, HAZUS will enable planners to reduce earthquake losses by providing land use and development information on the expected level of shaking and illustrate regions which are susceptible to ground failure, liquefaction or landslides. Further, from the analysis of the vital facilities, mitigation opportunities can be identified. Retrofitting unreinforced masonry buildings and other vulnerable structures saves lives and reduces earthquake losses.
Finally, HAZUS can be an important decision support tool to speed-up response and relief. By providing emergency managers with information on likely damaged areas, estimation on damage and possible casualties, the type and quantity of resources, which would be needed, could be rapidly identified.

The Next Step

Several options should be considered to prepare Logan for earthquakes. First, acknowledge the hazard. Use public education and awareness as motivations for action to reduce business and residential losses. Take advantage of actual events, either locally or overseas, to showcase earthquake reduction measures in Logan. Encourage media reports to outline mitigation measures which people can undertake on their own.

Finding Effective Ways to Deal with Ongoing Saturation

Recurrent flooding in the Dakotas calls for new solutions

Most FEMA programs are based on the notion that disasters are discrete events – they happen and then they are over. Floodwaters inundate an area and then recede. That's the way such things usually happen.

In the Dakotas, however, this has not been the case. Both North Dakota and South Dakota have had recurrent disaster declarations since the great Midwest flood of 1993, as water has accumulated in areas where the topography is flat and outlets are severely restricted. Some of the problems are in closed basins, such as the one that ends in Devils Lake, N.D. Closed basins typically comprise large areas where water flows in but cannot easily flow out. Others problems are in prairie potholes, where depressions in the flat topography fill with increasing amounts of water as precipitation accumulates. These features, which are typically far smaller than closed basins, are numerous in northeastern South Dakota. High ground water, with the water table sometimes rising to near ground level, is yet another problem.

Since 1993, FEMA, through the Hazard Mitigation Grant Program, has helped to fund the acquisition and removal of 462 structures that had been located in North Dakota floodplains. Other measures are detailed here:

Devils Lake Basin interagency Task Force considers basin as a whole.
October '97 policy guidance addresses inundation and ground saturation.
Northeast Study calculates options for South Dakota communities.
August '99 policy endorsement allows flood insurance payout *before* imminent damage occurs.
Expanded Habitability Program helps residents.

Devils Lake Basin Interagency Task Force

Following the Great Midwest Flood of 1993, Devils Lake, located in northeastern North Dakota, continued to rise, inundating some structures and threatening others. And it appeared the situation was likely to get worse before getting better: water could not feasibly escape from the closed basin except by evaporation.

To address the problem, FEMA Director James Lee Witt in 1995 established the Devils Lake Basin Interagency Task Force. The mission of the task force has been to coordinate a multi-objective interagency response to the flooding issues of Devils Lake.

As with the 1994 multi-objective flood mitigation plan developed for the Vermillion River Basin in South Dakota, the work of the task force was the first consensus-building project done on an entire river basin in North Dakota. In addition, the task force accomplished many changes, as detailed in the executive summary from the *Summary Report of the Devils Lake Basin Interagency Task Force 1999.*

Expanded Habitability Helps Homeowners

Proactive program goes beyond repairs

In 1999, FEMA and the state of North Dakota teamed up to try a proactive approach to funding repairs to disaster-damaged homes. The action, begun on a smaller scale the previous year, was taken as part of FEMA's overall disaster housing program following the major disaster declaration DR-1279-ND, and it was continued in 2000 following DR-1334-ND.

Generally, disaster recovery programs have been geared to repairing structures to basic livable condition. However, in North Dakota, due to soil, geographic and weather conditions, many homes were subject to recurring high ground water conditions. The water table had risen to near ground level and remained there for extended periods. It was an unusual situation that

compounded the problems of spring flooding, which regularly occurs in the state. The result was that repairing homes to basic livable condition didn't keep them dry.

To address this problem, FEMA and the state introduced a program called "expanded habitability." Its aim is to repair damaged structures so they can be expected to remain repaired. One of the actions funded was installation of interior and exterior drainage tiles. This involves the digging of trenches and placement of gravel and pipes to remove water from homes. It also involves the digging of sump pits and providing sump pumps to move the water from homes to areas that drain away from the homes. Other activities included:

- Sloping land from foundations.
- Installing gutters, downspouts and downspout extenders.
- Modifying septic systems to avoid saturation by groundwater.

In the most severe cases, filling in basements and relocating such items as furnaces, hot water heaters, and washers and dryers away from the basements.

Initial indications were that the initiative has been highly effective as properties that had water for many years stayed dry after owners participated in the program. Monitoring of the program continued in 2000. The attached Recovery newsletters reflect the evolution of the expanded habitability program and contain articles on several other related topics.

Mitigation for Prairie Potholes in South Dakota

Northeast Study Calculates Options

The Waubay Lakes chain, which comprises 10 major lakes in an approximately 400-square mile area in northeastern South Dakota, is part of a closed basin. In general, the water there does not have a direct drainage path to a river outside the basin. Instead of flowing out, it ponds until it can evaporate into the atmosphere.

With floods severe enough to result in presidential declarations in five of the six years from 1993 through 1998, large amounts of water accumulated, turning former farmlands into lakes. While FEMA was able to provide assistance to meet flood emergency needs, new approaches were needed for chronic problems.

To help develop effective, long-term strategies to address the repetitive flooding, FEMA called on other federal and state agencies and together they decided that a true risk assessment was needed. FEMA asked the U. S. Geological Service and the U.S. Army Corps of Engineers to develop a series of technical reports, coupled with computer-modeling programs, to predict future lake levels and possible inundation areas based on various climatological scenarios. South Dakota State University of the Northern Great Plains Water Resources Research Center also contributed information to the project, as did other organizations.

In summary, the data indicated that the total surface area of the lakes increased by 15,804 acres—more than 74 percent—between 1991 and 1998 and that well over 100,000 additional acres were impacted by flooding, resulting in substantial damage to public and private properties. In addition, one hydrologic model indicated that flooding problems would persist over the next few years, regardless of whether the climate was wet or dry. Projects that were identified for reducing the amount of water in the basin included a diversion project at a cost between $45 million and $90 million, and pumping stations estimated at a cost between $10 million and $50 million.

The data compiled can be used as a basis for decisions about the best steps to take to avoid future flood losses.

Trial and Triumph in the Face of Adversity

Grand Forks, N. D., rebuilds after hellish '97 flood

The 1997 flood that inundated Grand Forks and damaged scores of other North Dakota communities began innocently enough with the first snowfall of '96. But, as one blizzard followed another, emergency managers began calculating likely river flows and devising strategies to avoid flood damages. On Jan. 12, between Doris and Elmo, the fourth and fifth named blizzards of the season, the state received a major disaster declaration for snow, ice, winter storms and freezing (DR-1157-ND).

Nonetheless, those in charge of the flood fight might have prevailed – damages might have been far less—had it not been for Hannah, which assaulted the state from April 4 through 6. According to the *Grand Forks Herald*, this last in the series of eight blizzards packed "the force of an Atlantic hurricane and the cold of an arctic night."

As the Red River of the North swelled, President Clinton made a second major disaster declaration for North Dakota on April 7 (DR-1174-ND) and FEMA employees from throughout Region VIII and the country began to gather there. Then, as the river continued to rise, emergency managers prepared for inundation in towns along its banks. At one point, it appeared that Fargo might receive the worst damage. Headlines in the Herald changed from "flood fight" to "evacuation."

From April 18 through 20, while significant flooding occurred elsewhere, events beyond the worst imaginable occurred in Grand Forks. Floodwaters engulfed the city, causing what was reported to be the largest evacuation of a U.S. city since the Civil War. And, while still underwater, the historic downtown area caught fire and more than 10 buildings were destroyed. With 90 percent of the city's residents displaced, a few fled the region never to return, but most stayed in the area. After what surely seemed a long, hard time, some began to return to their homes. Others stayed in rental units while the community made some difficult decisions. Grand Forks Mayor Pat Owens and FEMA Director James Lee Witt became friends as he made repeated trips to the stricken area.

Now, mitigation efforts all over Grand Forks are apparent to the trained eye. An obviously new levy rings a vulnerable area. Badly flooded places where homes once stood are now park-like floodways. New construction is disaster resistant, as buildings have been elevated and other protective measures have been taken. Monuments stand in testimony to the flood.

Sadly, even more than most disasters, the flood turned lives upside down and caused some damage that is irreparable. But, in the event the waters rise so high again in the future, the community will be better prepared.

Disaster Overview

FEMA-DR-1157-ND
Declaration Date: Jan. 12, 1997
Declaration: Major Disaster for Major Winter Storm & Blizzard
Counties: 53 (entire state)
Incident Period: January 3 and continuing
Report Date: Jan. 21, 1997

SUMMARY

This state has had presidential disaster declarations each of the past four years because of flooding. Now, North Dakota is experiencing one of the hardest winters in years. Residents here say that winter traditionally starts in November or December, with the coldest months usually being January and February. March often is the month with the heaviest snowfall. This year, locals say, the winter season began in mid-October and has continued.

The main issue in this disaster has been the severe weather (above-normal snowfall, strong winds and bitterly cold temperatures), causing a substantial impact statewide on personal health and safety, commerce, agriculture, wildlife and state/local financial resources. Among the affected populations are Native Americans living on four reservations throughout the state (one, Standing Rock, extends into South Dakota and reportedly was affected in that state as well). To date, newspaper accounts suggest the tribal issues are snow removal, heat and feeding livestock. FEMA staff was scheduled to conduct on-site assessments at the reservations on Monday, Jan. 21, and Tuesday, Jan. 22, to get a better handle on the needs/issues.

Human deaths to date:

From hypothermia/exposure: 3 (Rolette, Foster Counties)
From heart attack caused by exertion: 2 (Cass and Barnes Counties)
Delayed ambulance response because of snow: 2 (Logan County)

Human injuries to date

From carbon monoxide exposure: 26 (25 in 1 incident from Mandan, Morton County; 1 from Manango in Dickey County)
From traffic accidents: 32 (Morton, Nelson, Sioux, Dickey, Mountrail and Kidder Counties)
From frostbite: 6 (Griggs County)

Weather

The National Weather Service has documented nine (9) major winter storms since late October 1996 -- the last occurring on Jan. 15, 1997. They also have documented more Alberta Clippers than usual this winter. The state has experienced above-average snowfall. Normal cumulative snowfall amounts for this time of year are 13-14 inches. This season, cumulative snowfall amounts across the state are ranging from 13-65 inches. (Bismarck has had 55 inches of snow since October—already it is Bismarck's 15th snowiest winter since records there began in 1875). There were some record low temperatures in November and December, breaking records as old as 1900. High winds also have contributed to the weather problems, causing wind chills as low as minus 80F and creating serious drifting. Snow in some of the drifts is packed quite hard,

making road clearance even more difficult. The trend of above-average snowfall and below-average temperatures is forecast to continue.

Snow Removal

As of Jan. 20, 32 counties had opened emergency access passages for every residence (not driveways), at a minimum. However, many of these counties reported that the initial single-lane cuts through drifts would need to be widened to open two lanes and to stabilize the openings against future drifting. Reports are that many of the initial cuts are too narrow for school buses. It is estimated that all counties will have at least initial access completed within the next 8-10 days, pending weather conditions.

Agricultural Issues

*Statewide Statistics as of 1/1/96:

1.9 million cattle (includes beef, dairy, calves)

- 280,000 hogs
- 270,000 chickens
- 125,000 sheep

Source: N.D. Department of Agriculture

The state agriculture department is reporting that the majority of ranchers are running out of or unable to access feed for their cattle, sheep and hogs. Factors that are contributing to this problem are:

Poor quality of hay because of unusually wet weather this year – as a result, more hay is being used.

Farmers are unable to access hay supplies—fields were too wet this fall to move bales out, then early snows came and under these conditions, bales couldn't be moved with regular farm equipment, so they're stuck in fields that are now inaccessible—usual snow belts were ineffective this year because high winds blew snow right through, drifting around the bales.

Roads have been blocked with deep and drifting snow, preventing access to food supplies.

Cold weather is causing cattle to eat more to keep warm. On average, a cow eats about 20 lbs. of hay daily. With the extreme cold, they've been eating between 25 and 40 lbs. daily, so supplies are running low.

Early snowfall cut the grazing season in the southern and western parts of state by six weeks, causing farmers to dig into their feed supply earlier than planned.

Despite increased hay consumption, the cold weather reportedly is weakening much of the state's livestock population (up to 100,000 at risk according to a story in the Jan. 17th *Bismarck Tribune).* The Stockman's Association is warning that weakened cows (and calves) may not survive the upcoming calving season and that if they do, the cattle may be too weak to be bred again this June.

Dairy Industry

From Jan. 10-19, the agriculture department estimates that the state's dairy farmers dumped from 250,000-500,000 pounds of milk because dairy plants could not pick up the milk either because

of impassable roads or poor visibility. There are an estimated 1,025 producers statewide and an estimated 64,000 dairy cows.

Sheep
Same feeding issues as livestock but the danger here is that these animals are not as hearty as cows when it comes to surviving the weather (even though they require shelter).

Hogs
Some have already died; more are at risk. Temperature is not as great a risk because they are kept in confinement houses. Hogs feed on grain rather than hay, but same access issues apply.

Wildlife
Newspapers are reporting losses to pheasant population; no hard figures available, though.

Business
Many businesses have been closed for extended periods or have suffered other economic losses because customers couldn't get to them. Last week, Gov. Schafer asked the state department of economic development to look into the business impact and compile information on this issue.

COMMUNITY RELATIONS

MISSION

The mission of CR is to create an atmosphere wherein federal, state and local officials and other community leaders are encouraged to form a partnership and act as a team united to deliver disaster assistance. The following goals drive the operations undertaken by the CR Function:
Identify political, social, religious and ethnic leadership for the purpose of developing a team effort in the recovery process.
Collect and disseminate information to and from affected communities.
Locate individuals who may need special assistance or encouragement to initiate the application process.
Maintain the highest standards of customer service to those affected by the disaster, colleagues and co-workers.
Conduct pre-disaster planning with state and local governments. Periodically review these plans for currency and viability.

CONCEPT OF OPERATIONS

FEMA is responsible for coordinating an immense and complex disaster relief process involving dozens of Federal, State, local, private and voluntary interests and organizations. The CR Function plays an important role in FEMA's disaster response by ensuring that information collected and disseminated to and from affected communities is timely, consistent, and accurate. It is recommended that a CR presence be included on the first teams into an affected area (ERT-A, PDA, etc) to facilitate this information flow. As part of this process, the CR Function helps affected individuals, and the communities they live in, become aware of and access the disaster relief process.

FEMA's CR Function works with other federal, state and local disaster response organizations to promote equal access to available disaster assistance regardless of race, gender, disability or age, consistent with the provisions of the Stafford Act and Title VI of the Civil Rights Act. FEMA has developed and adheres to standardized procedures that provide a consistent level of service to disaster victims.

Striving for Excellence in Community Relations

Region led agency in establishing protocols and training

Prior to 1994, Community Relations as it is known in 2000 did not exist. In its most common form, the function was called "outreach" and consisted of information dissemination mainly by displaying posters and distributing flyers throughout communities affected by a disaster. The posters and flyers provided information on how those affected by disaster could apply for assistance.

Several regions, however, expanded the function to include one-on-one contact with officials and individuals in disaster affected areas, enhancing the effectiveness of the information dissemination process. In addition, some regions included community meetings in their disaster response efforts.

In April 1994, Region VIII began serving as the host region for a center for excellence tasked with the responsibility of overseeing the development of a set of standard operating procedures for outreach efforts in disaster operations throughout the country.

Under the guidance of Region VIII and a 15-member national steering committee, the center for excellence named the function Community Relations and developed a mission statement and set of goals that later evolved into the attached mission and concept of operations. In addition, a point of contact was identified within each region to work with the center, strengthening the commitment to nationwide uniformity.

Building on this foundation, the center addressed Community Relations in the field. A new organizational structure placed the function directly under the federal coordinating officer, where Community Relations could serve as a messaging unit, facilitating communication between the Disaster Field Office and the disaster-affected population. To support this role, the Center for Excellence developed guidelines for information networks. To plug into these networks, Community Relations works closely with state and local jurisdictions to identify community leaders, community-based organizations and neighborhood advocacy groups. Working through these groups assists in the rapid dissemination of information, the identification of unmet needs, establishment of an ongoing dialogue and information exchange. It also facilitates federal, state and local planning and mutual support for disaster recovery.

The center for excellence recognized that in accomplishing its mission, Community Relations would effectively become the eyes, ears and heart of the disaster response operation. In order to prepare field officers for this responsibility, the center developed two training courses, a basic course for all field officers and a management course for field staff managers. These courses laid the foundation for the development of the trained and credentialled Community Relations cadre that exists today. In addition, a draft *Field Officer Guide* and *Community Relations Operations Manual* were produced to provide support for the function.

In 1996, the Center for Excellence was moved to FEMA headquarters, where functional development continues.

Community Relations continues to be one of the cornerstones of Region VIII disaster response and Region VIII Community Relations officers often support response and recovery in other regions.

Honoring Our Partnerships

Conference redefined FEMA's relationships with tribes

More than 300 tribal leaders, state and local officials and others gathered in Rapid City, S.D., in September 2000 for a three-day conference entitled "Honoring our Partnerships, *a vision for emergency management in Indian Country.*" While there, representatives of 21 of the 28 tribes with lands within the six states of FEMA Region VIII pledged to join together to form a Tribal Emergency Management Coordination Council.

The purposes of the conference were to learn about successful tribal emergency management practices, take steps to enhance tribal emergency management capability and work together to implement FEMA's tribal policy within the region.

As with most conferences, the schedule for "Honoring Our Partnerships" included large group sessions and panel discussions on a variety of topics. However, unlike typical conferences, the tone for this one was set by such activities as traditional Indian blessings and other rituals.

The Tribal Emergency Management Coordination Council that was formed at the conference will serve as a central point of coordination between FEMA Region VIII and the tribes before, during, and after disaster events.

The conference was co-hosted by Region VIII and the Mni Sose Intertribal Water Rights Coalition, along with the Oglala, Rosebud, Cheyenne River and Standing Rock Sioux tribes.

The following tribes signed the memorandum of understanding and will seat one representative on the council: Arapahoe Tribe of the Wind River Reservation, Blackfeet Tribe of the Blackfeet Indian Nation of Montana, Cheyenne River Sioux Tribe of the Cheyenne River Reservation, Chippewa-Cree Indians of the Rocky Boy's Reservation, Confederated Tribes of the Goshute Reservation, Crow Creek Sioux Tribe of the Crow Creek Reservation, Flandreau Santee Sioux Tribe of South Dakota, Fort Belknap Indian Community of the Fort Belknap Reservation of Montana, Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Paiute Indian Tribe of Utah, Sisseton-Wahpeton Sioux Tribe of the Lake Traverse Reservation, Spirit Lake Tribe, Standing Rock Sioux Tribe of North and South Dakota, Three Affiliated Tribes of the Fort Berthold Reservation, Shoshone Tribe of the Wind River Reservation, Southern Ute Indian Tribe of the Southern Ute Reservation, Ute Mountain Tribe of the Ute Mountain Reservation and the Yankton Sioux Tribe of South Dakota.

The remaining tribes of Region VIII returned to their tribal councils with a memorandum of understanding for review and were expected to sign the memorandum following consensus by the council.

Strengthening Emergency Management in Indian Country

Region VIII, whose six states are home to 28 American Indian tribes, has led FEMA in the area of tribal relations. The region's actions have been consistent with a policy memorandum President Clinton issued in 1994, calling for government-to-government relations in all activities linking federal agencies and departments to American Indian and Alaska Natives.

As early as 1997, when many reservations in the Dakotas were assaulted first by blizzards and then by floods, both the region and headquarters began to scrutinize the agency's tribal policy. On the national level, with participation from the regions, a tribal relations policy was developed. In June 1997 at Standing Rock Reservation, which straddles the border between the Dakotas, FEMA Director James Lee Witt presented the first draft of the policy to many of the northern plains tribes. Finalized in 1998, the policy emphasizes that dealings should be on a government-to-government level and provides the basis for tribal relations activities.

In keeping with the policy, Region VIII, like the other regions where there are tribes, has a tribal liaison officer, just as it has state liaison officers. In Region VIII, the liaisons are all members of senior management who report on their constituents at weekly staff meetings. As tribal liaison officer, Scott Logan, who is Preparedness, Training and Exercises Division Director, makes frequent, proactive calls to the region's tribes in order to maintain an active dialogue and keep his reports current. And, when issues come up, the regional director often becomes involved right away.

Also on the regional level, Region VIII developed the agency's only tribal cadre to pursue the agency's tribal relations mission and to work to meet the needs of American Indian people in terms of disaster preparedness and recovery. The cadre comprises eight members, all American Indians with experience in tribal government relations. Their services have been used in five of the nine FEMA regions where there are Indian tribes (only Region III has no tribes).

In addition, the region has pursued partnerships with several other federal agencies, including the Bureau of Indian Affairs and the Environmental Protection Agency. And, Salish-Kootenai College on the Flathead Indian Reservation in western Montana will be among the first of 16 tribal colleges within Region VIII to explore the potential of providing an Integrated Emergency Management Curriculum developed by FEMA.

Region VIII Project Impact Communities

Activities are unique to each community

From the time that *Project Impact* was launched until the summer of 2000, 21 communities within Region VIII joined the initiative. While they share many of the same disaster risks, the steps they have taken are as unique as the communities themselves. In addition, the 2001 communities were named in September 2000. They are El Paso County, Colo.; Gallatin County, Mont.; Pembina County, N.D.; Sioux Falls, S.D.; Provo, Utah; and Campbell County, Wyo.

Colorado

Clear Creek County

Named as a 1999 *Project Impact* community, Clear Creek County has developed pre-disaster mitigation projects for three of its towns plus a fire protection plan for the entire county. The county has also implemented an early warning system and a public information network project for pre-disaster preparedness.

Delta

Named as a 2000 *Project Impact* community, Delta is assessing vulnerabilities to natural hazards and planning action that will protect families, businesses and the community.

Fort Collins

Named as a *Project Impact* community in 1998, Fort Collins has developed a state-of-the-art flood detection system, and an advance-warning system that helps residents get out of harm's way. Coupled with this technological solution to its flood risk, Fort Collins has developed videos, web sites, school programs and other initiatives to inform citizens about all types of disaster risks and steps they should take to reduce their vulnerability.

Morgan County

Named as a 1999 *Project Impact* community, Morgan County has developed a variety of educational initiatives including a *Project Impact* web site, a hazard awareness video and a program for use in schools. The county has also developed an early emergency notification evacuation project to integrate the system countywide. Additionally, Morgan County started flood mitigation projects throughout the county.

