Chapter 9

SUMMARY

A holistic recovery from a disaster is one in which the six principles of sustainability are considered in all recovery decisionmaking and action. Holistic recovery is a reasonable, forward-looking approach to recovering from a disaster. The holistic recovery process as described in this handbook does not guarantee that every sustainability principle will actually be included in the recovery, but including the principles as decisionmaking criteria ensures that they will at least be considered. Applying those principles when making decisions can help communities avoid the pitfalls of adopting a course of action without realizing that it will have detrimental impacts in another place or time—whether that course of action includes disaster recovery activities, environmental quality, mitigation, economic redevelopment, or any other community concern. The holistic recovery framework helps a community work toward fully coordinating available assistance and funding while seeking ways to accomplish other community goals and priorities, using the disaster recovery process as the catalyst. In addition, it broadens those goals to include many aspects of a community's characteristics that may not have been considered before.

SUSTAINABILITY

Sustainability is an embracing concept that can give localities a framework within which to approach many of the forward-looking activities they are already doing (or want to do), whether they be recovering from a disaster or making improvements in lifestyle, safety, economic opportunity, or environmental quality. Sustainability is a way of looking at a community within its broadest possible context, in both time and space. It provides an ideal toward which to strive and against which to weigh proposed local actions, plans, expenditures, and decisions.

The classic definition of sustainability is "meeting the needs of the present without compromising the ability of future generations to meet their own needs." People in every community have social, economic, and environmental needs and in every community the quality, quantity, importance, and balance of those needs is unique. To be sustainable, a community needs to integrate its social, economic, and environmental activities so that no single goal, need, group of people, or function takes undue precedence over the others.

There are six principles of sustainability that guide a community in ensuring that integration, and in moving itself toward sustainability. These principles can be a checklist for a community to use as it decides where it wants to improve its sustainability, and how to do it.

A community that wants to become more sustainable will

1. Maintain and, if possible, enhance, its residents' quality of life.
2. Enhance local economic vitality.
3. Ensure social and intergenerational equity.
4. Maintain and, if possible, enhance, environmental quality.
5. Incorporate disaster resilience and mitigation.
6. Use a consensus-building, participatory process when making decisions.

It would be good if all communities already adopted a long-term view and incorporated sustainability ideals into their comprehensive plans and other operating procedures and policies, and budgets. But if a community has not yet formally considered broader issues like environmental quality, social equity, or livability, the period of recovery after a disaster can be a good time to start. A disaster brings temporary changes to a community that can be viewed as opportunities to build back in a better way. People are thinking about the problems that they normally do not think about—the risks they face from hazards, the housing situation, the scenic aspects of the community, livability. Public officials have media attention that enables them to garner support for innovative ideas. A disaster forces a community to make a wide range of decisions—some of them quite difficult ones. Technical and expert advice becomes available from numerous public and private sources. Financial assistance comes into the community, enabling it to tackle more ambitious projects than would normally be the case.

PROCESS

The best way to ensure that a community has a holistic recovery from a future disaster is to prepare a comprehensive plan for such a recovery. But even if the community does not have such a plan, there are many things that can be done during recovery that will make a community more sustainable than it was before. What is needed is a disaster recovery process that recognizes the possibilities and manages the recovery activities so that they become solutions, not additional problems. A community needs to strive to fully coordinate available assistance and funding while seeking ways to accomplish other community goals and priorities, using the disaster recovery process as the catalyst.

The key to making sustainable disaster recovery happen is that it does not differ from "normal" disaster recovery—it is part of what *should be* normal disaster recovery. A good recovery *is* a sustainable, holistic recovery.

Building sustainability does not demand a new or separate planning or recovery process. Rather, it provides an enlarged focus for examining perennial community concerns in light of disaster-imposed situations. It can be accommodated in different ways and to varying degrees through a standard procedure that a community might use for comprehensive planning, mitigation planning, disaster recovery, or other efforts. A community with a proven, workable procedure for planning and taking action should not dismantle that process, but instead work within it to address sustainability. A community without such an established process should consider using the 10-step process. A community already using the 10-step (or similar) process for other purposes can incorporate sustainability principles at each stage as summarized below.

A 10-Step Process for Local Sustainable Recovery

Step 1. Get organized. At this stage a community makes a commitment to sustainability by designating appropriate responsibility for the holistic recovery, delegating it to an individual or entity—new or existing—and setting up measures for integrating holistic recovery planning and activities with ongoing disaster recovery and other community processes, as necessary. Appointments of appropriate staff and the designation of support resources will help ensure that the subsequent steps are handled effectively. Care must be taken that responsible people understand and support all the principles of sustainability: environment, social equity, consideration of the future, economic development, quality of life, and disaster resilience.

Step 2. Involve the public. Using a participatory process is an essential aspect of sustainability and is addressed by including all the stakeholders in the recovery. A community that seeks sustainability must have a demonstrated commitment to full community involvement and a viable participatory process. At this point the community needs to design public participation components into all the anticipated phases of the coming recovery.