The San Luis Valley

Project Impact activities in the San Luis Valley, which joined the initiative in 2000, focus on three areas: fires, flooding and school safety. Steps being taken to protect against fire damage include the establishment of defensible space around homes and strategic placement of fire wells so there is sufficient water for fighting fires throughout the sparsely populated six-county area. Steps are being taken to provide flood protection in the towns of Creede, which is in a narrow gorge, and San Luis, where a high water table threatened the historic adobe Costilla County Courthouse. To increase school safety, *Project Impact* corporate partners helped make schools in remote locations more secure by helping apply to windows and glass doors a film that makes glass shatter resistant.

Montana

Libby

Named as a *Project Impact* community in 1998, Libby developed a variety of educational materials including brochures on disaster hazards, videos on earthquake and wildfire hazards, and extensive public relations and outreach materials. Libby has also upgraded the infrastructure of its critical facilities, such as the hospital power system and sewer lift stations, and the town has redeveloped drainage systems along Parmenter Creek.

Lewis & Clark County

Named as a *Project Impact* community in 1999, Lewis & Clark County initiated a variety of mitigation projects and a public awareness and education campaign. Additionally, the counties installed an alert and warning system that utilizes a reverse 911 system and 3M, a *Project Impact* corporate partner, worked with the county to retrofit public schools with the company's safety film for glass to protect against earthquake and wind damage.

Yellowstone County

Yellowstone County, which became a *Project Impact* community in 2000, will work with local private partners in taking steps to become disaster resistant.

North Dakota

Fargo
Named as North Dakota's first *Project Impact* community in 1998, Fargo has begun several multi-hazard projects throughout the city and surrounding areas. The main projects include developing a mitigation strategy for overland flooding, upgrading storm sirens, and constructing storm lift stations, storm water retention basins and tornado/storm shelters. The city, which has an extensive web site, received an award for livability and establishing creative approaches at the second annual *Project Impact* Summit in 1999, held in Washington, D.C.

Jamestown
Named as a 2000 *Project Impact* community, Jamestown places great emphasis on public awareness and education along with protection of critical infrastructure. One local private partner, Jamestown Hospital, has donated a generator to the Jamestown Civic Center so the facility can be used as a shelter in emergency situations.

Valley City
Named as a 1999 *Project Impact* community, Valley City supports measures that improve the emergency warning system, ensure a safe water system and provide for school and community education. At the 1999 *Project Impact* Summit, Valley City received the "Fostering Community Partners" award for efforts to develop strategic partnerships with a variety of local organizations.

South Dakota

Aberdeen
Named as a *Project Impact* community in 1998, Aberdeen has initiated a variety of projects to reduce the threat of disasters. For instance, Aberdeen started an area-wide contour mapping and drainage study for the protection of the city. Another project involves a citywide outdoor warning system for immediate protection of citizens. Aberdeen's primary mitigation project will upgrade the dike system protecting the city's water treatment plant.

Huron
Named as a *Project Impact* community in 1999, the town of Huron and Beadle County, where Huron is located, have developed a 20-project plan to ensure greater resistance to natural disasters. The four major areas are warning equipment, mitigation construction projects, non-construction projects and community education.

Watertown
With a generous donation from *Project Impact* corporate partner Qwest, Watertown, which joined the initiative in 2000, is installing an emergency preparedness network, which includes telecommunication service for speedy notification by phone in the event of an impending disaster. The system may also be used during disaster recovery to provide citizens with critical messages from public safety officials and community leaders.

Utah

Centerville
Named as a *Project Impact* community in 1998, Centerville has developed numerous projects, including multi-hazard mapping, citywide flood mitigation planning, and business contingency planning.

Logan
Named as a 2000 *Project Impact* community, Logan commits to review local hazards and explore opportunities to incorporate local resources, talent and potential partners to limit losses due to future disasters.

Moab
Named as a 2000 *Project Impact* community, Moab has been building local partnerships, assessing vulnerabilities to natural hazards and implementing actions that protect families, businesses and the community.

Salt Lake City
Named as a 1999 *Project Impact* community, Salt Lake City has developed an array of mitigation and educational projects. The mitigation projects focus on flood control, fire prevention and earthquake preparedness. Salt Lake City's public awareness products include a home retrofit telecourse, a *Project Impact* video and a wildfire education program.

Wyoming

Fremont County
In 1998 *Project Impact* community Fremont County has undertaken an array of activities—from mapping county roads to providing a back-up generator for a water treatment plant. The county collaborated with the Caterpillar Corporation and Wyoming Machinery Company to acquire a piece of heavy equipment to perform flood mitigation projects. Attachments provide more detail on Lee and the county's projects.

Natrona County
Named as a 1999 *Project Impact* community, Natrona County upgraded its early warning and alert system by partnering with local government and privately owned radio towers. In addition, the county relocated and provided better equipment for a volunteer fire department that serves the half of the county that includes part of the town of Casper. The county also implemented a public education program focusing on raising awareness and understanding of hazards and the community's response to them. For instance one education program, primarily funded by the Wyoming state legislature, studies wildfire/urban interface.

Teton County
Named as a 2000 *Project Impact* community, Teton County has identified eight major areas on which to focus its *Project Impact* efforts: individual preparedness, neighborhood preparedness, risk assessment, communications, education and awareness, community education, building codes, and natural disasters.

Some businesses contribute materials, expertise and staff resources to support a community-based hazard mitigation project. Others share information with their staff, associates and clients about how to prepare for and prevent disasters.

In return, FEMA works to recognize those businesses that support the initiative, and to connect them with *Project Impact* community leaders. Some case studies are included in the attached flyer.

Businesses that have joined as regional partners in Region VIII's Project Impact initiative include:

- Colorado Biz *Magazine*
- Englewood, Colo.

Colorado Biz is a monthly business magazine covering economic issues and trends of the Colorado economy for some 16,000 readers statewide. As a regional *Project Impact* partner, the publication provides editorial coverage of the steps businesses can take to protect their investment and their bottom line.

Flame Safe of the Rockies
Helena, Mont.

Flame Safe manufactures and markets proven, tested, fire retardants that meet or exceed existing and current federal, state and local fire safety code requirements, as well as industry standards. Flame Safe-treated products automatically react with fire or heat to convert combustible gases and tars to noncombustible carbon char, nitrogen, and carbon dioxide. This chemical reaction substantially increases carbon char and creates an action that causes the surface to bubble up and thereby keep the heat from regenerating. The nitrogen produced as a byproduct of the bubbling up action displaces the oxygen, thus smothering the fire. This action separates the fuel from the source of ignition. This "double protection" is one reason only FLAME SAFE products are authorized to bear the FireBuster™ trademark.

Hach Company
Loveland, Colo.

When disasters threaten the use of a water supply, Hach can provide water-analysis products that are reliable, portable and easy to use. This supports FEMA's work to increase public awareness of natural hazard risk and the subsequent use of technology to reduce disaster risk to life, property and economy.

One of the most critical elements in disaster recovery is the availability of safe water. Microbial contamination of drinking water supplies during natural disasters is common, and devastating. A lack of clean, safe water inhibits disaster recovery and compromises public health and safety through the spread of disease. Hach Company became a *Project Impact* partner because it was an opportunity to help communities *mitigate* the dangers and trauma associated with natural disasters, not just *respond* to them.

Institute for Business and Home Safety
Boston, Mass.

The Institute for Business & Home Safety (IBHS) is a nonprofit association supported by insurers and reinsurers that conduct business in the United States or reinsure locations in the U.S. It engages in communication, education, engineering and research to reduce disaster-related losses.
The organization has developed a number of written materials on simple steps individuals and businesses can take to reduce their risk, including the downloadable workbook "Open For Business," which addresses risk reduction and disaster preparedness for small business owners. Other materials include homeowners' guides for protection from damages caused by earthquakes, hail and wind, as well as a booklet and video for nonstructural retrofit of childcare centers, "Protecting Our Kids from Disasters."
IBHS and FEMA Region VIII signed a memorandum of agreement in May 2000 to work together to raise awareness about the importance of disaster prevention. This partnership also furthers FEMA's connectivity with the insurance industry as a whole

Minnesota Mining and Manufacturing (3M)
St. Paul, Minn.

The 3M Corporation and FEMA Region VIII signed a *Project Impact* memorandum of agreement in July 2000 to help make communities more disaster resistant across America. The company agreed to provide its safety window-film product at the current General Services Administration price to all *Project Impact* communities. This film reduces shattering from high winds, tornadoes, flying debris and explosions. 3M also agreed to provide training on the installation or application of the product as necessary.

MK Centennial Engineering
Littleton, Colo.

The company has established an emergency response team with highly qualified and experienced personnel who are readily available to assist agencies in their response to natural disasters or catastrophic events. These agencies include the Federal Highway Administration, National Park Service, Forest Service, Bureau of Indian Affairs, Bureau of Reclamation, Department of Defense, FEMA, state highway departments and other agencies frequently in need of qualified personnel to expedite emergency relief programs.
MK Centennial and FEMA Region VIII signed a Memorandum of Agreement in July 2000 to work together to raise awareness about the importance of disaster safety. The partnership also furthers FEMA's connectivity with the surface transportation industry as a whole.

Paramount Beverage Inc.
Salt Lake City, Utah 84107

Paramount Beverage Inc. is a leading supplier of 72-hour emergency kits and purified water products in Utah. The company has developed four fruit-flavored juice drinks that contain 10 percent fruit juice and are fortified with 100 percent of the daily values of Vitamin C. Most recently, state-of-the-art water purification equipment was installed to produce high-purity drinking water through a process that utilizes reverse osmosis and ozonation. The production

capacity for the water purification equipment can reach 1 million pouches daily. Purified drinking water is marketed under the name PouchH2Oasis. The environmental advantage of the drink pouches is clear – more than 100 empty pouches fit inside one empty bottle or aluminum can. The company's mission is to provide high-purity drinking water and the finest quality non-carbonated beverages in a convenient container.

Qwest
Minneapolis, Minn.

Qwest (formerly US West) is a leading broadband and communications service provider. Qwest Emergency Preparedness Network (EPN) is a new, potentially life-saving, public safety tool that provides emergency notification by proactively placing telephone calls to inform citizens of impending danger. In the event of a disaster, a designated public safety official can request that Qwest activate EPN. Within moments, calls simultaneously reach the affected community to deliver warnings and critical safety instructions.

South Dakota Association of General Contractors
Sioux Falls, S.D.

Associated General Contractors (AGC) of South Dakota, Highway Heavy Utilities Chapter, is a voluntary association of more than 300 contractor, supply and service firms. AGC is a leader in membership services and benefits, political action and public relations, and in fostering cooperation and communication within South Dakota's construction industry.
In August 2000, AGC and FEMA Region VIII signed a memorandum of agreement to work together to increase industry awareness about the importance or disaster safety. The partnership also strengthens FEMA's link with the highway construction industry.

United States Department of Energy, Denver Regional Office
Golden, Colo.

Because of the significant environmental resources required for disaster response and recovery, the Department of Energy (DOE) has shown significant interest in mitigation and is showing itself to be a valuable associate. As a *Project Impact* partner, the department will provide technical support to *Project Impact* communities on sustainable development, and plan to work shoulder-to-shoulder with FEMA on sustainable disaster recovery. DOE is also launching its own grassroots, *Project-Impact*-style initiative to help forward-thinking communities develop more sustainable and livable communities.

Embracing Innovation
Emphasis on solutions and services yields better results
Region VIII is reluctant to do things a certain way simply because they've been done that way in the past. Instead, workers take a solution-oriented approach through which they constantly strive to deliver better services.
Project Impact: Building Disaster Resistant Communities: Region VIII led the agency with the first signing ceremonies in the nation for post-pilot Project Impact communities. The region also

took the first steps in other aspects of the initiative introduced by FEMA Director James Lee Witt.

Building on a Foundation of Strong Partnerships

Both internally and externally, Region VIII has sought to build strong partnerships as a foundation for its many activities.

Region IX

INTRODUCTION TO FEMA REGION IX

REGIONAL PARTNERS

American Samoa
Arizona
California
Community Preparedness
Commonwealth of the Northern Mariana Islands
Guam
Hawaii

When describing FEMA Region IX, superlatives such as "the most" and "the largest" come to mind. Diverse populations, cultures, climates, geologies, natural environments, and economies – factors that influence the ways Region IX helps people and communities - characterize the region.

Region IX is headquartered in San Francisco and the region maintains a Pacific area office in Hawaii. A long-term recovery area office, dealing with Northridge earthquake closeouts, remains in Pasadena.

The region covers nine political jurisdictions totaling 386,000 square miles, with a breadth of over 8,000 miles, making it geographically the most extensive of FEMA's 10 regions. It includes the states of Arizona, California, Hawaii, and Nevada; the U.S. territories of American Samoa and Guam; the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands, and the Federated States of Micronesia.

In overall population, Region IX is the largest and fastest growing FEMA region, with at least 39 million residents speaking approximately 100 languages (1990 census). The region also has some of the biggest and fastest growing metropolitan areas in the United States, such as Los Angeles, San Diego, San Francisco, San Jose, Phoenix, Las Vegas, Reno, and Honolulu.

In the last decade of the twentieth century, the numerous disasters within Region IX ran the gamut: earthquakes, severe storms - including typhoons and hurricanes, floods, wildfires, agricultural freezes, and droughts. The Northridge earthquake, the costliest disaster in FEMA history, occurred within the region. However, because of its sheer size and makeup, Region IX is vulnerable not just to potential catastrophic events, but also to frequent smaller events over a huge area.

Because of the region's extensive experience in dealing with complex disaster operations, many innovations and improvements in emergency management that originated in Region IX have been adopted for use elsewhere in the nation and the world.

Recent Disasters:

<u>Earthquake</u>
1994 Northridge, Calif.
On-going activities at Mammoth Lake, Calif.
At any given time, there is 60 percent probability of a catastrophic (M7+) earthquake in the San Francisco Bay area

<u>Flood</u>
1993, 1995 (all 58 counties affected), and 1997, California
1998 El Nino storms (48 counties affected), California
1997 and 1999, Nevada
1990, 1999, Arizona

<u>Fire</u>
1993, 1994, 1995, 1996, fire suppression, Arizona
1994, 1996, fire suppression, Nevada
1996 Calabasas / Malibu, Calif.
1999 Northern and Southern California

Freeze
1998 Central Valley, Calif.

Typhoon / Hurricane
1997 Typhoon Paka, Guam

Other
1994 Salmon Fisheries, California

DIVERSITY & UNIQUE CHALLENGES – HIGHLIGHTS

In each of the major statewide disasters in California, there were more than 80 recognized languages along with a diversity of cultures.
While the Silicon Valley attracts a number of well-educated immigrants to lucrative positions in the technology field, most immigrants remain in the service industry and agricultural jobs.
Immigration status and "legally present" assistance issues become political challenges after each disaster.
Disaster assistance eligibility for migrant farm workers continues to be a controversial issue after each event.
Working relationships with Native American tribes continue to improve after various disasters in California and Nevada.
Emergency managers and government officials from around the world, especially those who are interested in earthquake preparedness, visit the Region IX offices on a regular basis. The region hosted more than 60 groups of international visitors (mostly from the Pacific Rim) in 1994 – 1995.

MILESTONES & INNOVATIONS- HIGHLIGHTS

Earthquakes
Preparedness and response efforts change drastically since Loma Prieta
California expands statewide earthquake preparedness education, started in late 1970s
Northridge earthquake is the most expensive disaster to date (FEMA cost as of July 2000: $7 billion)
Continuous seismic activities in Mojave Desert and Mammoth Lake area
60 percent probability of a major (M7+) earthquake in the San Francisco Bay area
April – annual statewide earthquake awareness month campaigns

Urban Search and Rescue (USAR)
FEMA urban search and rescue task force established immediately after 1989 Loma Prieta earthquake in California
Today, 10 of the country's 27 search and rescue teams reside in Region IX (one in Arizona, one in Nevada, eight in California)

Urban Wild-land Fires
Focus on education and mitigation after major urban wild-land fires in Oakland (1991) and Malibu (1996)

Numerous fire suppression grants in California, Arizona, and Nevada

Mitigation

New mitigation directorate at headquarters
Regional responses changed
First deputy director for mitigation appointed following a Region IX disaster
Landslide acquisition policy implemented in DR-1203-CA El Niño storms

Floodplain Management / National Flood Insurance Program (NFIP)

NFIP area of restoration flood zone implementation in Sacramento and Los Angeles (U.S. Army Corps of Engineers projects in major urban areas)
Area of restoration zone, a uniquely Californian issue, remains political
Los Angeles River levee project to be completed in December 2001
California governor's levee studies (private and government owned) illustrated multiple challenges
Deer Creek levee (proposed plan to eliminate the levee for housing development; subject of congressional inquiry)
Ongoing re-mapping issues in Region IX – extensive outreach efforts before disasters
Community rating system of NFIP
Association of State Floodplain Management and National Emergency Management Association formed joint policy sounding board
Failure of Guam to meet National Flood Insurance Program regulations

Repetitive Losses

Homes along the Russian River, Sonoma County, and in the Sacramento (Calif.) area suffer repeated flooding
FEMA mitigation funds elevate hundreds of houses in Sonoma, Calif.
FEMA grant addresses repeated flood and wildland fire declarations in Malibu, Calif.
Focus on buyout and elevation
Identify long-term planning goals

Landslide / Buyout

Region IX implemented its first relocation/buyout program after the 1998 El Niño storms
$22 million FEMA Hazard Mitigation Grant Program funds used to purchase 165 homes in 25 communities in California
$6 million set aside for Laguna Niguel; FEMA may reevaluate this funding in future
FEMA purchased two homes in Daly City; local governments appeal to FEMA for additional funding for more homes at risk

Pacific Islands

Essential lifelines (power, water, food), and infrastructure remains critical after disasters
Expensive to bring personnel and resources to islands
Lifestyle and business approach are more laid back
Independent governance
Recently began state-of-the-art operations/logistics (a.k.a. warehouse) approach in the Pacific
Pacific area office established in September 1992

Extensive mitigation efforts in Guam after Typhoon Omar (1992) and Super Typhoon Paka (1997)

Infrastructure Projects
Northcoast railroad, California – ongoing issues regarding public assistance following several flooding disasters. Highly political – local politicians are board members of the Northcoast Railroad Authority that runs the railroad. Continued financial challenges.
Debris removal, Guam – ongoing appeals concerning FEMA's demand that funds be returned for debris removal services following Typhoon Paka.

Preparedness, Training & Exercise
Division established in 1993
Reorganization at HQ and in regions

Region IX – Major Disaster Closeout Efforts
East Bay Hills fires, California (1991)
Hurricane Iniki, Hawaii (1992)
Los Angeles fires and civil unrest, California (1992)

Y2K TRANSITION – HIGHLIGHTS

Compiled proactive materials on preparedness including flyers, articles and web site information
Partnered with local and state counterparts in planning, exercises, and staffing of emergency operations centers and public affairs efforts
Prepared communications strategy plan
Regional operations center (San Francisco) attracted round-the-clock media attention from English and multilingual press
Guam - became the first U.S. soil to welcome the new millennium; received extraordinary media coverage across the nation; provided live interviews and photos to wire services. Hawaii was the last U.S. soil to welcome the new millennium.
Sacramento -- worked in partnership with the California office of emergency services in the "Follow the sun" project

PROJECT IMPACT REGION IX: 15 COMMUNITIES

CALIFORNIA
City of Oakland - (One of seven pilot communities; Director Witt attended signing ceremony. Participated in spring break events; presenting disaster-resistant "model homes" award-winning projects)
City of Berkeley - (Received Project Impact award in 1998; named Project Impact community in 1999; preparing formal signing ceremony. Partnering with University of California, Berkeley; U. C. Berkeley was named Disaster Resistant University in 1998)
City and County of Santa Barbara

San Bernardino County
City of Napa County (non-grant community)

NEVADA
City of Las Vegas - (slow progress; site of 1999 floods).
Carson City - (state capital, site of 1997 floods).
City of Reno
City of Sparks - (created innovative *Project Impact* radio jingle, established *Project Impact* web site; working with IBM Global to assess disaster risks).

HAWAII
County of Kauai - (still recovering from the 1992 Hurricane Iniki)
Island of Hawaii
County of Maui

ARIZONA
City of Glendale
City of Tempe
City of Yuma

PACIFIC AREA OFFICE

FEMA's Pacific area jurisdictions include the island territories of American Samoa, Guam, the Commonwealth of the Northern Mariana Islands, the Republic of the Marshall Islands and the Federated States of Micronesia as well as the state of Hawaii.

The 1993 establishment of a Pacific area office in Honolulu, Hawaii, has greatly facilitated the mission of providing assistance and FEMA program oversight to far-flung island jurisdictions, some of which are as much as 6,200 miles from the U.S. mainland.

Much like the U.S. military, FEMA's Region IX has found that having a presence (both personnel and logistics) in the mid-Pacific, provides a significant advantage in reducing the challenges imposed by the vast distances between Pacific jurisdictions and the U.S. mainland.

The mission of the Pacific area office is threefold:

To provide a proactive FEMA presence in the Pacific

Facilitate coordination and communication with the jurisdictions and military organizations in the area

Facilitate implementation of FEMA programs and emergency response operations within the Pacific jurisdictions

There have been eight Presidentially-declared disasters in the Pacific Area since 1993. Some of these have been significant events, having tremendous impacts on the island populations. There have been four declared disasters from Pacific cyclonic storms, all in 1997. Disasters in the Northern Mariana Islands and Guam resulted from damage caused by Typhoons Fern, Keith and Paka (two disaster declarations). These typhoons, with sustained winds sometimes exceeding 150 mph and gusts in excess of 180 mph, leveled structures, destroyed forests and left many people homeless.

In some Pacific-area jurisdictions, mainland building practices are not always adopted and typhoon winds severely damage many homes. Ongoing mitigation efforts have been successful in reducing the devastation. Additionally, the challenge of handling wind-blown debris is magnified on islands with very limited landfill capacity. Widespread power outages often occur and are difficult to repair because of the insular nature of the jurisdictions (limited repair parts and no opportunity for diverting power from contiguous power grids).

Surprisingly, in this area of millions of square miles of water and much rainfall, drought is another common disaster in the Pacific, especially on the low islands. There are long periods of no rain and many of the islands have little or no water storage facilities, underground water supplies or water delivery systems.

There were two major droughts in 1998. The Marshall Islands virtually ran out of water and requested a presidential declaration for assistance in obtaining equipment to convert salt water into potable water through reverse osmosis. FEMA was able to underwrite most of the cost of rushing equipment to the islands by jet aircraft. Micronesia, which also suffered a major drought in 1998, was better prepared – thanks to previous mitigation measures which had been funded by FEMA.

In an effort to foster self-reliance and ownership in the drought-relief operation, federal coordinating officers for 1998 disaster declarations encouraged jurisdictions to become more involved. They were urged to fully participate in the response and recovery from the drought disasters and prepare themselves for future disasters.

Unlike previous operations, the governments of the Marshall Islands and Micronesia provided strong leadership and participation in the distribution of drinking water and emergency food.

Another initiative in these disasters was the use of U.S. Forest Service personnel to provide logistical and technical assistance to local governments.

PACIFIC AREA STORMS

Few situations are as frightening as being trapped on a small island while a massive typhoon bears down on you. Yet, that is exactly what happens in the Pacific nearly every year. The lives of residents of Hawaii, American Samoa, the Republic of the Marshall Islands, the Commonwealth of the Northern Mariana Islands, and Guam, are routinely torn apart by these storms.

Guam, which lies at the southern end of the Mariana Islands, is directly within "typhoon alley," the general route many of the cyclonic storms follow. Storms named Keith, Paka, Iniki, Russ and Yuri are just a few of the events Pacific islanders will never forget.

In general, the Pacific cyclonic storms (known as "hurricanes" if east of the international date line and "typhoons" west of the line) build in the warm waters off the western side of Mexico. The storms then track westerly across the ocean, sometimes gaining amazing strength as they stay in warmer tropical waters.

Pacific Ocean typhoons have made landfall on inhabited islands with winds in excess of 180 mph, ripping up forests and leveling structures. Since many traditional building practices do not meet current codes for structural integrity under high winds, homes are flattened.

The common use of wood power poles, which can quickly snap under the barrage of wind-blown debris, means widespread power outages are common. Loss of power can seriously impact the safety of the water supply, rendering water unsafe for drinking.

FEMA hazard mitigation survey teams, which visit the islands following disastrous storms, have identified several problems, which are common to many of the islands and made recommendations on how to mitigate future storm effects. These include:

"Harden" the power transmission system, using concrete poles instead of wood;

Bury utilities where possible, shielding them from the effects of storms;

Maintain equipment to shred the enormous quantities of storm-strewn vegetation that otherwise impedes passage on highways;

Install hardened electrical generators at water pumping and sewage lift stations to maintain the systems in the event of widespread power outages;

Adopt and enforce a building code with adequate wind-loading requirements, ideally 155 mph; and

Adopt and enforce policies keeping floodways clear of structures.

In examining the aftermath of each hurricane and typhoon, several FEMA programs have been initiated to assist property owners in lessening structural damage and recovering from future storms. For example, in 1992 Hurricane Iniki severely damaged or destroyed about one-fifth of the 20,000 homes on Kauai, Hawaii, while also damaging most hotels, government buildings and commercial buildings. The losses reached $1.6 billion, enough to make many insurance companies stop providing coverage to property owners.

Innovations and Partnerships

Following Typhoon Omar in 1992, another destructive storm, a demonstration project built 450 concrete homes. Of these, 112 were financed by FEMA through its Hazard Mitigation Grant Program and were sold to owners of the destroyed dwellings for one dollar each. The others were financed by U. S. Small Business Administration loans.

When Typhoon Paka struck the island just before Christmas 1997, these homes showed the survivability of concrete construction during subsequent storms. The so-called "dollar homes" typically sustain only cosmetic damages during typhoons, whereas the traditional lumber and metal ("wood-and-tin") homes are frequently destroyed.

In recent years, increased emphasis has been placed on sound construction practices. Engineering studies are exploring whether a wood-and-tin house can be designed to withstand a 155 mph wind standard. Following Typhoon Paka, a FEMA-funded mobile mitigation van toured island villages and demonstrations were made of the technique of designing a "continuous load path" from roof to foundation. Structures with secure connections from roof to foundation have a much higher survival rate in major storms.

Surviving storms and recovering in the aftermath has always presented a unique set of problems to the Pacific islands. Isolated by thousands of miles of water from the mainland, disaster sites must initially be self-reliant. Warehouses in Guam and Hawaii keep generators, tents and other emergency supplies available where they will be needed.

As part of a disaster response, logistics supply lines need to be established, as in the case of the "air bridge" in which the U.S. Air Force flew 55 missions into Guam following Typhoon Paka. These flights delivered more than 1,800 tons of materiel and 534 passengers – including work crews who came to help restore power – to the island.

One final innovation that came out of Typhoon Paka had an immediate, positive impact on the many storm victims. Normal procedure would be for FEMA assistance checks to be mailed to the recipients from a processing center on the mainland, thus incurring a significant delivery delay because of the distances involved. Following Paka, however, the checks were prepared on the mainland, then flown in batches to Guam to be entered directly into the postal service delivery system. This significantly reduced the transit time and quickly got money into the hands of those who needed it.

Major Pacific Area Storm Disasters in the 1990s

NAME	**Disaster #**	**Declared**	**Location**
Typhoon Paka	DR-1194	12/24/97	Mariana Islands
Typhoon Paka	DR-1193	12/17/97	Guam
Typhoon Keith	DR-1192	12/08/97	Mariana Islands
Typhoon Fern	DR-1166	3/11/97	Mariana Islands
Typhoon Gay	DR-971	12/16/92	Marshall Islands
Hurricane Iniki	DR-961	9/12/92	Hawaii
Typhoon Omar	DR-957	8/28/92	Guam
Typhoon Axel	DR-934	12/07/92	Mariana Islands

Resources for more information include the Guam long-term recovery task force report, April 1998; Estorian Paka: Guam's Spirit of Recovery, 1998; and FEMA hazard mitigation reports from each disaster.

DROUGHTS IN THE PACIFIC

In an area of millions of square miles of water, it seems incongruous that thousands of islands in the Pacific Ocean might lack water for drinking and cooking. But in this water-rich area, where it is not unusual to have rain every day for months on end, there also may be long spells of no rain.

On virtually all of the inhabited islands, there are little or no water storage facilities, underground water supplies, or water delivery systems. Drinking water is precious and supplies for agriculture can be limited.

In dealing with droughts, such as those that occurred in 1998 in two island countries under U. S. protection, FEMA's Region IX handles each unique situation differently. For example, when the Republic of the Marshall Islands virtually ran out of water on its populated islands, equipment that converted salt ocean water into potable water through reverse osmosis were rushed to the islands by jet aircraft.

The Federated States of Micronesia, which also suffered a major drought in 1998, was better prepared, thanks to previous measures that had been funded by FEMA after Typhoon Owen.

Innovations and Partnerships

Helping the islands become self-sustaining during times of droughts has been one of Region IX's tasks. After Typhoon Owen swept through Micronesia in 1990, FEMA helped establish drought-resistant crops on the island of Yap. A food bank, which supplies other islands with seedlings and cuttings for crops lost during storms, was also established on Yap. Smaller wind-protected food banks were likewise set up on several other islands in Micronesia.

Yap in the early 1990s was also surrounded by a system of buoys to protect coral reefs and provide a safe anchor for fishermen during storms. When a major typhoon blew through the area in 1997, the project proved successful and none of the buoys were lost. Also, because the lagoons inside the reefs were protected, fish in the lagoon, an island staple, were safe.

The biggest of FEMA's 10 regions, much of Region IX spreads across a huge portion of the Pacific. Its island jurisdictions include the territories of American Samoa and Guam, the Commonwealth of the Northern Mariana Islands, as well as the Marshall Islands and Micronesia. The task of providing assistance to the far-flung island groups has been helped considerably by having a regional Pacific area office in Honolulu, Hawaii. Having personnel and a warehouse of critical materials in Honolulu is a big advantage for the region when it serves islands as far away as Guam, some 6,200 miles from the U. S. mainland.

PREPAREDNESS, TRAINING AND EXERCISES DIVISION

The key to effective emergency management is systematic and deliberate preparation that leads to rapid, well-planned response. The preparedness, training and exercises division in FEMA Region IX coordinates emergency preparedness and response training, exercises and planning at the federal, state and local levels. These activities ensure that when a disaster strikes, emergency managers will be able to provide the best possible response.

Reorganized in 1993 to combine outreach and technical preparedness programs, the division is involved in a wide variety of projects with its partners. Region IX partners are a diverse group including four states, five territories, other federal agencies, private industry, Native American tribes and other groups.

INNOVATION AND PARTNERSHIPS

Grants

Region IX provides emergency management performance grants for training and exercises to support a multitude of preparedness efforts. Among other costs, the grants pay up to 50 percent of the salaries and expenses of all emergency managers at the state and local level. In the past

several years, these programs were streamlined to allow states and Pacific territories greater flexibility in the use of the funds based on their specific needs.
Region IX customers and the PTE division staff facilitated development of a "capability assessment for readiness" instrument to be used by states to identify strengths and weaknesses in their emergency management programs. Region IX states and territories recently completed these documents and are using them as a guide for their respective strategic plans, which in turn will dictate priorities for future emergency management performance grants. The state and territorial representatives welcome this new performance-based approach as significantly better than the old way of simply completing pre-mandated tasks that may or may not be useful to them.
As a result, Region IX states have made substantial strides in self-management to develop a comprehensive, risk-based, all-hazard emergency management capability. A great deal of this capability has involved the development of public and private partnerships that seven years ago were not even on the horizon. For example, to combat their substantial wildland fire threat, Nevada emergency management has taken the lead in developing a coalition of federal, state and local fire and land management agencies to plan, train, mitigate, and respond to wildland fires.

Tribal Preparedness – See the section on tribal matters

Terrorism Consequence Management Program
The increasing threat of terrorism has been recognized and FEMA has significantly increased its presence in this arena. Region IX has recently consolidated its counter-terrorism planning and preparedness assistance with the addition of a new full-time PTE division position.
The division staff recently assisted states and territories in the development of specific response planning to deal with the threat of terrorism and have assisted states and local jurisdictions in maintaining some of the most aggressive anti-terrorism exercise schedules in the nation. The states of Arizona, California, Hawaii and Nevada and the Pacific jurisdictions of American Samoa, Guam and the Mariana Islands are developing individual terrorism consequence management programs. The states have developed new or refined terrorism response plans or annexes to plans. Consequence management training curricula have been established for public officials, first responders and emergency management personnel. Exercises with terrorism scenarios have been conducted in all the states to test first responder and emergency management coordination. FEMA Region IX PTE staff continue to support state and local jurisdictions as well as other federal agencies in the execution of these exercises.
With regional encouragement, vulnerability studies and threat analyses on terrorism have been completed and are being used in site-specific and area-wide response plans. Cyber-terrorism is also being addressed through conferences and specialized training throughout the region. Region IX PTE staff have helped the Pacific jurisdictions (American Samoa, Guam and the Mariana Islands) recognize their unique vulnerability to terrorism. These jurisdictions are now in the process of filling new anti-terrorism program positions, coordinating program projects, and setting long-term goals. Additionally, they will conduct terrorism-specific threat analyses/vulnerability studies and will be given training to improve their ability to prepare for the threat.
FEMA Region IX staff participated in the first west coast, large-scale weapons of mass destruction exercise. Called Westwind 99, it was conducted by the FBI in Los Angeles, Calif., in

February 1999. The multi-agency exercise was one of the largest domestic preparedness exercises ever, and the FBI after-action report included many lessons learned.

Hazardous Materials Program

The hazardous materials program was created under the Superfund Amendment Reauthorization Act, which requires that first responders be trained to deal with chemical spills and accidents. In 1990, FEMA Region IX set out to establish a forum where emergency responders can share information and experiences, get training and certification, interact with experts in their field, and learn new techniques and methodologies in responding to chemical spills. The continuing challenge -- hazardous materials emergency workshop is an internationally recognized event. The emergency workshop is a result of regional collaboration and partnership, not only with governmental entities, but also with industry, nonprofit organizations, higher education institutions and the public. Approximately 95 workshop instructors give their time and share knowledge and experience. Tuition assistance is offered to rural volunteer first responders who normally do not have training funds or technical advances, yet face the risk of chemical exposure. In a decade, attendance has grown from only 200 people to more than 1,000. Recognizing the need to provide better information and training to such a diverse region, the PTE division established a hazardous materials library. Starting with a compilation of case studies documenting responses to chemical accidents, the library has grown into the largest in the agency. The library contains a variety of materials related to hazardous materials in diverse media such as video, audio, film slides and print. The library also has several transcripts and training packages in Spanish.

Radiological Emergency Preparedness

Region IX PTE staff administer the radiological emergency preparedness program. In addition to coordinating and maintaining federal response capabilities for the region in the event of a nuclear accident, radiological program staff assist and evaluate offsite response organizations in their capability to respond to such an event at any of three active nuclear power plants in the region. Regional program staff have been involved in the first strategic review of the program since its inception and have embarked on a significant outreach program to Region IX stakeholders. This outreach led to a streamlining of the program with a results-oriented, rather than task-oriented, approach that has been well-received in the region. With regional encouragement, offsite organizations have increased the complexity of radiological emergency preparedness exercises by using "mini-scenarios" and other enhancements that make these events more challenging and meaningful. Additionally, both Arizona and California are actively seeking the participation of tribal nations located within the fifty-mile ingestion zone of the power plant sites.

Training

Region IX's PTE division has been a leader in the development of and participation in FEMA training programs.

The integrated emergency management course, FEMA's flagship course, formerly was conducted within the communities about twice a year. Beginning in 1996, a concerted effort was made to encourage state support and participation. Since then, Region IX has presented five emergency management courses per year and delivered a terrorism-based scenario course for the government of Guam in preparation for the IX South Pacific Games (the regional equivalent of

the international Olympics). In 2000, the region facilitated the delivery of the first-ever integrated emergency management course for a tribal nation, the Gila River Indian Community. Another major milestone will be reached in 2001 when the first international integrated emergency management course is conducted for the U. S. territory of American Samoa and for Western Samoa. Region IX will assist in the preparation and execution phases of the course.
The disaster field training organization was born in Region IX out of the need for quality, on-site training following the 1994 Northridge earthquake. Personnel from the Emergency Management Institute in Emmitsburg, Md., and the Region IX training office laid the framework for what has become one of the mainstays of FEMA training.
During the response to the 1998 California floods (DR-1203-CA), the Region IX disaster field training cadre set a record by conducting classes for more than 1,000 individuals in a three-week period. This record stands today.
Recognizing the need for high-quality, cost-effective computer training for its disaster closeout center and permanent full-time staff, the Region IX training office set up an in-house computer training laboratory using equipment from the disaster information systems clearinghouse at Mt. Weather, Va. The lab, using a Region IX disaster field training cadre member to prepare the entire curriculum and conduct the training sessions, has saved countless thousands of training dollars.

TRIBAL MATTERS

Approximately 550 Native American tribes reside in the United States and about 144 of them are represented within Region IX's area of jurisdiction. In Arizona, nearly two-thirds of all land is tribally owned. Emergency management in tribal areas raises important cultural, political and fiscal issues.
When a disaster occurs, federally recognized tribes are dependent on the governor of their state for inclusion in the president's disaster declaration. Tribes are not authorized to request a disaster declaration independently although, for other federal purposes, tribes are sovereign entities on par with the states.
Many tribal leaders prefer to operate autonomously in a disaster, yet if each tribe were to receive a separate declaration, a single disaster incident could require anywhere from several to dozens of declarations. This would be so unwieldy and difficult to administer that it is incumbent upon FEMA to encourage other ways of working through the tribal declaration process. However, once they have been included in a disaster declaration, federally recognized tribes do have the authority to apply directly to FEMA for federal assistance, rather than going through the state.
On May 14, 1998, President Clinton issued Executive Order 13084 (Consultation and Coordination with Indian Tribal Governments) requiring all federal agencies to establish regular and meaningful coordination in regulatory practices and to streamline processes with tribal governments. To comply with that directive, FEMA sought areas of commonality of interest between the tribes and other government entities.
One area of commonality is fire fighting. Wildfires do not respect territorial boundaries, which necessitates cooperative effort by all people living in an area. Native American firefighters are recognized worldwide for their wildland fire fighting skills.
Another sphere of common interest is related to water resources. Many tribes not only need to effectively manage and protect rivers and streams for their own needs, but much of their economy is generated from sport fishing and tourism. Since the headwaters of many rivers and streams are on tribal lands, state and local authorities have united with tribal leaders to manage

water resources for all residents of the state. Using these and other starting points, FEMA has encouraged federal, state, local and tribal authorities to build and strengthen cooperative relationships.

Innovations and Partnerships

Following any disaster declaration, FEMA conducts a survey of possible tribal participants and makes sure that a specially trained Native American liaison has the opportunity to meet with officials from each tribe. During the 1995 California winter storms (DR #1044/1046), FEMA's mitigation division sent staff members to tribal governments that expressed interest in the Hazard Mitigation Grant Program. They discussed the positive long-term effects of mitigation and provided technical assistance in preparing grant applications, mitigation and administrative plans. As a result, nearly $30,000 has been spent on mitigation projects on California tribal lands.

The California Office of Emergency Services is now creating a process to facilitate communication and extend its technical services to Indian communities. California OES also is reviewing laws to help FEMA implement the agency's tribal policy

In 1997, following floods in northern and western Nevada, FEMA was instrumental in negotiating an agreement of cooperation between the agency, the tribes, and the state. The pact called for the state of Nevada to act as the contractor on behalf of the tribes in the response, recovery and mitigation effort, but for the tribes to have a direct relationship to FEMA in certain other fiscal matters. For example, if it becomes necessary for FEMA to recover funds for any reason, the funds will be reclaimed directly from tribal authorities. This was the first known agreement of its type.

In the preparedness arena, FEMA sets aside funds to meet the requirements of the Superfund Amendment Reauthorization Act for tribes to use for training emergency personnel to respond to chemical spills and accidents. Interstate highways and major roadways cross tribal lands, increasing the risk of transportation-related hazardous materials incidents. Because of wide open spaces that are infrequently patrolled, tribal lands sometimes become sites for clandestine drug labs and illegal chemical dumping. Due to the limited funds in the reauthorization act, Region IX has established closer partnerships with the states and other federal agencies to help address these matters.

FEMA and some states have increased efforts to help inform and educate tribal leaders regarding disaster preparedness, response and recovery, and mitigation. In 1998 FEMA, the Arizona director of emergency management and his staff, county directors and tribal leaders met to discuss many difficult issues surrounding the government-to-government relationship related to disaster assistance. Sensitive issues were candidly discussed, attitudes expressed and solutions were suggested at that landmark meeting. This meeting was the impetus for improved dialogue between the state of Arizona, local governments and communities adjacent to the tribes. In addition, training opportunities and outreach activities are being extended to the tribes.

In April 2000, an integrated emergency management course was held for the Gila River Indian Community in Arizona, the first such course for a tribe. State officials and leaders of communities adjacent to the reservations were invited to attend as well. In addition, the Gila River Indian Community participated in the year 2000 radiological emergency preparedness exercise for the Palo Verde Nuclear Plant.

The Bureau of Indian Affairs and the Indian Health Service are key partners in any FEMA disaster-related activities involving Native Americans, as they frequently find available funds and streamline administrative matters by implementing processes that are currently in place.

Reinvention

To help resolve some of these issues, FEMA developed a policy statement to guide the agency's interactions with tribal governments. *The Final Agency Policy for Government-to-Government Relations with American Indian and Alaska Native Tribal Governments* went into effect in January 1999. This policy recognizes that tribes have a unique and direct relationship with the federal government and that as a sovereign government, each tribe has the right to set its own priorities and goals for the welfare of its membership.

As FEMA, state and tribal leaders work together on Native American issues related to preparing for, responding to and recovering from disaster, the process is being refined. Not all of the problems have been resolved, but the progress is significant.

RESPONSE AND RECOVERY

When FEMA makes the news, often it means that the response and recovery division is in its most active state. An earthquake, hurricane, typhoon, flood, fire, incident of civil unrest, or some other notable disaster has occurred.

The first response to a disaster is the job of local governments' emergency services with help from nearby municipalities, the state and volunteer agencies. In a catastrophic disaster, at the request of the governor, federal response resources may be mobilized through FEMA for search and rescue, electrical power, food, water, shelter and other basic human needs. After helping to meet immediate needs, FEMA and its state and local partners move to the recovery stage, assisting individuals in getting their lives and homes back in order, and helping state and local governments and eligible non-profit organizations make repairs to damaged infrastructure.

In Region IX, the response and recovery division faces extreme challenges, thanks to the nature of the area. The Loma Prieta and Northridge earthquakes were large magnitude events that struck highly populated areas. Typhoon Paka swept distant and remote islands of the Pacific Ocean. The California and Nevada floods brought unusual weather and geological conditions into play. The following sections on Human Services, Community Relations, Infrastructure, Environmental Compliance, and Historic Preservation describe the work and innovations of the response and recovery division. Elsewhere, the Disasters section describes major Region IX events, showing how response and recovery personnel work with other FEMA divisions, other federal agencies and non-governmental disaster partners to reinvent the way disasters are handled in the United States and the territories for which it is responsible.

HUMAN SERVICES

The human services programs touch a larger number of individuals than any other of the various FEMA programs. The Region IX human services division has provided well over 950,000 applicants with assistance since 1993.

Human services primarily deals with providing individual assistance for damage to residences and businesses and personal property losses. Assistance is in the form of disaster housing, rental assistance, emergency repairs, low interest loans (through the U. S. Small Business Administration, individual and family grants for serious disaster related needs, disaster related

unemployment, crisis counseling, legal aid and assistance with income tax, social security and veteran's benefits.

The human services division has adapted and modified its programs continually to meet the needs of the disaster victims. The region experiences almost every type of disaster that can occur, including several which are unique to the region because much of it encompasses island territories in the Pacific Ocean. Many of the changes and innovations that have been adopted nationwide were first used successfully in Region IX.

Innovations

Some of the human service innovations that were initially implemented in the region included the development and enhancement of the "palm pad," the first central processing office, and use of the national teleregistration center.

The hand-held computer used by housing inspectors in the field to record disaster damages, was initially tested in Arizona. After system deficiencies were recorded and corrected, the automated construction estimate palm pads were used with great success during the Northridge earthquake in January 1994.

The first central processing office was located in Redwood City, Calif., and during the Northridge earthquake the office performed critical functions that are now performed at national processing service centers.

The national processing center is a prime example of how human services has been able to deliver assistance more quickly and efficiently. FEMA's first processing office in Redwood City demonstrated that centralized disaster application processing is much more efficient and less costly to taxpayers.

The whole national processing center concept of operations, staffing patterns, and training was developed on the basis of the Redwood City experience.

The national teleregistration center received and successfully processed more than 660,000 registrations during the Northridge earthquake. It was the first major use of the teleregistration system. Prior to Northridge, disaster application centers were opened in the affected area and individuals sat down with a FEMA registrar who wrote information about their damages on a multi-carbon federal form. With teleregistration, individuals call a toll-free number as soon as a disaster is declared and as they describe their damages, the application is taken electronically. Temporary phone systems can be provided in cases where the local infrastructure is impaired. Region IX played a prominent role in the transition of disaster application centers into disaster recovery centers.

Pilot Program

The mortgage and rental assistance program was restructured and used successfully in 1998/1999 when a severe freeze occurred in the central valley of California. No one was killed or injured and there was virtually no structural damage. However, the damage to the agriculture industry of California was substantial and many people suffered financial hardships.

The mortgage/rental assistance program was designed to help those who lost their jobs as a result of the freeze to receive assistance in paying their mortgage and rental payments. It is estimated that thousands of victims were able to avoid foreclosure or eviction as a result of participating in this program. The program will be reviewed at FEMA headquarters before it is implemented in other disasters.

Partnerships

FEMA participation in public-private partnerships has increased dramatically since 1993. FEMA's voluntary agency liaisons have encouraged and facilitated greater cooperation, coordination and consultation with groups involved with emergency recovery and management, notably Volunteer Organizations Active in Disaster. New and revised agreements and Memorandums of Understanding with major volunteer organizations have been developed.

Ongoing improvements

FEMA Region IX's human services program has strived to improve customer service throughout the years. Human services has reaped the benefit of studies, surveys and modern technology to allow faster and more efficient coordination and delivery of disaster assistance.

COMMUNITY RELATIONS

Because FEMA Region IX deals with disasters over such a broad geographic area - urban, suburban, rural and island settings - the region's community relations unit faces unique challenges. Many communities within the region encompass multiple languages and cultures, which affects efforts to disseminate information to all disaster victims. However, the Region IX community relations section meets these challenges with innovative solutions that have been adopted by other community relations units throughout the nation.

Outreach, as community relations originally was called, was a network designed to simply disseminate information, but it quickly found itself involved in all aspects of the federal response effort. Initially, outreach operated without a clear role under the federal response plan, but thanks to the Northridge earthquake, the community relations role was redefined to its current, clear position as a vital link in the response efforts.

By being out in the community, community relations staff become the "eyes and ears" of FEMA. They see and hear problems that people and their communities are facing. Community relations quickly forwards the message to FEMA or disaster partners that can help with resources for special needs.

Sophisticated teamwork and outreach efforts have been refined through a variety of disasters, with many innovations first implemented in Region IX.

1993 – Southern California Fires

During firestorms in southern California (especially in Malibu and Laguna Beach) community relations, then called outreach, realized that there are many ways of expanding the scope of information distribution.

In the beginning, outreach field staff mostly posted flyers and other printed materials. But once outreach workers were within the communities, they discovered additional opportunities and methods to disseminate information and communicate to wider audiences. Outreach officers began having face-to-face interactions, representing FEMA at church services or community meetings and providing crucial information directly to community-based organizations. This proved so successful that it was used as a springboard for the expansion of community outreach.

1994 - Northridge Earthquake

The Northridge earthquake was a defining moment for community relations and outreach. Because of the demographics that define the densely populated Los Angeles area, the Northridge earthquake outreach effort quickly became the most comprehensive ever undertaken by FEMA.

Earthquake victims were of diverse racial, ethnic and cultural backgrounds, and socio-economic levels. More than 46 percent of the people in the Los Angeles area speak languages other than English. This language and cultural diversity presented a formidable task in getting messages about assistance to victims in need. Some of the groundbreaking community relations innovations following the Northridge earthquake included:

Management by sectors and areas - because of the magnitude of the disaster and the vast area affected, the region was divided into sectors for more efficient management. Outreach identified and defined sections, and assigned managers and teams to each area. FEMA and the governor's office of emergency services worked together to create and manage unified teams that included federal, state and local representatives.

The state provided information to help identify community-based organizations in sectors/neighborhoods. Within four months, more than 760 groups had been identified and contacted.

The position of community outreach liaison was created to organize and facilitate the information needs within the disaster field office. Liaisons identified the needs and issues of other departments and programs and facilitated communications with other departments in the community outreach efforts.

A liaison was named to the general counsel office so that the legal needs of special populations could be identified and forwarded to the appropriate legal aid organizations.

Multilingual translators were hired, leading to the development of the current multilingual divisions within community relations and public affairs cadres nationwide. During the Northridge recovery, community outreach skills included 14 languages and dialects. Flyers, brochures, posters and fact sheets were produced and translated into a variety of languages. More than 1.4 million non-English publications were distributed, almost half of which were in Spanish. Within six months, a total of more than five million informational publications were printed and distributed.

With the cooperation of FEMA public affairs joint information centers, multilingual videos were produced, and multilingual radio interviews were conducted. The FEMA newsletter for people affected by disasters, *Recovery Times*, was published in different languages, and distributed to the communities that needed them. In addition, outreach was able to assist public affairs in identifying community multilingual publications and media outlets.

Community relations teams identified additional special populations including senior citizens and disabled persons, and designed special outreach efforts for these groups.

<u>1997 - Typhoon Paka - Guam</u>

To improve customer service, outreach, and feedback, community relations initiated a new certificate standards and mentoring program to assure consistent professionalism and program knowledge. The pilot phase for the mentoring program and the quality assurance review was field-tested on Guam during Region IX's Typhoon Paka disaster, resulting in adoption of the program throughout the entire agency.

INFRASTRUCTURE SUPPORT – PUBLIC ASSISTANCE

Following the Loma Prieta and Northridge earthquakes, the world saw amazing and terrifying images of collapsed freeway bridges, overpass destruction, and ravaged infrastructure. During the El Niño storms, the public viewed washed-out bridges and levees. In each case, FEMA's infrastructure support (also called public assistance or PA) division clearly faced substantial challenges.

When a disaster occurs, property damage and destruction often fall into two distinct categories – damage to private, individually owned property and damage to public or government-owned property. In situations where roads, bridges, government buildings, or other public facilities become unsafe or unusable, the infrastructure support division takes action.

Communities in designated disaster areas may be eligible for funds to remove debris, activate emergency protective measures, or to repair or replace public facilities harmed in the disaster. During a typical disaster in the 1990s, public assistance expenditures far exceeded individual assistance costs.

In fact, costs for infrastructure between 1989 and 1999, on average, represented 49 percent or more of the total costs of all Presidentially declared disasters. The emphasis on infrastructure projects in the Northridge earthquake recovery was particularly high, in both dollar terms and total disaster costs.

When full costs are paid out, FEMA expenditures for Northridge are expected to top $7 billion. Of that amount, $4.54 billion represents infrastructure projects and $1.43 billion is human service assistance costs. The remainder represents money paid to other agencies for mission assignments, administrative overhead and other items.

Lessons Learned

Because of the Region IX's large geographic area, infrastructure challenges are varied and often quite interesting. The carnage of the Loma Prieta and Northridge earthquakes prompted all state and federal agencies to look at physical structures, such as freeways and bridges, and to concentrate even more on preventing future losses to people or property.

Innovations

The Northridge earthquake experience contributed significantly to the development of a new agency-wide public assistance (infrastructure) program, which came as a directive from FEMA headquarters. The redesigned program was approved for implementation on disasters declared after Oct. 1, 1998.

The new infrastructure program simplifies the application process and expedites funding. In the interest of good customer service, a single inspector is assigned to a client from start to finish of the process. Having a single contact allows the inspector and the client - whether a local government agency or eligible not-for-profit organization – to build rapport and communicate more effectively.

Hazard mitigation concerns are now an integral part of public assistance/infrastructure. The infrastructure and hazard mitigation sections of FEMA work more closely together to take on larger, more complex projects.

In the past eight years, infrastructure support has become more aware of environmental issues. The implementation of the national environmental policy act has focused attention on the total environment, the historical significance of properties, and the need for a safe, durable structure.

All of these new elements have come together in several recent projects. A good example is the ornate and historically significant San Francisco city hall, which suffered damages in the Loma Prieta earthquake. The structure is nearly 100 years old, but a new spring-and-shock-absorber system installed at the foundation made very little change to the building's appearance. Infrastructure staff worked in conjunction with mitigation staff to help the city of San Francisco plan the project. The city also participated in funding the work.

ENVIRONMENTAL COMPLIANCE

FEMA Region IX has been instrumental in emphasizing the importance of regulatory compliance with all federal environmental laws and statutes. The region has not only been a leader in agency environmental compliance but also created and fine-tuned many innovative, cost-effective, and timesaving procedures that have been adopted nationwide.

Today FEMA has balanced disaster responsibilities with environmental protection and compliance in a manner that was unimaginable 10 years ago.

Until January 1993, more than three years after the Loma Prieta earthquake hit the San Francisco Bay area in California, environmental compliance was very limited nationwide. The reconstruction of the Moss Landing Marine Laboratory, destroyed by the earthquake in 1989, and the controversy generated by its relocation, triggered a series of events and actions that forever changed the manner in which FEMA addresses environmental compliance and its related responsibilities. Prior to this event, there was a general, but erroneous, belief that the FEMA public assistance (infrastructure) program was exempted from environmental compliance.

Region IX Environmental Compliance Implementation

A series of winter storms and flood disasters hit California in 1993 and recurred in subsequent years, with devastating consequences to affected communities, the environment and the general ecosystem of almost all counties of the state. In addition, similar flood events in Arizona and wind disasters in Hawaii and the Pacific territories made it evident that the agency must comply with existing environmental laws and statutes and assume a pro-active role regarding coordination and implementation with other local and federal agencies.

In September of 1993, Region IX became the first FEMA region to identify the need for a regional environmental officer to be responsible for coordination and training and, especially, to ensure proper compliance throughout regional operations and programs. This new regional function was a key factor in timely response and recovery efforts for winter storm and flood disasters, and particularly in the immediate aftermath of the January 1994 Northridge earthquake. FEMA Director James Lee Witt decided in 1996 to establish a regional environmental officer position and function for each regional office. This was done on the model established by Region IX three years earlier.

Other Region IX Innovative Projects

In 1996, Region IX introduced a full environmental compliance training program on CD-ROM and video that is now used at the national level. The program is comprised of two sections, a short unit or executive overview, and a longer training program that is especially useful for state and FEMA staff members.

Between 1997 and 1998, the Region IX environmental officer prepared a series of programmatic environmental assessments for floods and fires to streamline the compliance process and to serve communities struck by disasters in the most effective and timely manner possible.

The program is now used in other regions and plans call for it to be adopted at the national level. These programmatic documents have also been of interest to several universities in the U.S. and Mexico.

Recognizing that one of the most recurring and lengthy processes was compliance with Section 7 of the endangered species act, Region IX entered into a programmatic consultation with the U.S. Fish and Wildlife Service and Marine Fisheries, similar to agreements in place for the historic preservation process. This was also tested in Kentucky in May 1998 as a pilot for the new public assistance program, and is now used in other regions. It is targeted for implementation at the national level.

Region IX is preparing a new CD-ROM and video training on the endangered species act. The material will be posted on the FEMA web site to ensure that consistent information is available to FEMA partners and applicants.

All the above-mentioned innovative processes, documents and training materials are posted on the FEMA internet site in the section for Region IX.

Partnership

Region IX has been extremely supportive of Director Witt's greater emphasis on private- and public-organization partnerships with local, state and federal agencies. The region has been a leader in providing the necessary financial assistance for additional local and state personnel to work on recovery and hazard mitigation projects.

HISTORIC PRESERVATION

FEMA Region IX has been instrumental in helping protect America's historic legacy. In response to unique disasters in the region, Region IX has created and fine-tuned many innovative, cost-effective, and timesaving procedures that have been adopted nationwide to save irreplaceable buildings and properties that provide important cultural links to the past.

Under its historic preservation program, FEMA helps identify and evaluate disaster-impacted historic properties, determines the effects of preservation projects, consults with affected parties, and provides funding to help repair and restore structures.

Notable historic preservation projects in Region IX include San Francisco and Oakland city halls, Stanford University, and the Palace of the Legion of Honor – all damaged in the Loma Prieta earthquake; and Los Angeles City Hall, Los Angeles Coliseum and Watts Towers – impacted by the Northridge earthquake.

Loma Prieta Earthquake

The emphasis on historic preservation came out of the 1989 Loma Prieta earthquake in California, which damaged or destroyed hundreds of beautiful historical buildings and properties. While working with its local, state and federal partners, it became apparent to Region IX that it was crucial to rescue as many of the buildings as possible. However, at that time FEMA's knowledge and implementation of the historic preservation process was minimal.

After his appointment by President Bill Clinton as FEMA director, James Lee Witt recognized FEMA's responsibility to the National Historic Preservation Act and emphasized the importance of historical properties and buildings as part of a community's identity.

Although the Loma Prieta earthquake struck before Witt's appointment as director of FEMA in April 1993, many of the historic preservation projects for Loma Prieta were still underway because of the lengthy process involved. Those projects, therefore, benefited from the new

emphasis. For example, not only was San Francisco's Mexican Museum deemed a building of historic significance, so was the artwork inside. Recognition of the significance of the artwork led to an extension of funding eligibility for the museum's historical contents as well as the structure itself.

Northridge Earthquake

The positive changes and expedited processes related to historic preservation were of great help when the Northridge earthquake hit in 1994. Because of that disaster's immense scope and number of large projects, Region IX introduced more efficient methods and fast-track procedures to FEMA's historic preservation program. In fact, due to Region IX's novel approaches and streamlined processes, Northridge historic preservation projects were completed in record time. In the first year after the earthquake occurred, about 1,420 historic buildings and other structures had been repaired. The biggest project was rehabilitation of facilities at the University of Southern California-Los Angeles County Medical Center involving more than $234 million in federal funds. Another $97 million of federal money was spent for restoration of the Los Angeles Coliseum, a landmark facility where the 1932 and 1984 Olympic Games were staged. Another $141 million was spent on restoration of Los Angeles City Hall.

As of August 2000, about $765 million has been spent on restoration of 2,600 historic structures that were affected by the Northridge earthquake in the Los Angeles County area.

Partnerships

One of the most important improvements in FEMA is the greater emphasis on partnerships as state and federal authorities work together. After a disaster declaration, FEMA finances the cost of historic preservation, including additional local/state personnel and experts who work on the projects. This standard has been expanded and adopted nationwide by FEMA.

Innovations

Region IX also pioneered a process that shortens project time while still complying with National Historic Preservation Act. An example of a streamlined procedure initiated in Region IX and adopted nationally is the Programmatic Agreement, which allows FEMA to delegate responsibilities. The agreements were first used following Hurricane Iniki and later refined during the 1993 Midwest floods.

Generally, FEMA is responsible for identifying historic projects, determining eligibility, assessing effects of disasters on historic properties, and seeking state historic preservation officer concurrence. When these responsibilities are delegated to the state historic preservation officer, the process is streamlined and accelerated.

In response to the increased awareness of FEMA's preservation responsibilities and specific challenging projects in Region IX, FEMA designated its first headquarters-based federal historic preservation officer in 1993 to establish and monitor the agency's historic preservation program. The federal preservation officer has nationwide responsibilities and the regional environmental officer, who reports to the headquarters counterpart, assumes regional responsibilities for historic preservation.

A Region IX pilot program, initiated after 1997 statewide flooding in California, funded the state's creation of an electronic database of historic properties. This database is linked to the governor's Office of Emergency Services' and FEMA's Geographic Information System. With a GIS database of historic buildings in place before a disaster occurs, research and project approval after a disaster is expedited. This pilot program is proposed for nationwide adoption.

Region IX has also financed and created a nationally adopted historic preservation program training and an interactive CD-ROM that gives an overview of the program and FEMA's responsibilities under the National Historic Preservation Act.

MITIGATION

Mitigation has become the cornerstone of federal emergency management. Region IX is subject to virtually every type of natural disaster that can occur. The region's mitigation division works continuously on retrofitting or rehabilitating facilities to withstand the next storm, flood or earthquake.

Innovations

The Region IX mitigation division has assisted its states and islands with countless mitigation projects that vary from improving drainage culverts, to strengthening emergency-power generators at key emergency facilities, to billion-dollar retrofits for hospital campus buildings.

Landmarks

Guam lies in "Typhoon Alley," the most common path that typhoons follow when they cross the Western Pacific. More than 25 typhoons have hammered the island in the last 50 years.

Guam Memorial Hospital, the major medical facility for the civilian population on the island, had open passageways going from one floor to another. Patients were transported from one floor to the next via the exposed stairwells.

The hospital's administration analyzed the situation from a number of perspectives, including costs. Aided with more than $1.7 million from FEMA's Hazard Mitigation Grant Program, the hospital made two major changes: it covered the stairwells and hardened the oxygen storage facility.

When Typhoon Paka struck in December 1997, with sustained winds of 150 miles per hour and gusts of more than 180 mph, the hospital was able to maintain traffic flow from floor to floor and sustained no more than cosmetic damage.

A second major mitigation example centered on protecting students and employees of one of the nation's biggest school districts from injury. The Northridge earthquake struck southern California before dawn on Jan. 17, 1994, leaving dozens dead, thousands injured; and thousands of homes and buildings destroyed or badly damaged. Fortunately, schools were not open, exposing students to harm from falling classroom ceilings and light fixtures.

More than 5,500 buildings owned by the Los Angeles Unified School District were damaged. Subsequently, more than $48 million in FEMA funds has been invested in schools and other buildings in the school district of 900 schools and 800,000 students.

The nonstructural mitigation completed in the schools protects students, teachers and staff members from effects of future earthquakes, and is one of several forms of earthquake mitigation. Other examples include bolting houses to foundations and strapping water heaters to house frames to lessen damages during violent tremors.

For other types of disaster - houses repeatedly flooded may be elevated above the 100-year base flood elevation to protect living space. Installing fire-resistant roofing materials and organizing vegetation around homes will lessen the likelihood of fire ignition in homes at risk from wildfires.

Lessons Learned

These and other forms of mitigation have resulted from lessons learned in past disasters by the mitigation division in Region IX. For example, wood shake roofs offer wildfires opportunities to race through neighborhoods and destroy everything in their path. Thus, new fire-resistant roofing materials were developed and adopted by states and communities as part of their building codes. Offering various methods of damage prevention and helping people capitalize on them is one of the most important customer services that FEMA and its regions offer. Lives maybe saved, as well as time and money, when people choose to take responsibility for their own safety and property.

HAZUS

FEMA Region IX is using a computer program designed to help people understand where threats from future disasters may lie. Called HAZUS99, the program was developed for FEMA by the National Institute of Building Sciences as software that will estimate disaster losses from earthquakes, floods and other hazards.

Innovation

HAZUS (which stands for Hazards/U.S.) was first developed in the mid-1990s to model earthquake risks and losses. The earthquake module helps officials in communities to better prepare for, and recover from, earthquakes such as the major temblors that shook the San Francisco Bay region in 1989 and Los Angeles County in 1994.

Landmark Decision

The specialized program was developed because FEMA recognizes that mounting dollar losses cannot be adequately addressed by a fragmented approach to estimating the effects of natural hazards. Estimated losses for all hazards are necessary to support FEMA's risk-based approach to mitigation (methods of making homes and other structures, and publicly-owned infrastructure safer and more disaster-resistant) and emergency preparedness.

Using PC-based technology, the HAZUS program analyzes databases and generates detailed maps and analytical reports from Geographic Information Systems. HAZUS99 can perform an earthquake analysis and produce results in minutes.

Aimed at helping reduce losses and making communities disaster resistant through public and private partnerships, HAZUS is a key component of FEMA's *Project Impact*: Building Disaster Resistant Communities, a nationwide program initiated in 1997.

HAZUS software is being expanded for multi-hazard use so it can make similar loss evaluations for floods, coastal storm surges and cyclones.

In Region IX, which encompasses four states and five jurisdictions in the Pacific, HAZUS is being implemented regionally in the San Francisco Bay area, southern California, Nevada and Hawaii. Development of a HAZUS user group has led to partnerships with more than 100 organizations and corporations interested in earthquake risk reduction.

More than 100 risk managers, earthquake experts, and GIS professionals have received HAZUS training. HAZUS applications are being supported in Santa Clara County; the heart of Silicon Valley; the city of San Francisco; Los Angeles County; Reno, Nev.; and Oahu, Hawaii.

If a major earthquake were to occur today, HAZUS99 could give FEMA essential information for rapid mobilization of federal resources to assist state and local emergency response agencies.

HAZUS99 is being linked to information received from strong ground instrumentation networks in earthquake-prone states. When an earthquake hits, HAZUS99 will automatically receive data from the network and run an analysis based on that data.
The results will represent FEMA's first official estimates of damage and loss from a quake, similar to preliminary assessments that the state and FEMA do before deciding whether to request a major disaster declaration by the president.
Emergency managers, earthquake experts and GIS professionals from all 50 states and U.S. territories have been trained to use HAZUS. Several foreign countries are using HAZUS99 as a model to develop their own earthquake-loss estimation programs.
Even business is turning to HAZUS as a tool it can use. For example, Charles Schwab and Co. educates people about disaster preparation and aspects of business-continuity planning through its business resumption services program. Schwab is using HAZUS to help build earthquake scenarios for its presentations. And Wells Fargo Bank is assessing its business portfolio exposure to earthquake risk in the San Francisco area.

AR FLOOD ZONES

AR Zone defined: As designated on a community's Flood Insurance Rate Map (FIRM), an "AR zone" is a high-risk area where existing federally funded flood-control systems no longer provide adequate protection and flood control improvements are underway that will restore protection from a major flood.

The "A" designates an A zone, an area of special flood hazard. "A" and "V" zones are the only ones in which flood insurance is required. Flood insurance under the National Flood Insurance Program is mandatory in special hazard areas, including AR zones. AR refers to Area of Restoration, meaning work on restoring the flood-control systems is underway.
Because of the repair effort, new construction in an AR zone generally has less restrictive building requirements and lower flood insurance rates than in other special flood risk zones. To qualify for the AR zone designation, the flood control restoration project must be completed in 10 years if it uses federal funds, or five years if the community does not use federal funds.
History
AR zones were created for the first time in California, in FEMA Region IX. Flooding from severe storms in 1980 in the greater Los Angeles area and in 1986 in the Sacramento area nearly went over the tops of existing levees. That led to the U.S. Army Corps of Engineers reevaluation of the levee systems they built in both areas.
The Corps determined that the area levees no longer provided sufficient flood protection because of urbanization upstream in the watershed. In urbanization, there is greater water runoff after rain or snow because areas of soil that once absorbed water are now covered with hard surfaces - including homes, buildings, paved roads and sidewalks - that prevent runoffs from entering underground water aquifers.
Innovations
The decertification of levees (declaring them as no longer adequate protection for adjacent areas) in densely populated areas created a major problem for urban renewal projects. Following the Corps findings in 1997, Congress enacted Section 928, an amendment to the Housing and Community Development Act of 1992, Public Law 102-550, which created the new special flood control restoration (AR) zones.

In 1998, FEMA issued new floodplain maps with the high-risk AR designation for parts of the metropolitan Los Angeles and Sacramento areas.

By February 2000, the Corps had completed a section of additions, and bolstered the Los Angeles River levee system that provides improved flood protection for three communities – Carson, Los Angeles and Long Beach – and adjacent areas of Los Angeles County. AR zone designations were removed from the better-protected areas of those communities. For flood map purposes, those areas were changed to a lower-risk designation (Zone X).
The Corps' work on the Sacramento projects is nearing completion, and the AR zones transitioned to A99 zones during the first half of 2000. People living in the A99 zones will still be required to buy flood insurance, but developers of new structures will not be required to flood proof or elevate new homes.

PROJECT IMPACT: BUILDING DISASTER RESISTANT COMMUNITIES

FEMA Director James Lee Witt has long believed that proactively protecting communities, individuals and property from possible disaster damage will save lives and money in the long-term.
The heart of FEMA's effort is *Project Impact: Building Disaster Resistant Communities*, a nationwide initiative inaugurated in 1997 by Director Witt. Three common-sense principles are the basis of *Project Impact*: mitigation at the local community level; participation by the private sector; and long-term preventive measures.
FEMA offers *Project Impact* to communities that need it, want it, and agree to its terms. FEMA signs on as a partner with each community. However, once the *Project Impact* agreement is signed, it then becomes the community's initiative. After a community embraces *Project Impact*, it assesses its risks from disasters, determines how to deal with those disasters, and takes action. Seed money provided by FEMA to fund *Project Impact* communities is in the form of grants ranging from $300,000 to $500,000. The funds are provided, in part, to stimulate contributions by other *Project Impact* community partners.
Project Impact is already having dramatic impact in Region IX on such communities as Oakland, Calif., one of seven cities chosen as pilot communities; and Sparks, Nev., and Tempe, Ariz., which are also actively engaged in the *Project Impact* initiative.
Oakland calls its Project Impact activities Project Safe and, under that heading, has instituted such regular actions as Project Spring Break. During the traditional college break period, youth volunteers go home-to-home and help homeowners and renters with installation of non-structural mitigation measures designed to prevent or lessen earthquake and fire hazards. These measures include installing smoke alarms and strapping standing bookshelf units to walls so they will not topple over during temblors.
Oakland and other pilot communities were chosen because of their unique qualities and vulnerability to a variety of disasters and hazards. The pilot communities are creating models that other localities, now numbering more than 200 nationwide, can adapt to their own situations. For example, Oakland is threatened by earthquakes, floods and wildfires - any of which could leave behind a path of destruction, death, and severe economic loss. The same vulnerabilities affect Oakland's neighbor, the city of Berkeley, which has become one of the newest members of the growing number of Region IX communities engaged in the *Project Impact* initiative.

In the midst of this San Francisco Bay area community is the University of California at Berkeley, where tens of thousands of students congregate on a massive campus, and where the impact of disaster, such as the next major earthquake in the area, could be huge.
In a recent study by UC Berkeley, "The Economic Benefits of a Disaster Resistant University," researchers presented a worst-case scenario - an earthquake that closes the campus for a year. In such a catastrophe, the economic impact on three Bay area counties could include the loss of 8,900 jobs and $861 million in damaged and destroyed facilities.
Those statistics for the university do not include the massive losses in the city of Berkeley, its neighbor, Oakland, and other communities in the San Francisco Bay area, if they are not better prepared for future disasters.
Sparks, Nev., is threatened by flooding from the Truckee River and is in a seismically active area. The community signed on as a *Project Impact* community in 1998. The community's decision to participate in *Project Impact* came after it was flooded in 1997. Sparks has already recorded a number of accomplishments in the process of meeting its goals, and lists those, along with its partners, on its web site: www.disastersplans.com.
One of the more remarkable projects that Sparks has completed is the upgrade of its Global Positioning System. The system measures river elevation, among other things, and indicates when it is rising and exactly where it will flood. That allows sufficient time for emergency officials to notify people to evacuate their homes and businesses in flood-risk areas. Sparks' GPS system also pinpoints locations of important emergency service items such as fire hydrants and manholes that occasionally are buried by snowdrifts.
Wind and flood are major threats to Tempe, Ariz. Windstorms may lead to power outages. The community plan calls for pre-positioning of power generators to assure continuity of community water and electrical supplies to centralized disaster shelters. Actions thus far include hardening of power poles in key areas, plus training of city personnel to deal with emergencies.
A number of other Region IX communities are participating in Project Impact: Glendale and Yuma, Ariz.; Maui and Kauai counties, Hawaii; Berkeley, Napa, Santa Barbara, Santa Barbara County and San Bernardino County, Calif.; and Carson City, Las Vegas and Reno, Nev.

SUPPORT FUNCTIONS

OPERATIONS SUPPORT DIVISION

To fly an airplane from the eastern border of Arizona to the Pacific island of Yap, is to travel approximately halfway around the globe. It is the mission of FEMA Region IX operations support division to provide services and logistical support - including payroll, acquisition, branch management, personnel, telecommunications and computers - for that vast area which includes the states of Arizona, California, Nevada, Hawaii and certain Pacific commonwealths and territories.
These services were provided through the Resource Management and Development Group, which accomplished its disaster-related services by deploying a small cadre of disaster assistance employees (reservists).. Shortly before the Northridge earthquake, the development group and disaster assistance programs were consolidated as the operations support division. To improve efficiency, some operations were centralized to include several regions. The equipment warehouse closed and the disaster information storage center and the territory logistics centers

opened. The logistics centers correspond with the three largest FEMA regions, one at Moffett Field in California, another in Denton, Tex., and the third in Thomasville, Ga.

Partnerships

Now, when a disaster is declared, the managing region organizes a conference call with the necessary providers. The Northridge earthquake was both a testing ground for new practices and procedures and a laboratory for reinventing others. Prompted by the need to learn new ways of operating, FEMA adopted the Incident Command System from the U.S. Forest Service. The incident command system standardized the disaster response organization chart and provides stable relationships between the various responding agencies.

Innovations

The National Emergency Management Information System, initiated in the late 1990s makes it possible for all FEMA computers to share and process key disaster information.

Reinvention

These new partnerships and innovations have reinvented the operations support division and have simplified and streamlined management functions, for greater efficiency and cost control.

Innovations

FEMA Region IX joined the computer age in 1986, starting with a server and 14 workstations. People who operated that first system gathered and tracked information on disaster victims, inspections of damaged property, awards of grants and other forms of assistance. They used a program called Automated Disaster Assistance Management System (ADAMS), which had severe limitations. For example, ADAMS could not handle more than 1,000 active files at one time.

That same year Region IX sent a team to Kansas to handle a flood disaster because Region VII was already fully involved with a previous disaster. Region IX took all of its computers, intending to do ADAMS-only functions. In just over two weeks that it took to deal with the flood damage, the disaster team quickly discovered that the computers could be used for much more than just ADAMS interface.

Workers could use word processing (type letters, memos, reports) and spreadsheets (collections of information for analysis) and some simple modem communications. The national flood database became available, which had never accessible before.

When the Loma Prieta earthquake shook the San Francisco Bay area in October of 1989, FEMA was prepared. For the first time, everyone at the disaster field office who needed a computer was equipped with one.

The ADAMS system, customized to Novell's system 3.0, eventually became the basis for the National Emergency Management Information System, another innovation that is used today by FEMA as its central system for nationwide information gathering, processing and analysis.

Partnerships

Region IX pioneered the process of making data entries from remote locations such as the state's Individual and Family Grant Program office; the U. S. Small Business Administration, which makes low-interest long-term loans to disaster victims; and the American Red Cross, another of FEMA's partners in responding to disasters.

After the 1994 Northridge earthquake struck southern California, Region IX made its first extensive use of a remote data entry system. The server – the brain of the system where all the information was stored and analyzed – was based in Redwood City, Calif. Information was pumped into the server from 22 locations in the Los Angeles area and from hundreds of operators in Lakewood, Colo. During that disaster response and recovery, Region IX had more users operating remotely than directly. Most of the information needed to assist victims of the disaster was gathered in three weeks.

A major innovation during the Northridge earthquake in 1994 was the initiation of a telephone registration system. Toll-free teleregistration was a customer friendly alternative to having all applicants for assistance wait in lines to register in person at disaster application centers. As it turned out, more than 80 percent of the applications were taken by phone via the FEMA teleregistration system. Since then, virtually all registration at disasters around the country has been by phone. The system is shared by all regions, and teleregistration operators may handle applications from people affected by several active disasters simultaneously. All the regions share in this wider-scope FEMA partnership.

Another major innovation occurred during the Northridge earthquake with the introduction of the Geographic Information System. The state of California had a GIS that was able to provide a map that included demographic information. The maps identified areas of Los Angeles County with high damage or special needs. They showed, for example, varying demographic areas with overlays of damage reports. That gave Region IX and the state Office of Emergency Services a better idea of what areas needed specific services. Region IX has used a GIS team on every disaster since that time.

PUBLIC AFFAIRS

The overall mission of the FEMA public affairs team is to contribute to the well-being of a disaster-affected community by disseminating information that is timely, accurate, consistent and easy to understand. The FEMA public affairs office has made enormous strides since 1993, and Region IX public affairs has been at the forefront of many innovations and modifications to the office.

The multi-lingual capability of the public affairs office was expanded enormously during the Northridge earthquake recovery. Russian and numerous Asian language capabilities were added to the cadre of English and Spanish linguists.

Media monitoring via the Internet, now standard throughout FEMA, was developed in the 1997 floods in California. This has allowed the public affairs officers to dramatically increase the number of media sources that they review, to expand the number of persons who receive news clips and to disseminate information more rapidly and at lower cost.

The El Niño Community Preparedness Summit of 1997, held in Santa Monica, Calif., was a mammoth media event. More than 20 Region IX public affairs officers participated in the planning and coordination of the event. The summit was covered by 160 media representatives, including 45 television camera crews, all five national television networks, 38 major newspapers, five wire services, five radio networks and six photographers.

Region IX was in the unique position of being the first and the last region to participate in the Y2K transition from 1999 to 2000. Some parts of the Pacific region were the first (Guam) and Hawaii was the last to participate in the countdown to the year 2000. The regional public affairs office was deeply involved in the preparation and implementation of a comprehensive Y2K contingency plan. They were present on New Year's Eve at the regional operation center in San

Francisco, and at the state of California's "Follow the Sun" center in Sacramento – established to monitor any problems with the millennium transition.
Public affairs officers at the regional office and the Northridge recovery center have coordinated and hosted numerous international visits. In 1999 alone, Region IX hosted more than 50 individuals from nine visiting agencies, including the China Seismological Bureau, Japan Broadcasting Company, the Korean State Bureau of Quality and Technical Supervision, the Swedish Defense Material Administration, and the Russian Consulate General.

CONGRESSIONAL AFFAIRS
Region IX, with the largest population among all 10 regions of FEMA, correspondingly has the largest number of elected officials. This includes 62 voting members of the House of Representatives, two delegates from island territories in the Pacific, and eight U. S. senators, two for each of the four states in Region IX.

Disasters

NORTHRIDGE EARTHQUAKE
When the Northridge earthquake struck in the pre-dawn hours of Jan. 17, 1994, the human impact was staggering. In terms of property damage and loss, the event surpassed Hurricane Andrew to become the largest and most costly disaster in the history of FEMA.
The full cost of the Northridge earthquake, including public, private and insured losses, is estimated at about $25 billion. The total federal expenditure is more than $12.6 billion, with FEMA's portion projected at $7.8 billion. This compares to $1.9 billion in FEMA recovery programs for Hurricane Andrew and $1.8 billion for the Loma Prieta earthquake. A record 681,765 households applied for individual assistance under state and federal programs. The previous record for applications was 304,369 following Hurricane Hugo, which struck the Carolina coast, Puerto Rico and the Virgin Islands in 1989. (
The remarkable speed with which FEMA and its partners responded to the Northridge earthquake set a precedent for future large-scale disasters. The disaster struck at 4:31 a.m. PST. Less than five hours later, California Gov. Pete Wilson had declared a state of emergency. At 2:08 p.m. PST, President Clinton signed a federal disaster declaration. Because FEMA Region IX already had an established field office in Pasadena to finish up work on earlier disasters, public information and other functions were in place and operating even before the president declared the earthquake a federal disaster area.

Partnerships
The partnership between FEMA, the California Governor's Office of Emergency Services and other government agencies was key to a successful response and recovery. The immediate and long-term recovery process involved 27 different government agencies plus numerous private non-profit organizations. On the day of the earthquake, mutual aid services were immediately activated as were other services. U.S. Public Health Service deployed disaster medical assistance teams, FEMA urban search and rescue task forces arrived on the scene, the American Red Cross set up 25 shelters and the Salvation Army organized five shelters.
Very soon after the event, the U.S. Small Business Administration, realizing that existing loan limits would be insufficient to address the unusually high costs in the Los Angeles area, doubled loan limits for both real and personal property. SBA also simplified its loan application forms.

Lessons learned and Innovations

Invaluable lessons were learned in the Northridge earthquake, due to the quake's large magnitude and the demographics of the area in which it occurred. The following list highlights some of the practical and technical innovations developed for Northridge. These innovations later were used in disasters in other parts of the country.

Response and Recovery

In this disaster, time was of the essence to protect human life, preserve property, to avoid damage in aftershocks and to get the Los Angeles area back to a condition where it could function.

Innovations included streamlining FEMA's process for disaster declaration, allowing for quick deployment of staff and resources - often within hours of the event. Three national, on-call emergency response teams were established to be available for immediate deployment to disaster areas. The teams serve on a three-month rotating basis.

FEMA began to emphasize automation in relation to customer service. For example, the hand-held computer tested by damage inspectors in the field, could send results overnight to the national processing centers for action. The automated construction estimates system, or palm pad, is now a standard way of doing business for the individual assistance program. Not only did the hand-heldcomputer save taxpayers an estimated $36 million ($54 per application), the computers also shaved three days off the normal processing time.

Human Services

When working with a large, highly traumatized, diverse population, FEMA workers must quickly adapt to the situation. The ethnic, racial, cultural and physical diversity of the Los Angeles area presented challenges in understanding the needs of special communities, and in providing translation and other services. Flyers, brochures, newsletters, press releases, television programming and other informational material was translated from English into many languages including Spanish, Tagalog, Korean, Vietnamese, Chinese, Farsi and Russian.

The application and assistance process was also improved. For the first time after a federal declaration, the vast majority of victims seeking assistance registered through FEMA's toll-free teleregistration number. Disaster service centers helped victims resolve application issues and meet most other needs at one location. A national disaster finance center and new national processing centers were established to handle large or multiple disasters.

Community relations workers found ways to contact members of communities directly by speaking at community meetings, church gatherings and going door-to-door in heavily impacted areas. These methods were standardized for use nationwide.

Public Assistance and Infrastructure Repair

The rapid repair of freeways was made possible by aggressively revising bidding procedures and using incentive programs for contractors. The badly damaged Santa Monica Freeway (I-10) reopened to traffic April 11, ahead of schedule and less than three months after the earthquake. The Golden State Freeway (I-5) reopened May 17. Parts of the Simi Valley Freeway reopened as early as February, although it was September before full use of east and westbound lanes became possible. The collapsed I-5, Route 14 Interchange, fully reopened to traffic on Nov. 4. While road and freeway repair was underway, FEMA spent approximately $9.3 million in infrastructure funds to help expand and enhance mass transit systems.

Hazard Mitigation

Death and damage from a major earthquake can be severe in a major urban area. To protect lives and property in future events, it is necessary to take measures in advance.

The Los Angeles Unified School District operates 900 schools serving more than 800,000 students and employing 57,000 full-time and 24,000 part-time staff. The earthquake caused hundreds of lighting units to fall on desks in classrooms normally occupied during a school day, but fortunately, because the earthquake struck early in the morning on a school holiday, there were no injuries. FEMA funded $3.1 million to replace damaged fixtures with versions that would be safer in future temblors, and another $45 million was obligated to replace non-braced pendant ceilings and light systems that were not damaged.

The Seismic Hazard Mitigation Program for Hospitals is unique to the Northridge recovery effort. The voluntary program is designed to provide funding for measures that will make hospitals structurally safer in an earthquake. FEMA has provided approximately $1.9 billion in seismic mitigation funding to more than 20 hospitals.

In another innovative project, FEMA provided a $40.5 million grant to help carry out a seismic retrofitting of electric power generating plants belonging to the Los Angeles Department of Water and Power. FEMA funds 75 percent of the cost of Hazard Mitigation Grant Program projects to prevent or reduce damage from future disasters. State or local entities supply the remaining 25 percent.

Historic Properties

At the time Northridge earthquake struck, the federal government had made a strong commitment to the repair and restoration of historic properties. This philosophy was reflected in many projects following the disaster.

The Los Angeles Coliseum, a symbol for the entire city, was built in 1932 and was the home of two Olympic Games. The damaged coliseum was repaired - with 1,000 workers operating in two 10- to 12-hour shifts - and reopened within six months of the earthquake. Other less urgent projects took longer.

On April 2000, the 1921 Frank Lloyd Wright "Hollyhock House" restoration was started. The $10 million post-earthquake historic property restoration was expected to take three years for completion.

Public Affairs

During and following a major disaster, it is not always possible to rely on mass media outlets to deliver extensive recovery-related messages. It sometimes works better to have dedicated sources of FEMA/State assistance information for disaster victims, such as the Recovery Times newsletter, flyers, brochures, etc.

During the recovery operation, FEMA Public Affairs' Recovery Channel, which won the Federal Technical Leadership award, used satellite and cable television to broadcast direct, rapid and relevant emergency information to the general public. The Recovery Channel produced 24-hour programming, broadcast to more than 35 cable channels.

Northridge Earthquake Statistical Recap

Date and time of earthquake:

Jan. 17, 1994, at 4:31 a.m. Pacific Standard Time.

Magnitude: 6.7 estimated moment magnitude.
Location: One mile south of Northridge, Calif., a suburb northwest of Los Angeles, at a depth of 11 miles.
Counties affected: Jurisdictions included in the gubernatorial proclamation of a state of emergency and the presidential major disaster declaration were Los Angeles, Ventura and Orange counties.
Aftershocks: Within the first year there were 14,204 recorded aftershocks, including 11 of 5.0 or greater magnitude.
Deaths: 72 deaths in affected counties.
Injuries: 11,846 people received hospital treatment for quake-related injuries.
Area of damage: 2,192 square miles, based on reported damage areas as inspected by city building and safety departments in survey conducted within one month of earthquake. Total square miles for Los Angeles, Ventura and Orange counties are 6,589.
Scope of damage: Approximately 114,039 residential and commercial structures were damaged, according to statistics provided by building departments in each local jurisdiction.
Assessed damage costs: Approximately $25 billion in public and private costs. Projected expenditures for all federal agencies are $12.7 billion. (These numbers do not include losses from reduced productivity and business loss).
Federal Expenditures:

FEMA:	$7.8 *billion*
U.S. Small Business Administration	$4.1 *billion*
Housing and Urban Development	$819.5 million
Transportation Department	$655.3 million
Department of Education	$183.1 million

Insurance
Insured losses total: $12.5 billion.
Residential: $8.3 billion
Commercial: $4.2 billion

FEMA Recovery Programs
FEMA has obligated approximately $7.8 billion for public assistance, hazard mitigation and individual assistance programs, as well as mission assignments, miscellaneous and administrative expenses. The U.S. Small Business Administration approved 124,261 low-interest disaster loans worth $4.1 billion for home, business and personal property losses and measures taken to reduce the effects of future disasters.
Listed below are some of the major assistance programs:

Human Services Programs
FEMA's disaster housing assistance program issued checks totaling more than $1.2 billion for alternate housing, emergency home repairs and mortgage and rental assistance.
FEMA provided funding of $167 million to 214,227 applicants for the Individual and Family Grant program.
California State Supplemental Grant program -- $7,545,978.
Mobile Home Minimal Repair program - $18.9 million to 2,900 applicants.
Crisis Counseling -- $32.3 million for 1.8 million contacts.

California Employment Development Department paid more than $41.2 million to approximately 25,800 people who lost work because of the disaster.
The Agriculture Department issued $63 million in emergency food stamps to more than 293,000 households.

Public Assistance
The FEMA/State infrastructure (public assistance) program processed more than 30,000 damage survey reports and has obligated more than $4.5 billion. The majority of the obligations went to hospitals (45 percent), schools (18 percent) and cities, counties and state (32 percent).

Hazard Mitigation Grant Program
As of August 2000, FEMA has approved more than $717.5 million for mitigation funding. The funding covers public education, medical facilities, essential buildings and state agencies.
Five Percent Initiative
The Five Percent Initiative, which provides the state with discretionary use of five percent of the total hazard mitigation grant funds available within a specific disaster fund, has obligated over $40 million to the state.

Miscellaneous Recovery Programs
The Federal Highway Administration, U.S. Department of Transportation authorized payment of more than $327 million for freeway, highway and bridge repairs.
The U.S. Department of Housing and Urban Development obligated over $800 million for emergency housing certificates, repair and rehabilitation of federally insured and/or financed housing and infrastructure and community development needs.
The U.S. Army Corps of Engineers distributed drinking water, dispensing one million gallons per day to more than 100,000 people.
The State Board of Control provided more than $5.5 million in settlements for damaged items or loss of property kept in self-storage units located under the Santa Monica Freeway.

Tri-Net
Under the Tri-Net initiative, the state selected and FEMA approved the development of the Rapid Detection and Distribution of Ground Motion or Tri-Net project. The grant was awarded to the California Institute of Technology (Caltech) and the California Department of Conservation Division of Mines and Geology (DMG) to develop the Tri-Net system. The project calls for a visionary, state-of-the-art digital seismographic and communication network that includes remote seismic activity detection stations, a central data processing facility and a notification system. This should mitigate some of the risks of future earthquake losses throughout Southern California.

Volunteer Organizations

The American Red Cross
During the emergency period, the American Red Cross sheltered 22,004 persons, served 1.73 million meals, operated various other programs and obligated over $6 million for the disaster.

Salvation Army

The Salvation Army spent $105,947 for displaced persons' housing and $918,678 for mass feeding in the disaster.

WILDFIRES OF 1993 – CALIFORNIA

Between Oct. 25 and November 10, 1993, over 197,000 acres in six Southern California counties were burned in a series of wildfires, fanned by two waves of hot, dry "Santa Ana" winds. Nearly 10,000 fire fighting personnel battled the blaze. Three people lost their lives and hundreds of others suffered injuries.

The fires destroyed 1,241 structures and damage was estimated at $1 billion. The fire disaster declaration, originally for the counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura, was later expanded to include damage resulting from soil erosion, landslides, flooding and mudslides in the fire areas. Over 2,500 individuals and families registered for disaster assistance and disaster application centers were established in six of the areas with greatest damage.

The primary damage occurred in the Malibu-Topanga Canyon area (323 structures lost); Altadena (151 structures destroyed) in Los Angeles County; and Laguna Beach (366 structures damaged and destroyed) in Orange County. The disaster application centers in those three areas were transitioned into long-term recovery centers in December of 1993, and eventually were exclusively operated by the state.

Innovations

Damage inspectors used miniature computers to speed up the processing of claims related to FEMA/State disaster assistance. The computer – a 2.5 lb. hand-held "palm pad" device called the Automated Construction Estimator– was used by inspectors while visiting home sites damaged by the fires. The computer enabled FEMA to issue assistance checks in a week or less instead of the previous 21-day turnaround. The first official use of the palm pad was during the wildfires, and the technology was particularly noted for its efficiency following the 1994 Northridge earthquake.

WINTER STORMS

Region IX has suffered many winter storms and floods. The most serious of these occur in California. In 1993, 1995, 1997 and 1998, a series of severe storms passed through the state. Previously saturated soils set the stage for rapid runoff and flooding, including flash flooding. Across the state, towns were submerged in water, levees broke and high winds uprooted trees and downed power lines. Washed out bridges and mud and rockslides forced road closures. As wastewater treatment plants failed, untreated waste discharged into streams, lakes, reservoirs and the Pacific Ocean. There were power outages, destroyed crops and mud and rockslides, especially in areas previously damaged by fires. Mass evacuations occurred.

In the 1993 floods, 24 counties, one city and 23 Native American reservations were declared federal disaster areas. The disaster caused at least 20 deaths and damage to public property in excess of $175 million. More than 7,000 individuals and families registered for disaster assistance programs.

There were two disaster declarations in 1995; the first included 42 counties and the second covered 58 counties. Together the two disasters caused 29 deaths and total damages of at least $1.8 billion; more than half of that damage was agricultural. More than 117,000 registrations for

disaster assistance were received and over $473 million in disaster assistance payments were made. The National Flood Insurance Program received approximately 6,400 claims.

The winter storms of 1997 affected 48 counties, caused nine deaths and displaced more than 100,000 persons. A primary cause of the damage was due to failure of the levee system. Total damage was estimated at $1.6 billion. Approximately 2,500 homes and 570 manufactured homes were destroyed, and 13,400 homes and 1,950 manufactured homes were damaged by the disaster.

More than 23,000 persons registered for disaster assistance. Recovery Times newsletters were produced and distributed quickly and efficiently, thanks to coordination between the FEMA/State joint information center and FEMA headquarters.

In the aftermath of the storms, an interagency task force was formed to address long-term flood plain issues. In addition, more than 6,000 miles of levees were charted and put into a Geographic Information System database.

The "El Niño" events of 1998 - characterized by recurring storms, high winds and heavy surf - caused widespread flooding, earth movement, debris flow, landslides and coastal erosion. A major disaster (individual assistance and public assistance) was declared for 41 counties and all 58 counties were eligible for the hazard mitigation grant program.

The 1998 El Niño storms caused 17 deaths, destroyed 91 houses, and caused major damage to 2,300 houses and minor damage to 4,252 houses. Approximately 75,000 individuals and families registered for disaster assistance and closeout centers were established to help track applications and other paperwork.

Other states in the region have also suffered from storms and flooding. Arizona, in 1999, and Nevada, in 1997 and 1999, were declared disaster areas as a result of winter storm activity. Many of the flood-affected communities are now participating in *Project Impact*.

CALIFORNIA'S SEVERE FREEZE

California, the most populous state in the union, is also the country's most productive agricultural state. Approximately one-third of the state's land area, about 30 million acres, is devoted to agriculture.

Whenever disaster strikes in California, the farming community almost always suffers. Such was the case in late December 1998 when temperatures dropped below 32 degrees for more than a week.

Unlike other natural disasters in FEMA Region IX, no one was killed or injured because of the freeze, and damages to structures were minor. Nevertheless, the freeze caused $700 million worth of ruin to California's food commodities, and that led to financial suffering for thousands of people.

Growers and field workers dependent on the citrus harvest were the hardest hit. The California Employment Development Department estimated that 14,000 workers from the citrus industry lost wages because of the freeze. Unemployment claims increased substantially. (A similar freeze disaster in California in 1990 led to job loss for 12,000 workers.)

In view of the continuing negative effects of the freeze, President Clinton declared a disaster on Feb. 9, 1999. Under the declaration, farmers, workers, and business owners in eight California counties were able to apply for a variety of disaster assistance programs. The designated counties were: Fresno, Kern, Kings, Madera, Merced, Monterey, Tulare and Ventura.

Innovations

The most appreciated form of help from FEMA in this disaster was mortgage and rental assistance. Nearly 6,000 homeowners and renters who had lost work or commerce, and who

faced home foreclosure or eviction, applied for mortgage/rental payment grants through FEMA's disaster housing assistance program.
The freeze disaster provided an opportunity for FEMA and Region IX to use, for the first time, a new, streamlined process for mortgage and rental assistance. To render help as quickly and efficiently as possible, FEMA reduced the documentation needed to establish each victim's eligibility.
The agency also established a special unit (at its national processing service center) to handle all mortgage/rental assistance applications. Moreover, a caseworker was assigned to each applicant and helped each disaster victim complete forms and obtain necessary documents.

Special Language Needs
The majority of the farm workers whose livelihoods were harmed by the freeze were Latinos. Many were immigrants with limited English-speaking ability. FEMA Region IX provided the best customer service possible, including assigning a bilingual manager (as deputy federal coordinating officer) and bilingual public affairs and community relations staff. Using Spanish and English, these representatives directly assisted disaster victims and worked with community representatives.

Partnerships
To assist the victims of the freeze disaster and their communities, Region IX and its primary California partner, the state's Office of Emergency Services, worked in close alliance with several state and federal agencies. These included Disaster Legal Services, the United Farm Workers union, California Rural Legal Assistance, Central California Legal Assistance, Greater Bakersfield Legal Services, and Proteus (a California state contract organization that operated disaster service centers serving needs of people affected by the disaster).

SALMON FISHERIES

Fishing is a major source of livelihood in Northern California. Fishing is mainly for salmon and steelhead. These fish use specific breeding and spawning sites caused by fallen logs, in-stream rock outcroppings and each stream's geomorphology, which creates eddies and deep pools that allow Coho and Chinook salmon and steelhead trout (salmonids) to spawn away from a river's fast moving currents.
However, many of these breeding sites in Northern California were disturbed during the mid- to late-1990s by severe storms, floods and an extended drought in 1994. Fishing communities in five counties suffered great economic losses when more than 1,500 spawning and rearing sites for Coho and Chinook salmon and steelhead trout were damaged.
In 1997, FEMA, under its Hazard Mitigation Grant Program, approved $1,369,200 in funding to reduce impacts of future flooding or drought events and to enhance fish habitat. The repair projects included sediment reduction through erosion control (including log and boulder arrangements) and re-vegetation along stream banks.

Other Events

El Niño COMMUNITY PREPAREDNESS SUMMIT
Prior to the El Niño weather phenomenon, FEMA and U. S. Senator Barbara Boxer, D-Calif., co-sponsored a conference to help state and local officials and other interested parties prepare for weather expected to be generated by El Niño in the western Pacific Ocean.

The conference, held in Santa Monica, Calif., on Oct. 14, 1997, included participants, observers and media from around the world. Elected officials, federal, state and local disaster personnel, and representatives from the business, labor, insurance, environmental and neighborhood communities took part in the El Niños summit.

The event received wide media coverage and was well received by the public. There was a major amount of interest in El Niño. Photographs and FEMA stories on the event were posted on the FEMA web site within minutes after the pictures were taken. FEMA's web site received a maximum number of contacts the day of the summit by persons interested in El Niño. CNN also picked up FEMA's photographs and stories, and the CNN web site also received a maximum number of contacts that day.

Y2K PREPAREDNESS

The possibility for disruption as computers ticked from Dec. 31, 1999 to Jan. 1, 2000 (Y2K) was a unique challenge for public and private sectors worldwide. FEMA was the lead agency for the President's Council on Y2K conversion. The mission of the council was to work with the nation's emergency service providers and encourage them to assess their readiness to operate normally before, during and after the rollover to the year 2000. Region IX, as part of this program, coordinated activities to ensure federal compliance in the transition.

The Y2K conversion exercise had many positive results. The various entities were forced to realize that they must be prepared, not only for Y2K, but also for other unexpected events. It gave them a chance to prepare or fine-tune their contingency plans. New systems were put in place and old systems were updated and tested. In addition, federal, state and local entities were able to build on existing working relationships and solidify a unified approach to preparedness and response activities.

REGION X

INTRODUCTION

FEMA Region X includes the states of Alaska, Idaho, Oregon and Washington. The Federal Regional Center (FRC) is located in Bothell, Wash., six miles from Seattle's northern city limit, in a decommissioned Nike missile site. Built as a hardened, underground facility, the FRC is two stories of steel-reinforced concrete. The roof is 12 inches thick, and the outside walls are 14.5 inches thick.

The region employs a full-time staff of 69, and can draw on a cadre of over 400 disaster assistance employees (reservists) during a presidential disaster declaration.

The region's most devastating recent natural disaster occurred on May 18, 1980, when Mount St. Helens in Washington state erupted. Ash and steam poured out and avalanches of snow and ice thundered down the mountain's sides for two months, and then the volcano—literally —blew its top. The huge blast of rock, ash and hot gases devastated an area of about 230 square miles, destroying buildings, injuring scores of people, and killing a total of 57.

Since 1993, the region has experienced 23 presidentially-declared disasters involving earthquakes, winter storms, flooding, wildfires, landslides, and avalanches.

KEY DISASTER #1:

Koyukuk River Flood — Alaska

(DR-1039-AK)

From Aug. 8-27, 1994, heavy rains drenched northern Alaska from the coast to the central interior, resulting in extreme flood conditions along the Koyukuk and Kobuk rivers. On Aug. 28, the villages of Alatna and Allakaket flooded. The Department of Defense dispatched Army CH-47 Chinook helicopters from Fort Wainwright to evacuate 109 residents. On Aug. 31, the Koyukuk River crested at Hughes, where 37 people were evacuated. Minor damages occurred in Wiseman, Bettles, Evansville, Huslia, Koyukuk, Kotzebue, Noorvik, Noatak, Kobuk, Kiana, and the Northwest Arctic Borough. High water in smaller streams washed out the Dalton highway in several places, while storm-generated sea surges in Kotzebue caused significant beach and dam erosion. Major damages occurred in Hughes, and catastrophic damage occurred in Allakaket and Alatna.

A total of 487 residents of the Northwest Arctic Borough and the Yukon-Koyukuk Regional Educational Attendance Area (REAA) were affected by the flooding. The disaster area stretched 500 miles from the Bering Straits to the Alaska interior. Sixty homes were severely damaged, and 20 homes were completely destroyed. There was significant damage to the only access highway. It was necessary to perform emergency temporary relocations of evacuated residents in remote areas of the state.

The state of Alaska covers an area approximately two-thirds the size of the continental United States. The villages of Alatna and Allakaket, which were evacuated by helicopter at night as the Koyukuk River rose at the rate of 5 feet an hour, are approximately 150 miles from Fairbanks and accessible only by aircraft. The affected area, which is entirely above the Arctic Circle, stretches along the Koyukuk River from Kotzebue on the Bering Sea to Bettles. The 13 affected villages are hundreds of miles apart, and only Bettles has formal lodging accommodation. Though some villages did have airfields or float/ski plane sites, many of these were rendered unusable by the flood. These circumstances strained staff resources, air operations, and support in general, and the extreme cold became a life-and-death issue.

Major Challenges and Lessons Learned

Maintaining Cultural Integrity

During the recovery phase, particular attention was paid to the state's commitment to retention of the cultural integrity of the interior Athabascan and Eskimo native peoples, which had a major influence on the decisions made. The governing covenant adhered to was Title VIII of PL 96-487, the Alaska National Interest Lands Conservation Act, which reads, in part:

Recognizing that imperative, village leadership and liaisons were included in all decisions made. This process was extremely difficult and time consuming, but allowed the affected peoples ownership of and commitment to the outcomes.

Building Houses in Remote Locations

During the rebuilding phase, the village of Alatna was relocated, and the village of Allakaket was partially moved out of the floodplain. In addition to repairing 60 severely damaged homes, 20 new houses were built to enable families whose homes had been destroyed to move back to

villages. The principal rationale for re-building the houses was the expense of transporting and siting mobile homes, which excluded using them as a temporary housing alternative. The new houses were constructed using the latest codes and standards, and none were located in flood hazard areas. Consequently, the new homes have withstood subsequent storms and FEMA has, in effect, helped to improve the safe housing stock in the community.

Using Interagency Incident Management Teams

The state of Alaska decided to contract an interagency incident management team (IMT) from the National Interagency Fire Center (NIFC) to manage the response phase of this disaster. The state's decision to use the team was driven by these factors:

The state did not have enough trained personnel to handle this extremely staff-intensive response, while the IMT was able to provide the necessary logistics, resources, personnel and expertise to effectively prevent loss of life.

The state's urgent need to act in order to protect lives was compounded by the extremely cold temperatures in the arctic interior.

Several management issues emerged in this situation:

The IMT was not familiar with FEMA's disaster assistance programs, resulting in unrealistic or ill-informed expectations of FEMA programs.

The team is designed to stabilize *situations*, and could not organizationally differentiate between short and long term projects, i.e.: emergency rebuilding and mitigation projects. This resulted in decisions that were in conflict with FEMA's legal capability and mission.

FEMA personnel and the IMT were unclear of their roles and working relationships, which stalled their interaction early on. This resulted in confusion and some delay of assistance.

After-action comments suggested that because other states may consider similar arrangements during future disasters, FEMA should examine the policy implications of using IMTs and review the Federal Response Plan (FRP) in regard to the teams. This may include adjusting the FRP to reflect the incident command system and identifying responsibilities and procedures, especially with regard to coordination of effort.

KEY DISASTER #2:

Severe Flooding — Washington, Oregon, Idaho

(DR-1079-WA, DR-1100-WA, DR-1099-OR, DR-1102-ID)

DR-1079-WA / DR-1100-WA

The state of Washington, with the exception of six counties, underwent flooding and severe storm damage between November 1995 and February 1996. November and December brought high winds, violent storms and flooding which affected 19 western Washington counties, where homes and property were damaged or destroyed. A federal disaster declaration was requested and granted (DR-1079-WA). January and February 1996 brought heavy snows in the mountainous regions and extremely cold temperatures. The heavy rains and a warming trend that followed caused severe flooding of every major river in southern, western, and eastern Washington. Another federal disaster (DR-1100-WA) was declared, comprising 24 counties. During the same time frame, Idaho and Oregon were also undergoing flooding problems. Upon the DR-1100-WA declaration, it was decided to utilize the in-place DR-1979-WA management team and disaster field office facilities.

DR-1079-WA

Beginning Nov. 7, 1995, unusually heavy and prolonged rainstorms began causing flooding in several counties in western Washington. Unseasonably warm temperatures melted the snowpack at higher elevations. Portions of two major interstate highways and 25 state routes were closed due to water over the roadway or landslides. On Dec. 3-4, in addition to the continuing heavy rain, damage in the northern and westernmost part of the flood-impacted areas was compounded by very high winds exceeding 80 mph, causing widespread power outages. On Dec.12-14, extremely high winds hit all western Washington counties. Sustained winds over 50 mph were common, with gusts exceeding 100 mph. Coastal areas of Washington recorded high tides, ocean swells exceeding 25 feet and winds of 110 mph.

There were no reported casualties associated with DR-1079-WA. As of Dec. 14, there were 430,200 homes and businesses without power. Initial damage reports from 17 counties indicated that 737 primary residences sustained damage, including 62 destroyed. Homes with major damage numbered 226, and those with minor damage numbered 449.

The intensity and geographic magnitude of flooding was unprecedented in recent regional disaster history. Damages rapidly escalated and were compounded while preliminary assessments were underway. At the height of the disaster, there were multiple county, state, and federal Emergency Operation Centers (EOCs) in operation concurrently.

DR-1100-WA: On Jan. 29, 1996, a series of severe weather systems began to impact Washington state. Heavy snows and extremely cold temperatures followed on Feb. 3, with persistent, heavy rains and a warming trend. This caused severe flooding as the heavy snowpack rapidly melted and combined with the warm, heavy rains. Virtually every major river in southern, western, and eastern Washington reached and/or surpassed flood stage. Heavy rains, sometimes exceeding 5 inches in a 24-hour period, caused many systems to reach record or near-record levels. Water spilled over several levees and dikes. Major roads were underwater and many communities had to be evacuated. Hundreds of homes had already been impacted by DR-1079-WA flooding. Both sides of the Cascade mountain range were greatly affected by flooding rivers and streams. Four deaths and 10 injuries were associated with DR-1100-WA.

Use of Mobile RICs

The flooding impacted a huge area, nearly the entire state of Washington. To get mitigation information and technical expertise out to the people who would be rebuilding, Region X decided to use mobile Reconstruction Information Centers (RICs). The centers transported hazard mitigation experts to towns and cities throughout Washington, where they met with hundreds of residents faced with the problem of rebuilding. The experts shared ideas and information on how to rebuild to mitigate the next flood. The RICs were extremely popular, and have been used in subsequent disasters in Region X.

DR-1099-OR

Background

Following an extended period of unseasonably cold weather and heavy snowfall in the Pacific Northwest, warming temperatures and rain began thawing the snowpack and frozen rivers throughout the state. According to the state climatologist, the event began with unusually high amounts of snow in the middle and high elevations of the Cascades and the Coast Range. In mid-January 1996, the snow pack for high-elevation sites in the Willamette drainage was only 29

percent of the average. During the next two weeks, however, prodigious snowfalls were experienced - in many locations, several feet per day for many days. By Jan. 31, the average snowpack for the Willamette drainage had risen to 112 percent of average.

An intense cold spell during the last week of January resulted in very low temperatures in the northern half of the state. A moderate storm on Feb. 3 dropped rain on top of frozen soil and roads, causing a major freezing rain episode throughout the Willamette valley. Then on Feb. 6, a strong subtropical jet stream called the "Pineapple Express" reached Oregon. This warm, very humid air mass, which originated near the equator in the western Pacific, brought record rainfall amounts to northern sections of the state. In addition to the wet conditions, temperatures were unusually mild.

The warm rain and air temperatures quickly began to erode the snowpack. Streams rose rapidly on Feb. 6 and 7, reaching flood stage in many locations. Eventually at least 25 Oregon rivers reached flood stage. The coastal areas experienced the most extreme flooding, where the frequencies ranged up to the 200-year event on several western Oregon streams.

Roads and bridges were damaged and thousands of residents required evacuation, including 20 families from the Warm Springs Indian Reservation in low areas along the Deschutes River and inmates at the Women's Correctional Facility in Marion County.

Transportation was disrupted throughout the area by road and bridge closures. In addition, the Salem Airport was closed due to flooding, and both the Columbia River and the Willamette River were closed to all but emergency traffic. Agricultural damage was extensive, and drop-off sites were set up to receive carcasses of dead livestock. The Oregon Diary Farmers Association sent dairy cows to Tillamook to aid dairy farms in rebuilding their herds to replace drowned stock.

Mitigation Plans in Small Communities

At the time of this flood, few Oregon jurisdictions had developed and sustained flood damage reduction plans. Many such jurisdictions were small, with limited resources and expertise to sustain such plans. Since the area had not experienced a serious flood for 22 years, the incentive to develop such plans may well have abated and made it easy to focus limited resources on more pressing issues. Failure to adopt and enforce appropriate flood control and protection mechanisms was reflected in the disproportionately high impact of the 1996 flood on some small communities. For example, flood damage in Tillamook County was 148 percent of its annual budget. Frequently, local jurisdictions also had insufficient knowledge regarding risk locations and inadequate resources to implement a coordinated mitigation program.

The ability of small communities to pay for engineering and flood control was often lacking in terms of manpower, revenues and technical expertise. Several smaller communities contained repetitive loss areas that needed to be addressed by mitigation projects. Unfortunately, these are the communities that can least afford the local share (25 percent) and are the least likely to have mitigation plans ready to implement in post-disaster settings. The disparity between these smaller communities and larger communities with more financial capabilities was obvious.

To meet this need, Region X's Mitigation branch worked with the state to develop a training program to teach smaller communities how to set up mitigation plans, which are required before Section 404 funds can be allocated to local mitigation projects. Mitigation also made a movie (perhaps the first in the nation) called "Mitigation Success Stories" to show communities and individuals the advantages of a damage-prevention approach.

Landslide Mitigation

At the time of this event, Oregon did not by statute require or make legal provisions for construction specifically related to areas affected by steep slopes or the development of hillsides. Although landslides were recognized as an element of natural disasters and hazards, no specific policy, laws, guidelines or implementation strategy existed to guide communities in drafting requirements or guidelines for development in such areas.

As a result of widespread landslides caused by this flood, FEMA and the state began helping communities address the problem of landslide mitigation. Funding and expertise were shared, especially with the smaller communities, to assist with mapping areas at risk from landslides and designing measures for restricting development in these locations.

DR-1102-ID

Background

The same weather system that hit Washington and Oregon produced excessive rain in Idaho and freezing up to elevations of 9,000 feet. Beginning on Feb. 6, 1996, and continuing through Feb. 23, severe storms and flooding occurred in the northern areas of the state. A combination of existing snow, 10 inches of new snow, and single-digit temperatures the last week of January caused ice to form on many rivers. This was followed by a warming pattern the first week of February and resulted in flooding in the northern panhandle counties. Rivers in northern Idaho rose rapidly, resulting in localized flooding. Numerous roads were closed due to mudslides, ices jams, and water over roadways. Residents were without power and potable water. Levees were undercut, and entire towns were flooded.

On Feb. 7, Governor Batt declared a state of emergency and on Feb. 11 President Clinton signed a disaster declaration for Idaho (DR-1102-ID). Since Region X was already responding to three declarations in Washington and Oregon, the new disaster was handled by FEMA Region VIII.

Coordinating with Support from Another Region

Since Region X was already involved with two disaster declarations in Washington state and one in Oregon, FEMA Region VIII was requested to provide support for the disaster operations in Idaho. From the beginning, the eventual transition back to Region X was anticipated and planned.

The region's method for achieving continuity throughout the process was to designate a Region X liaison as the deputy federal coordinating officer (DFCO), to be involved at the leadership level from declaration through transition. This was viewed as essential to provide current and institutional knowledge of Region X's policies and procedures, as well as to ensure that the transition period from Region VIII to Region X would be seamless for the state, and local jurisdictions.

To this end, the FEMA Region X liaison participated in the preliminary damage assessment and was deployed as the DFCO/Region X liaison on Feb. 18, just eight days after the Regional Operations Center was activated. The liaison remained on site until after transition from Region VIII to Region X during the first week of April 1996.

KEY DISASTER #3:

Miller's Reach Fire / Flood — Alaska

(DR-1119-AK)

Background

On May 8, 1996, a series of wildfires began in the Miller's Reach area of the Matanuska-Susitna Borough. On June 2, the wildland fires began spreading rapidly, threatening the city of Houston and the community of Big Lake. Before the end of the incident period on June 15, over 37,400 heavily-wooded acres were damaged in and around Big Lake and the community of Big Lake, with over 250 structures destroyed. Nearly 2,200 residents were evacuated, with 650 housed in a Red Cross shelter. The city of Houston is approximately 55 road miles north of Anchorage.
The impacted area has primary homes, vacation cabins, hunting lodges and small home-based businesses. Of the 250 structures destroyed, 175 were homes and vacation cabins, with approximately 50 percent being primary residences. Approximately 200 people became unemployed due to the fire impact.
The primary infrastructure impact to the declared areas was to local utility systems. Extensive debris clearance and removal throughout the Matanuska-Susitna Borough was also required. Power was out to thousands of rural electrical customers during the height of the event, and several hundred remained without power for a few weeks afterward. The fire destroyed electric and telephone poles and burned through electrical lines in many areas.

Wildfire Funding

The Miller's Reach fire disaster presented disaster funding issues which were new to the state of Alaska. For the first time, FEMA provided both fire suppression grant assistance and federal disaster assistance on the same disaster.

Wildfire Advisory Panel

As a result of this fire disaster, the Miller's Reach wildfire advisory panel was formed, comprised of respected citizens of the impacted areas. The panel held several fact-finding meetings, took public comments, and explored what other areas have done to handle similar disasters. The state of Alaska and the Matanuska-Susitna Borough are subject to repetitive wild-land fires and there are abundant opportunities to reduce future disaster costs to federal, state and local governments. Further, there is the necessary local government support to implement mitigation measures. Possible hazard mitigation measures include: projects to protect critical public facilities, improved state and local wildland fire public education programs, and research and development of safe wildland fire fighting techniques for property owners.

KEY DISASTER #4:

West Coast Flooding — Washington, Oregon, Idaho

(DR-1152-WA, DR-1159-WA, DR-1154-ID, DR-1149-OR, DR-1160-OR)

DR-1152-WA

Background

Beginning Nov. 19, 1996, and continuing for several days, an early and unprecedented ice storm, combined with a heavy snowfall to cause extensive damage and power outages in eastern Washington state, affecting Spokane, Pend Oreille and Klickitat counties. The winter storm left a covering of up to 2 inches of ice on top of already heavy snow, blanketing the entire area. Local newspapers characterized the snow and ice storm as a "115-year event."

This ice and snow storm affected all 39 counties in Washington state. However, the counties of Klickitat, Pend Oreille, and Spokane were most devastated and were the only counties covered by the disaster declaration. In those three counties, more than 100,000 residences, businesses, and governmental operations were left without power, light, and heat - some for more than two weeks. Approximately 30,000 residents were directly impacted by damage to hundreds of homes and personal property losses.

Utility companies worked around the clock to get systems back on line to establish temporary power, bringing in additional crews from western Washington, Oregon, Idaho, and British Columbia, Canada. In Klickitat County, water usage was restricted to emergency purposes only. Loss of power affected lift pumps for water and sewage systems in Klickitat and Spokane counties. Downed power lines and falling ice and debris created additional hazards, and thousands of trees broke under the weight of snow and ice. Mail and emergency service vehicle response was hampered by poor road conditions. There were three documented storm-related deaths.

The governor did not request individual assistance due to the military department's assessment that homeowner and business uninsured losses did not meet the eligibility criteria of federal disaster programs. The severe impacts of this unprecedented and unexpected ice storm found the populace, businesses and governments surprised and overwhelmed by the consequences.

DR-1159-WA

Background

A cold front moved over Washington state on Dec. 25, 1996, and settled over the lowlands. Early on Dec. 26, a strong southwesterly jet stream began to drive warm moist air over the cold air. Snow fell to the north of the front and the southern area encountered some snow, freezing rain or rain. Snow began at the Seattle-Tacoma International Airport early on Dec. 26, and continued intermittently through the next day.

As this first system moved out of the area, a second weather system moved a warm front northward through the state beginning on Dec. 28, once again bringing warm, moist flow over the existing cold air mass, which deposited another 6 to 14 inches of heavy wet snow. As the frontal system moved north, the snow changed to rain and temperatures warmed into the upper 40s, causing rapid melting and increased runoff. This period of abundant rain on snow resulted in heavy loads on structures and many flooded roadways. A Pacific frontal system began to affect the area on Dec. 31. This system resulted in high winds and local heavy rains. These conditions, combined with the ongoing rapid snowmelt, resulted in flooding over some of western Washington's rivers, widespread urban and small stream flooding, numerous occurrences of mudslides, and other significant erosion. Along the coast, 25-foot swells, high tides, and heavy runoff combined for additional flooding in those areas. Rainfall in western Washington tapered off on Jan. 1, 1997, and a drier pattern began to allow the ice and snow to melt at a more moderate rate.

As a result of this disaster, it is estimated that more than 412,000 electrical power customers in Washington residences, businesses, and governmental operations were left without power, light, and heat, some for more than two weeks. Utilities worked around the clock to get systems back on line to establish temporary power, bringing in additional crews from other states and the Province of British Columbia. Water, sewer and septic systems were widely impacted. At one point, nearly 100 landslides were reported in the Seattle area.

There were 17 deaths statewide, the highest number of fatalities caused by natural disaster since the Mount St. Helens eruption in 1980. Many homes and businesses were evacuated due to the threat of landslides. The combination of these weather conditions produced disastrous results: widespread power outages due to falling trees, multiple structures collapsed from the weight of ice and snow, flooding from streams and rivers, blocked storm drain systems with localized surface flooding, and erosion of roads and hillsides with subsequent loss of buried utilities and damages to homes. These effects were compounded in many areas by wet conditions prevailing from the flooding disasters of November/December 1995 (DR-1079-WA) and January/February 1996 (DR-1100-WA).

DR-1154-ID

Background

Unseasonably heavy snowfalls began on Christmas Day 1996, in south central Idaho and caused localized power failures and road closures in isolated rural and mountain areas, stranding residents and tourists.

Snow had begun falling in the Idaho panhandle on Nov. 16, resulting in heavy accumulations for several consecutive days. By Nov. 19, weather reporting stations in the populated valleys had between 12 and 20 inches of wet snow on the ground, with Bonners Ferry reporting 27 inches. Additional rain and snow events occurred for the remainder of the month, which consolidated the snow pack. Snow depth measurements decreased as rain and settling occurred, then additional snow brought totals right back up. The water content of the snow became very high as a result of the temperatures and the additional wet snow and rain. A further complicating factor was cold air trapped in the valleys, which resulted in freezing rain on many occasions, while the higher elevations continued to fluctuate between rain and snow.

Precipitation for the month of November was well above normal for all reporting stations. The ensuing weeks in December brought another cold outbreak and a return of the same pattern. High temperatures seldom got above the mid 30s, and low temperatures varied between the teens and 20s. Snow depths began increasing again, and by the morning of Dec. 5 were mostly in the 24-36 inch range.

Cold Canadian air moved to southern Idaho in mid December. Wet Pacific weather systems moving this cold air brought considerable snow to central and southern Idaho. Boise received its second highest 24-hour snowfall on Dec. 20. Both high and low elevation snow pack were well above normal. A rapid warming occurred beginning Christmas Eve, as very warm, wet weather systems came into the area from the tropical region near Hawaii. This moisture stream persisted for more than a week, ending early on Jan. 3, 1997. The combination of a heavy snow pack, well above normal temperatures that rose into the 50s during the day and stayed near or above freezing at night to melt the snow pack, and days of moderate rain, brought significant runoff in all southern basins. This combination triggered rapid river flooding and mud slides from super-saturated soils.

Flooding occurred on several rivers, cutting access to power lines, softening roadbeds, and slowing evacuation and rescue efforts. In the Pinehurst area of southern Idaho County, significant landslides and highway flooding resulted in helicopter evacuations for approximately 30 people on Jan. 2. The most severely affected communities were Sandpoint, Bonners Ferry, Pinehurst, Lowman, Garden Valley, Banks, Cambridge, Midvale, Weiser and Payette. Six deaths and three injuries were attributed to the disaster.

Major Challenges and Lessons Learned

Governor's Landslide Task Force

On Feb. 4, 1997, the newly organized Governor's landslide task force held its first meeting. The overriding area of concern and focus by the task force was the potential for renewed flooding and slides due to unusually high snow accumulations in the upper elevations. This near-term risk was compounded by reservoirs serving the affected areas being at or near capacity. The task force formed four committees - science, mitigation, funding and policy - and drew up long-range policy recommendations to present to the state of Idaho.

Mobile Reconstruction Information Centers

Mobile reconstruction information centers were again deployed to visit impacted areas to provide individual advice on appropriate rebuilding of flood-damaged structures utilizing damage prevention design and techniques. This was valuable to flood victims and the federal coordinating officer recommended continuing and expanding the use of the mobile centers, preferably early in an event, in order to provide one-on-one consultations regarding repair of damaged structures.

Community Meetings

The federal coordinating officer also recommended scheduling community meetings as early as possible in the recovery phase to provide an efficient and timely exchange of program/assistance information and to allow service providers to hear constituent concerns early in the process.

Using Low Altitude Aerial Photography

Low altitude aerial photography was of great value in assessing flood damage and confirming flood mapping. The federal coordinating officer suggested that controlled low altitude photographic mapping be done at the time of the event, through utilization of preauthorized accounts. Satellite photography, while available, is usually not useful due to heavy cloud cover during rain events.

Availability of Office of General Council

Infrastructure found it valuable to have a representative of the Office of General Counsel available. They suggested that maintaining a general council presence is especially useful while the FEMA/State disaster field office is in its final stage of closing.

DR-1149-OR/ DR-1160-OR

Background

DR-1149-OR

A severe winter storm started along the Oregon coast on Nov. 17, 1996, and continued through Nov. 19. The storm, which consisted of high volumes of rain and strong gusting winds, caused major damage to public infrastructure in three counties in western Oregon. The governor directed implementation of the Oregon emergency operations plan and declared a state of emergency in three Oregon counties. The Oregon State Police, the Office of Emergency Management, the Oregon National Guard, and all state departments were activated. The Oregon State Police and the Office of Emergency Management coordinated all appropriate agencies of the state of Oregon in assessing, alleviating or mitigating conditions caused by the emergency. The Oregon National Guard, in coordination with the Office of Emergency Management, provided essential assistance that was deemed necessary to carry out the mission. All state departments coordinated requests and deployment of resources through the state emergency coordination center. The disaster area was highly vulnerable. A combination of high river levels, accumulated silt and debris, mudslides, and saturated soils presented an imminent threat to public safety. In addition, a continuing series of subsequent storms kept the respective counties in a constant response mode for over two weeks. There were five fatalities attributed to the disaster.

DR-1160-OR

A storm that brought heavy snows to the Cascades Dec. 19 and 20, 1996, was followed by widespread rain showers starting Dec. 21. In northern Oregon, heavy rainfall on the Oregon coast and in the Willamette valley caused already full rivers and their tributaries to rise above flood stage in several locations. Evacuations took place on Christmas Day, due to flooding of coastal rivers. In response to the situation, the Oregon emergency operations plan was activated on Dec. 25. On Dec. 26 an ice storm in Portland felled trees and caused power outages at the same time as heavy ice and snow halted transportation in the Columbia River Gorge. Similar events were repeated Dec. 28. By Dec. 30, more Oregon rivers had risen above flood stage, including the Tualatin, Nehalem, Luckiamute, Santiam and Yamhill, and by Dec. 31 the combined effects from rainfall, rapid snowmelt and already full reservoirs caused widespread flooding throughout the state. Rivers continued to rise throughout Oregon during the next several days as local communities attempted to deal with the effects of statewide flooding and landslides.

Impacts of the earlier event were compounded in several counties by the new series of storms. Flooding and landslides occurred throughout most of the state. For example, in Wallowa County extreme flooding caused severe road washouts and many residents were isolated without necessary supplies. In the most remote areas, a mule pack team was the only mode of transportation available to reach stranded individuals and families and to transport the needed supplies and equipment. Wallowa County's agricultural industry was also adversely affected, and many of the farmers and ranchers in the area struggled with the inability to feed stranded livestock. State resources were used to airlift feed to several locations, and also to carry supplies to many of the counties' most isolated areas. There were three fatalities resulting from the disaster.

The combined events exacerbated damages already inflicted in many counties of the state by several storms during the preceding year, which softened soils and, in many cases, severely impacted local governmental financial capability to deal with the latest series of storms.

Major Challenges and Lessons Learned

The Effects of Multiple Disasters

Although the damages incurred during this event might be considered marginal on a statewide basis, it was declared eligible to receive federal disaster assistance due to significant financial impact on state and local governments from earlier disasters.

When DR-1160-OR was declared, it constituted the seventh open disaster being handled by the state of Oregon (the other six were DR-0985-OR, DR-1004-OR, DR-1061-OR, DR-1099-OR, DR-1107-OR and DR-1149-OR). The most recent four disasters were due to flooding, which contributed to the damage created by the December 1996 storms. Residents in some areas were displaced three times in one year.

Two of the major industries of these rural counties were heavily impacted. The inability to gain access for harvesting timber, due to damaged roads, contributed to the decline of timber sales. In addition, hikers and rafters were unable to reach recreational sites, which led to unemployment in areas whose economies depend on tourism. These conditions exacerbated already severe unemployment and overall economic depression, and further eroded the tax base.

Typical of counties hit hard by the cumulative effects of repeated flooding was Wallowa County, a small, rural county (population 7,250), which covers over 3,000 square miles in the Blue Mountains of northeastern Oregon. The heavy rainfall that hit this area, coupled with the rapid snowmelt, virtually destroyed the county's main road system and isolated many residents. County officials used pack mules to deliver provisions to stranded residents along the Imnaha River. Since tourism in the Hell's Canyon area is one of the major resources of the county, inaccessible roads seriously impacted the economic base.

KEY DISASTER #5:
Kelso Landslide — Washington

Background

During the early spring of 1998, residents of Aldercrest, in the city of Kelso, became aware of rapidly increasing earth movement throughout their subdivision. On April 23, Kelso issued its first "letter of imminent danger" to a resident, followed by a proclamation of emergency on May 19, when the magnitude of the event became clear. The event, identified as the Aldercrest-Bayon landslide, was unusually large - covering an area approximately a quarter-mile long by a quarter-mile wide, or about 55 acres. It was technically identified as a deep-seated translational landslide with a 75-foot headscarp with approximately a 23- to 40-foot vertical displacement. An ancient slide area, it had been inactive for nearly 100 years, lying dormant until the rainfall during the 1995-98 period exceeded the average of the past 60 years by about 70 percent.

The landslide involved approximately 55 acres inside the Aldercrest subdivision. By Oct. 30, 1998, approximately 107 of the estimated 137 at-risk homes had been destroyed or significantly damaged. A landslide is a continuing event, and it has been determined that arresting the earth movement is not economically - and probably not technically - feasible. Some houses have been

completely destroyed. Some have not. It was forecast that eventually all 137 at-risk homes would be destroyed or seriously damaged.

Major Challenges and Lessons Learned

A decision was made to offer a buyout of the homes at risk. Three funding sources were combined to finance the project: FEMA's Hazard Mitigation Grant Program, unmet needs, and FEMA Public Assistance alternate project funds. Homeowners were compensated for approximately 30 percent of the pre-disaster assessment of their houses.

REGIONAL INNOVATIONS

The period from 1993 to 2000 saw the reinvention of FEMA. From being a multi-layered bureaucracy whose main areas of focus were on civil defense, natural disasters and response/recovery, FEMA Region X became a streamlined organization with an emphasis on customer service and mitigation. This reorientation changed the way everything is done in Region X, from the way the telephone is answered to the people who have decision-making authority. Instead of sticking to established rules and procedures, Region X began looking actively for the best, quickest and most long-lasting solutions.

As Region X responded to every disaster from this more proactive and creative perspective, it developed several innovations that changed the way disasters were handled. These innovations are listed under the following six headings: damage prevention, reinvention, partnership, customer service, rapid response, and Native American relations.

DAMAGE PREVENTION

In June 1993, Director Witt established as one of his principle goals for FEMA:

"To establish mitigation as the foundation of the (national emergency management) system."

Throughout 1994, FEMA developed a national mitigation strategy and made the internal readjustments required for the new focus. Mitigation was promoted as the "foundation" of FEMA, and a separate mitigation division was established.

The disasters of 1995-97 showed Region X that FEMA meant what they said about mitigation. During those two years, the region received $77 million through the Hazard Mitigation Grant Program, compared to a total of $20 million for the entire previous seven years. Region X bought 700 properties and elevated 300 houses in floodprone areas, compared with a total of 72 in the previous 13 years.

With the initiation of *"Project Impact - Building a Disaster Resistant Community"* in 1998, the direction of the agency toward mitigation has been reinforced. Region X was privileged to have one of the *Project Impact* pilot communities when Seattle was among the first seven communities chosen for the initiative.

Region X has directed scores of mitigation projects since 1993, to help reduce damage from a wide range of disasters: fires, floods, earthquakes, volcanoes, mudslides, avalanches and winter storms. The following three successful mitigation projects demonstrate the effectiveness of reducing the damaging effects of natural disasters through pre-disaster preparation.

Mitigation in Tillamook County, Oregon

Background

Tillamook County is a *Project Impact* community located near the Oregon coast on a flat, agricultural floodplain. The county has experienced flooding repeatedly over the years. After the floods of 1996, virtually every structure in the flood-prone area was elevated, through Region X's Hazard Mitigation Grant Program. In the winter of 1998-99 there was heavy rain and flooding. Again, on Thanksgiving weekend 1999, the county experienced another round of flooding. After these floods, though, Tillamook County had a different story to tell.

Results

Mitigation projects completed in the community proved to be effective long-term solutions to ending the cycle of damage/repair/damage. Tillamook County's elevation projects and animal refuge areas (known as critter pads) sailed through the floodwaters with flying colors. Seventy homes and businesses in the community all escaped problems from flooding. Every one of these structures would have experienced some degree of flood damage had they not been elevated to a safe level above floodwaters.

In addition to the elevations of floodprone structures, other community-based efforts also contributed to minimizing losses. The community completed several drainage improvement projects, which were providing a return on the investment a year after their inception. The U.S. Army Corps of Engineers fast-tracked a series of advance measures projects in the Tillamook area. One element of their work was ten tide gates integrated into a major levee west of town. These tide gates significantly decreased the duration of the flood by keeping the water from being trapped behind the levee, thereby minimizing siltation problems as well.

Tillamook County can expect future storms to produce flooding in the community, but some of the flood-prone homes and businesses will be spared the cost and anxiety of flood-related losses. These successful projects are also serving as prudent examples to others in the community who are still subject to losses in areas at risk for flooding.

The Milo Creek Watershed Improvement District

Background

Milo Creek carries drainage from its headwaters in the mountains of northern Idaho to the South Fork Coeur d'Alene River. During the past 100 years, private property owners, public utilities and municipalities have built near and, in many cases, over the creek. This construction has resulted in a composite system of corrugated metal pipe, wooden sluices, concrete box culverts and open channels. This is commonly called the "Milo Creek containment system" and it has failed several times, flooding private and public properties in Kellogg and Wardner.

Over 100 years of mining and 65 years of smelting activity have contaminated the area with lead and other heavy metals. Acid concentrations picked up by Milo Creek as it runs past the mines have accelerated erosion of the culvert system throughout Wardner and Kellogg. The Milo Creek containment system lies entirely within a U.S. Environmental Protection Agency "Superfund" site.

Results

After extensive flooding in March 1997 (DR-1154-ID), FEMA and the Idaho Bureau of Disaster Services suggested that restoration of the facility to pre-disaster conditions did not make sense given that damage would probably occur again within a short period of time. Instead, it was proposed that money available from the disaster fund be combined with other funding sources to provide a comprehensive long-term solution.

Eventually, the Milo Creek watershed improvement district was formed, consisting principally of the cities of Kellogg and Wardner, Shoshone County, the state of Idaho, the EPA, the Army Corps of Engineers, and FEMA. This group designed a long-term solution to the recurring and complex watershed problems. The centerpiece of this solution included the installation of dual 54-inch diameter, high-density polyethylene pipes to be installed from the upper watershed, past the mine, and through the cities of Kellogg and Wardner. Settling basins and flow energy dissipation measures are also being installed throughout the system to reduce flow velocity and sediment load. Extensive efforts to reduce mine infiltration are also planned.

In all, the project came to $9 million, and funding was put together from several sources. This was the first time in Region X that FEMA money had been used jointly with funds from other agencies. Through this extensive multi-agency and group partnership, a watershed problem that has lingered for decades has been solved, and the health and economic vitality of the area has been safeguarded.

Critter Pads (Livestock Sanctuary Areas)

Background

Several rivers in western Washington and Oregon have broad floodplains in their lower reaches, which are used extensively for dairy farms and for cattle and sheep ranching. Livestock have been exposed to drowning or illness related to partial immersion during past floods. More than 2,000 cattle drowned in King and Snohomish counties between 1975 and 1990. In 1990 in King County alone, over 600 head were lost in flooding.

King County Surface Water Management, in coordination with FEMA Region X, worked to amend local and state regulations in order to develop "critter pads." Critter pads are simple earthen mounds that provide livestock with high ground during floods. The concept sounds straightforward, but getting the mounds constructed took a lot of cooperation between local, state, and federal agencies, since local floodplain management ordinances prohibit filling in floodplains.

Results

During the 1995 floods and after the Thanksgiving flood of 1999, critter pads throughout Washington and Oregon showed themselves to be successful in protecting all livestock from loss. No cattle drowned and mastitis-related problems were minimal. Many ranchers in *Project Impact* communities in Benton County and Tillamook County, Ore., and in King County and Pierce County, Wash., are discovering that - with just a small investment of time and money - a great deal of heartache and expense can be avoided.

REINVENTION

When Director Witt initiated major changes in FEMA, Region X was ready. It welcomed the streamlining of divisions and the decentralization of authority and was grateful for the focus

Director Witt gave the organization. When the region had been a hodge-podge of dissimilar divisions, it was extremely difficult to pull together as one organization.
Now, team building is an established part of regional processes. Division directors hold a management retreat twice a year, and an all-hands retreat is held once a year. Employee surveys are done frequently and have demonstrated time and again that employee morale and team cooperation continue to stay high. Employee comments are summarized and passed on to division directors, and have resulted in many positive changes, especially in the area of improved communications.

PARTNERSHIP

To further the tasks of prevention and mitigation - as well as recovery - FEMA has entered into partnerships with state and local governments, other agencies, businesses, universities, and citizens. Given the complexity of every disaster situation, there are few problems that can be solved by FEMA alone.
A major focus of Region X's partnering efforts since 1998 has been *Project Impact*. This initiative encourages local businesses, governments and individuals to work together to help communities take actions that will dramatically reduce disruption and loss from the devastating effects of natural disasters. Under *Project Impact*, FEMA offers expertise, technical assistance and grants to get the latest technology and mitigation practices into the hands of the local communities. Region X currently has agreements with 14 *Project Impact* communities.
Region X has engaged in every conceivable combination of partnerships since 1993. The following five examples demonstrate the kinds of partnerships supported by the region:

Earthquake Preparedness Partnership

Background
There is a growing awareness in the Pacific Northwest of the nature of earthquake hazards and the interdependency of public agencies and private companies in planning for earthquakes. Recent research has revealed that several giant earthquakes (magnitude 8 to 9.5) have occurred along the Cascadia subduction zone in the Pacific Northwest and will likely occur again.
In response to the discovery of this threat and an increased acceptance of the likelihood of major earthquakes in the area, representatives from major corporations, academia and different levels of government began meeting in 1992 to form what eventually became the Cascadia region earthquake workgroup. FEMA and the U.S. Geological Survey provided seed money, shared advice on mitigation and preparation and helped coordinate the early efforts.

Results
Since 1992, the workgroup has worked actively to plan strategies for actions to take before the next earthquake to reduce the loss of people, property and continuity. Their goals are threefold:
Promote efforts to reduce the loss of life and property.
Conduct education efforts to motivate key decision makers to reduce risks associated with earthquakes.
Foster productive linkages between scientists, critical infrastructure providers, businesses and governmental agencies in order to improve the viability of communities after an earthquake event.

The rationale for the Cascadia effort is that damaging earthquakes within this zone are likely to be regional in nature. A regional risk-reduction effort could facilitate intergovernmental and regional response planning, cooperative regional mitigation planning (for lifelines, etc.), information dissemination (preparedness and mitigation, for example), and information sharing about site-specific events.

The Cascadia workgroup is now a large, active organization sponsoring conferences, research, planning sessions and project teams. It includes members from public utilities, major corporations, academia, and state emergency management who have assumed leadership roles. They proudly announce that they are in charge of their own project now, thus allowing FEMA and the USGS to assume support roles rather than a coordination role.

Partnering for Tsunami Preparedness

Background

Of all disasters, tsunamis are the most difficult to predict. The earthquakes that cause the huge ocean waves, also called tidal waves, sometimes occur deep under the sea and there may be little or no forewarning that a tsunami is even on the way.

Results

FEMA has joined forces with the National Oceanic and Atmospheric Agency and the U.S. Geological Survey to make coastal communities more aware of the potential dangers of tsunamis and to provide information about mitigating for them. NOAA develops deep-water buoys for warning of imminent tsunamis. They also direct inundation mapping to predict the areas most at risk from flooding by a tsunami. The USGS develops near real-time information to detect tsunami-generating earthquakes - essential data for predicting a tidal wave.

Region X, working with the state departments of emergency management and local communities, is coordinating the scientific abilities of NOAA and the USGS with the mitigation abilities of the states to develop, modify and distribute mitigation products and to promote educational activities. The goal is to heighten awareness and disaster resistance by means of education, warning, mitigation, short-term land use, and building issues (longer-term mitigation).

Kelso Buyout

Background

In the early spring of 1998, residents of the Aldercrest subdivision in Kelso, Wash., became aware of rapidly increasing earth movement throughout their subdivision. On April 23, the city of Kelso issued its first "Letter of Imminent Danger" to a resident, followed by a proclamation of emergency on May 19, when the magnitude of the event became clear. The event was identified as the Aldercrest-Bayon landslide and covered an area approximately a quarter-mile long by a quarter-mile wide (about 55 acres). The slide appeared to be the result of three years of heavier-than-normal rainfall.

The landslide (DR-1255-WA) involved approximately 40 acres inside the Aldercrest subdivision. As of Oct. 30, 1998, approximately 107 of the estimated 137 at-risk homes had been destroyed or significantly damaged. The landslide was a continuing event, and it was determined that arresting the earth movement was not economically, and probably not technically, feasible.

The forecast predicted that eventually all 137 at-risk homes would be destroyed or seriously damaged.

Results

To help bring relief to the residents of this ongoing disaster zone, it was decided to do a buyout of the area at risk. Given the size and complexity of the project, several funding sources were required to achieve the acquisition. After months of coordination between FEMA, the Washington Emergency Management Division, and the City of Kelso, FEMA and interested congressional offices worked in partnership to obtain funding to reimburse residents for at least part of their loss.

These funds came from three sources. First was the alternative Public Assistance program. Rather than replace utilities and roads in an area that was condemned, the state decided to contribute 90 percent of the Public Assistance funds to an acquisition project. The second source of income was the unmet needs program funding formerly under the jurisdiction of the Department of Housing and Urban Development (HUD). The third source of funds was the FEMA Hazard Mitigation Grant Program. With funds from these three sources, residents were reimbursed for almost 30 percent of the pre-disaster value of their homes.

Ward's Greenhouse, Idaho

Background

Ward's Greenhouse is an important employer in a rural area of southwest Idaho. The grounds - including several greenhouses, an irrigation pumping station, and assorted outbuildings - were inundated by floodwaters when Russell Creek overflowed during the February floods of 1997 (DR-1154-ID). Retreating waters left piles of mud, silt and debris and required serious cleanup before rebuilding could begin. It was not a problem that could be resolved by FEMA programs alone.

Results

As with all joint projects, this one required cooperation and communication between diverse groups. Mennonite volunteers led the recovery effort, shoveling ice and mud and recovering building materials. FEMA provided site supervision and coordinated much of the funding and permit applications. To oversee the rebuilding of the entire watershed of Russell Creek, the Natural Resources Conservation Service (NRCS), under the auspices of its Emergency Watershed Protection Program (EWP), brought in engineers and surveyors. The U.S. Forest Service (USFS) loaned equipment and road building consultants. Since the area was located on both private and Forest Service lands, a joint agreement had to be reached between the NRCS, the EWP, Boise County and the USFS.

The greenhouse project was completed on Feb. 22, 1997, and was considered to be a great success, particularly for Volunteer Organizations Active in Disaster and FEMA.

International Agreement with Canada

Background

One challenge faced by Region X is that it shares a long border with Canada. Coordinated disaster preparation and planning are essential to ensure that, in case of a mutual disaster,

emergency managers have the tools to work together and that border crossings of emergency equipment are not slowed down by red tape.
Traditionally, Canadian provincial emergency managers and their state-level U.S. counterparts have participated in planning, preparation and information-sharing activities. This allowed for joint exercises, offers of mutual aid, and information exchanges. There were limits, however, to how much could be accomplished with separate, individual state-to-province agreements.

Results
In 1997, Region X began negotiating with the provinces of British Columbia and the Yukon Territory to formalize a region-wide emergency management arrangement. In this agreement, Region X and the provinces acknowledged the benefits of coordinating their emergency preparedness, and response and recovery measures with those of contiguous jurisdictions and developing regionally based measures.
Congress ratified the "Pacific Northwest emergency management arrangement" on Oct. 15, 1998. This agreement smoothes the way for region-wide disaster planning and ensures that regional response to any disaster will not be hampered by international red tape.

CUSTOMER SERVICE

Outreach Program

Background
In February 1999, Regional Director David de Courcy approached James Lee Witt with a new outreach program being initiated by Region X. De Courcy wanted to take advantage of opportunities to market the agency's message of mitigation and prevention, as well as promote FEMA's other programs among businesses, the congressional delegation, local governments and citizens.

Results
De Courcy assigned several talented people to address groups throughout the community. The speakers specifically focused on the following:
Involving businesses in FEMA's mitigation and preparedness activities and encouraging them to address their own vulnerabilities;
Reaching out to congressional offices during non-disaster periods and educating them about mitigation, as well as the disaster declaration and response process;
Getting more involved (working with the states) with local governments and with intergovernmental associations such as the National Association of Counties.
This new outreach staff is operating in parallel with *Project Impact* efforts, as well as the more traditional public affairs programs.

Mitigation Outreach

Background
As FEMA's focus has shifted toward mitigation, Region X has developed several products to educate the public and local officials about ways to minimize the effects of disasters. These brochures, guidebooks and CDs target specific audiences and have proven to be effective tools

for informing the public of mitigation techniques, as well as for increasing awareness of *Project Impact.*

Mobile RICs

Background

Mitigation is a fairly new idea to many disaster victims, but it is when people are in the midst of rebuilding that mitigation information and advice have the most impact. Since Region X is committed to spreading mitigation techniques and ideas, it decided to take the experts to the victims, to streamline the process and disperse information as efficiently as possible.

Results

To bring the experts to the victims, Region X developed the idea of using mobile Reconstruction Information Centers to provide on-site, one-on-one consultation on appropriate flood-tolerant reconstruction techniques by FEMA and state hazard mitigation counselors.

The centers are located in recreational vehicles fitted with high-tech components, such as a fax machine, cell phones, a video and videocassette recorder, and a computer with a modem. A FEMA public affairs officer precedes the mobile center into a community and arranges for articles in the newspaper and posters explaining what the centers are and the time and place of the upcoming visit.

The first field trial of the reconstruction centers in Region X occurred during DR-1079-WA (November 1995 - May 1996). Two units were deployed on independent schedules throughout the state. Since the centers are mobile, they can return to a site if more people in the area need help. They have been used frequently on disasters since their inception and have been well received by victims.

RAPID RESPONSE

After a disaster, a rapid response can make the difference between life and death. It is the goal of disaster planning to be able to respond with help as quickly as possible after an event. As Region X's experience with planning Y2K communication strategies demonstrated, the planning pays off even when a disaster does not materialize. Region X has spawned several innovations in recent years to increase responsiveness.

School Safety in Pierce County, Washington

Background

Terrorism in schools is a threat Region X wants to be able to respond to quickly and effectively. After the April 20, 1999, Columbine High School shootings in Littleton, Colo., Region X started a pilot program to explore ways for emergency personnel to mitigate the effects of similar crises by better preparation.

The first step was to ask Region X *Project Impact* partners what they were doing. The school district in Pierce County, Wash., had just spent $250,000 on what they call the "Pierce responder," a computerized system that is an exciting new approach to school safety.

Results

Developed by Pierce County Emergency Management and Geographic Information Systems, the Pierce responder includes two main components: a partnership between emergency response agencies and schools, and an interactive web-based school information system.

To set up the system, school personnel and emergency responders interactively enter the school's utilities, shut-off valves for water and alarms, contacts, and floor plans into a database. They also import digital photos of the school's interior spaces and exterior, aerial photos of the surrounding area, and videos of the interior hallways.

If an incident happens at the school, responders have the information they need to react quickly and effectively. The system uses low-cost Internet technology, wireless modems and laptop computers so all responders see identical, current information and receive instructions without relying on radios or face-to-face communications. The database can now be used during any school emergency.

The new system was tested with a simulated act of school violence at a local high school and received positive feedback. As an added bonus, the Littleton Fire Department adopted the Pierce responder system as a primary database for school pre-incident planning. Officials at Littleton commented that if they had had such a system in place during the Columbine incident they could have gone in much sooner.

Region X has been working with the Pierce County school district to make this technology available to the other *Project Impact* partners in the region.

Fastrack Gets Funds to Locals

Background

When a disaster happens, some localities are ready with a mitigation plan and others have not even begun. Rather than require those that are prepared to wait months for competing proposals for FEMA Hazard Mitigation Grant Program grants from all applicants, the mitigation division prefers to get projects started as soon as local governments are ready.

Results

To respond as quickly as possible to local mitigation projects, Region X's Mitigation Division has developed a "fastrack" program. Communities with mitigation projects already discussed, defined and prepared can immediately present their proposals to FEMA for hazard mitigation grants. These communities can thus begin their projects within weeks of a disaster, rather than having to wait for months while the formal mitigation grant program process unfolds.

The fastrack program has the additional advantage of encouraging communities to have mitigation plans in place. As communities see how successful others are in starting mitigation projects quickly, they see that the responsibility for rebuilding is theirs and are inspired to begin their planning early as well.

Ready for Y2K

Background

As the new millennium approached, it became clear that computers worldwide would need updating so they would not malfunction when the date changed from 1999 to 2000. To help people get ready to respond quickly to possible disruptions, Region X conducted a sweeping

Y2K readiness program. For Region X, preparations for Y2K were fraught with more tension than usual. Seattle had just played host to the World Trade Organization conference, and experienced the resultant rioting, and was particularly concerned about the possibility of civil unrest.

Results

The advancements in communications and coordination greatly increased Region X's readiness to respond more rapidly to all future disasters. In addition to attending national workshops and participating in other national planning activities, Region X spent much of its Y2K preparation effort coordinating communication within the region.

Beginning in May 1999, monthly conference calls were made with all four state departments of emergency management, to get ready for a series of exercises held in the fall. These exercises were the first held in Region X to include all four states in the region simultaneously.

The regional exercises were coordinated to coincide with tests done by the White House's Information Coordination Center in Washington, D.C. Experience with the ICRS gained in these exercises allowed states the opportunity to give feedback to fine-tune the communication process. In addition, the exercises gave Region X the opportunity to test back-up communications systems, such as fax, high frequency radios and satellite telephones.

Native American Relations

Because Region X has the most tribal government entities—a total of 267 federally-recognized tribes—there has been substantial contact over the years through disaster programs and the National Flood Insurance Program. The four states in Region X also have a long record of good relations with tribal groups and Alaskan native villages, within each state's individual statutory restrictions.

The region's present strategy for implementing the FEMA tribal policy is founded on the assumption that overall emergency management capability in the region can be enhanced by facilitating partnerships among tribal governments, states, other federal agencies, counties and boroughs, and other appropriate jurisdictions. To this end, Region X developed clear objectives for working together and improving relationships among all levels of government.

Disaster Activity

Two major disasters resulted in extensive involvement with Native American recovery efforts: the Koyukuk River flood of 1994 and extensive three-state flooding during the winter of 1995-96 *(Key Disaster #2)*.

Koyukuk River Flood of 1994

Building Houses in Remote Locations

Background

In 1994, an interior Alaska flood along the Koyukuk River affected 13 native villages on or above the Arctic circle (DR-1039-AK). Region X worked with the state to provide assistance while addressing cultural priorities and keeping the communities intact. The fundamental strategy for assistance was to include tribal representatives in all aspects of decision making.

The area affected by the flood contained 13 Native American villages, hundred of miles apart and entirely above the Arctic circle. Residents were evacuated by helicopter at night, as the Koyukuk River rose at the rate of 5 feet per hour.

After several weeks of deliberation with the state and FEMA, and after assessing the amount of damage, the village leadership determined that even the current temporary relocation of the villagers to Fairbanks created widespread social and family problems. Threats to village families and lifestyles were compounding as long as the villagers remained in the urban environment. To avoid the imminent breakdown of village and family relationships, the state and FEMA agreed to provide the necessary emergency repairs to get the villagers back to their homes as quickly as possible. This meant completing the construction during the winter.

Traditionally, only temporary structures, such as mobile homes, have been provided to victims in the continental United States. The mobile homes are often subsequently sold to families but the expense of transporting and siting mobile homes into a remote Arctic area excluded using them as temporary housing alternatives. The decision was made to repair 60 severely damaged homes and construct 20 new houses to enable families whose homes had been destroyed to move back to the villages.

During the last 30 years, the federal disaster program has sponsored a number of house-building programs in other remote areas under U.S. jurisdiction in the Pacific and the Caribbean, using either emergency authority or temporary housing authority. These homes have, in effect, become permanent residences.

The rationale for building houses in remote areas was the absence of rental housing for families to move into while they rebuilt their homes. In this case, even Fairbanks (150 miles away) lacked sufficient suitable housing. Since no one has discovered a way of building a temporary house that is also safe, the Koyukuk River area houses were constructed using the latest codes and standards. Region X was not willing to put the houses into flood hazard areas. Consequently, the homes built after the 1994 disaster have withstood subsequent storms.

Results

By deciding to build permanent houses in a remote area, Region X provided temporary housing and at the same time reduced future disaster costs by mitigating the hazards. It also reduced the potential out-of-village time from 18 months to 4 or 5 months, reducing familial and social stress and preventing the breakup of the community.

Using a General Contractor in a Remote Area

Background

The Koyukuk flood destroyed most of the permanent residences in the 13 affected villages. In order to ensure expeditious reconstruction of the villages, FEMA and the state decided to contract with the highly regarded arctic construction firm of H.C. Price.

Results

By contracting with Price, many of the barriers to quick reconstruction were avoided. The reconstruction of entire villages was managed by the contractor—rather than by issuing emergency housing repair checks to individual homeowners. The contractor was familiar with the region and the demands of arctic construction. Everything—materials, supplies, fuels, food,

lodging facilities, equipment—had to be flown in. Ultimately, the contractor completed the reconstruction more quickly and probably more cheaply than any government agency could. An added advantage of using the contractor materialized when village leaders insisted that native labor be used on tribal work sites. This provided jobs and income and brought community members directly into the reconstruction process. As a result of working closely with the contractor, the villagers now have knowledge of the repaired and installed systems and will be able to maintain them. The contractor also provided an apprenticeship program to teach advanced carpentry to the village laborers, which expanded the labor pool while enhancing the villagers' skills.

Winter Floods of 1995-96

Background
In the winter of 1995-96, intense flooding in three of the four states in Region X resulted in four Presidentially-declared disasters

Results
As a matter of policy, Region X is in contact with all federally-recognized tribes and villages in the event of a Presidentially-declared disaster. For the 1995-96 winter floods, various tribes applied for FEMA disaster funding as subgrantees of the state: 16 from Washington, two from Oregon and three from Idaho.

NFIP

Background
Region X's effort to include Native American tribes and villages in every aspect of FEMA's programs included extensive outreach to Native Americans in all four states to educate them regarding the need for flood insurance and the advantages of enrolling in the National Flood Insurance Program.

Results
Region X has more tribes in the NFIP than any other FEMA region. In fact, since Alaskan native villages participate in NFIP as city or village governments, not as tribal governments, Region X's success rate measures only three states and, thus, is even higher.

Flooding on the Hoh River

Background
Beginning in December 1998, at the request of the Washington state emergency manager, various federal agencies met with the Hoh Tribe to assist in resolving an imminent flooding situation on the reservation.

Results
Combined state and federal programs addressed the problem and presented both short- and long-term solutions. For example, a National Resource Conservation Service erosion control project (short-term) and a U.S. Army Corps of Engineers study (long-term). Since this was not a

Presidentially-declared disaster, FEMA's role was to bring in the federal partners and support the state's effort to help.
As a result of these efforts, the Hoh Tribe has saved several threatened homes, their new community center, a well, and a water treatment facility.

Earthquake Preparation in Jamestown

Background
In 1998, the Jamestown S'Klallam Tribe in Washington became concerned about their readiness for a possible earthquake. Their tribal community center was found to be particularly in need of retrofitting, to avoid damage to this important hub of tribal activity.

Results
FEMA Region X worked with the tribal planner to seek additional funding for an earthquake retrofit of the tribal community center.

Reducing Flood Risk in Kamiah

Background
The *Project Impact* effort in Kamiah, Ore., focuses on reducing flood risks along Lawyer Creek through stream rehabilitation and restoration. One of the many stakeholders in the watershed is the Nez Perce Tribe.

Results
The Nez Perce Tribe has been included in the *Project Impact* partnering efforts. Not only has this allowed the Nez Perce to provide input to the watershed planning process, it also established closer ties with their neighbors. The tribe's water resource manager said, "Our involvement is helping to establish a positive working relationship among the local landowners, the numerous agencies including county, city, state, and federal, and the tribe."

Including the Tribes in the Chemical Stockpile Emergency Preparedness Program (CSEPP)

Background
Congress has directed that certain chemical weapons stockpiled at eight U.S. Army installations in the continental United States must be destroyed over the next several years. In these eight communities, emergency plans and capabilities are being expanded for the slight but real threat of an emergency involving chemical agents. This is called the Chemical Stockpile Emergency Preparedness Program (CSEPP). One of the sites slated for elimination is the Umatilla Station, located along the Columbia River in Oregon and Washington.

Results
In the CSEPP process, FEMA Region X has included both tribes located in the affected area, the Umatillas and the Yakimas. At the beginning of CSEPP, those tribes received planning grants from FEMA Region X. The Umatillas requested and received a full overview of FEMA programs and also established a relationship with the FEMA Hazardous Materials (HazMat) program specialist. The Umatillas also hosted a regular CSEPP planning meeting at their tribal

center. Last year, additional funds for tribal HazMat programs were identified and a formal outreach program was initiated to assist tribes in accessing this funding for tribal training, planning and exercises.

Consensus Decision Making

Background
After the Koyukuk River flood in August 1994, the state and FEMA hazard mitigation officers created a long-range planning team to achieve the complex mitigation projects in a short time. The team included native village representatives, which enabled the villagers to voice their specific concerns. Since Native Americans govern by consensus, it was agreed that this was the process that should be used by the planning team.

Results
Using consensus to guide the long-range planning team was initially perceived as cumbersome and staff intensive. In the final analysis, however, what had once seemed an almost impossible task—gaining community consensus—went smoothly, and decisions were not overturned. Although achieving consensus was time-consuming - and there was a perception that it slowed the recovery progress somewhat - it allowed the entire community to be informed of all options and gave everyone a stake in the process.
An unforeseen advantage of using this process was that the villagers continued using the planning and decision-making tools put in place by the long-range planning team to develop long-range mitigation projects with additional outside funding.

Gathering Feedback from Native Applicants

Background
After the Koyukuk flood in Alaska (1994), 35 Native villagers were randomly selected by the computer to be interviewed concerning their experiences with FEMA. Usually a host or hostess accompanied the interviewees, many of whom were residing at the Red Cross center in Fairbanks or with family.

Results
The Native applicants felt that FEMA had treated them well and helped them a lot. While access was excellent, there was a perception that the registrars were in a hurry and people did not have time to tell their stories to a responsive FEMA representative. One area of difficulty was the language barrier. While the applicants speak English, there are differences in word meanings, sentence structures, terms, body language, and response time to questions.
Most of the individual applicants did not understand the processes that were taking place. The village chiefs and liaisons were used to assist with information dissemination, but it was often difficult for the village representatives to explain the programs accurately to their people. Brochures were needed, but rarely given out, and people did not feel comfortable calling the 800 number. At that time, applicants had to apply to several agencies separately, and they became frustrated by having to retell their stories again and again.
New FEMA processes have solved many of the problems encountered in 1994. Disaster application centers have been replaced by toll-free phone contact with the national

teleregistration center and subsequent visits to a disaster recovery center if an applicant wants face-to-face information. Applicants no longer need to apply separately to the various programs - it now takes only one phone call to teleregistration. input (including the Alaskan Native study) has been included in the training of teleregistration staff who are less likely to be as rushed and exhausted as DAC workers used to be.