There are a range of techniques from which to choose, beyond the traditional public hearing and town meeting formats, including lectures, planning charettes, workshops, call-in radio, and community based events like festivals. Care should be taken to involve all the constituents in the community, giving particular attention to those that may have been historically excluded. Publicize the sustainability factors that will drive the decisionmaking, and use a variety of media (flyers, posters, local newspaper, local television stations, and the Internet) to reach the public.

Step 3. Coordinate with other agencies, departments, and groups.
To have a truly holistic recovery, a community expands representation on the recovery team to include those who can contribute expertise on each of the principles of sustainability. They could be in-house staffers, local experts, state or federal agencies, or consultants. Depending on the situation, this could include social services personnel, environmental specialists, engineers, economic development directors, parks or wildlife departments, the business community, or social services personnel. Formal and informal ties need to be developed with every conceivable private entity; non-profit group; neighborhood coalition; church; state, local, federal, and regional agency, and others. This will increase the diversity of ideas and potential solutions, provide a ready-made labor pool (which will be needed when implementation begins), and make problem-solving more imaginative. It also begins to accomplish what makes a recovery truly sustainable by building local capacities within and across groups.

Step 4. Identify the post-disaster problem situations. During this step, the recovery team needs to begin a systematic process of considering the ways in which it will be able to build sustainability as it goes about managing the recovery. This can start by simply listing all the disaster-caused situations that will need to be remedied in the course of recovery. (A community that has not had a disaster but instead is looking ahead can use the matrix in Chapter 1 to get some ideas of the sort of situations that may be encountered.)

PRINCIPLES OF SUSTAINABILITY & SOME OPTIONS FOR APPLYING THEM

1. **Maintain & enhance quality of life**
   Options: Make housing available/affordable/better
   Provide education opportunities
   Ensure mobility
   Provide health & other services
   Provide employment opportunities
   Provide for recreation
   Maintain safe/healthy environs
   Have opportunities for civic engagement
2. **Enhance economic vitality**
   Options: Support area redevelopment & revitalization
   Attract/retain businesses
   Attract/retain work force
   Enhance economic functionality
   Develop/redevelop recreational, historic, tourist attractions
3. **Ensure social & intergenerational equity**
   Options: Preserve/conserve natural, cultural, historical resources
   Adopt a longer-term focus for all planning
   Avoid/remedy disproportionate impacts on groups
   Consider future generations' quality of life
   Value diversity
   Preserve social connections in and among groups
4. **Enhance environmental quality**
   Options: Preserve/conserve/restore natural resources
   Protect open space
   Manage stormwater
   Prevent/remediate pollution
5. **Incorporate disaster resilience/mitigation**
   Options: Make buildings & infrastructure damage-resistant
   Avoid development in hazardous areas
   Manage stormwater
   Protect natural areas
   Promote & obtain hazard & other insurance
6. **Use a participatory process**
   Incorporate in each of other principles.

For each problem situation, information should be gathered to give a full picture of the problem. This is a broad exercise that likely will include many sub-steps spread over a wide array of issues, for example

- Getting expert analysis of economic trends, costs of rebuilding, and opportunities for economic growth, before and after the disaster.
- Mapping an environmentally sensitive area.
- Assessing the present and future vulnerability to hazards and disasters.
- Pinpointing social inequity and its impacts, before and after the disaster.
- Determining what quality of life concerns are important to residents, before and after the disaster.

(It can be seen that it would be better to have this information in hand before a disaster, rather than trying to gather it afterward, when things are more confused and rushed.)

This step will culminate in a list of problem situations, accompanied by back-up information.

Step 5. Evaluate the problems and identify opportunities. It is during this step that the implications of sustainability become clear. The recovery team evaluates each of the problems in the list developed in Step 4 in light of the six principles of sustainability, in turn. The list of options in the box (and on the matrix in Chapter 1) can be used to stimulate thinking about approaches that a locality can use to include that component of sustainability in a solution to each post-disaster problem. One or more approaches should be designated as possibilities for each problem, focusing on those that are applicable to the community's situation, needs, and concerns.

The principles and some options for applying each of them are listed in the box. Note that this is not an exhaustive list and also that some options apply to more than one principle.

This step results in a list of opportunities for holistic recovery activities. This will be a series of general statements of opportunities that could be taken, for example, "Expand stormwater management system to better handle street drainage and reduce streambank erosion in flood-damaged Elm Street neighborhood" or "Address damaged low-income housing by adding seismic-resistant features and insulation during repair."

Step 6. Set goals. This step involves getting people to agree on what should be done. Using the recovery team and public involvement, set goals and objectives by picking and choosing from among the list of opportunities identified in Step 5. The possibilities are narrowed down to those that can be agreed to and are most preferable, based on local needs and situations, public support, cost-effectiveness, availability of technical expertise, other community goals, compliance with regulations, and other factors. Give full consideration to all sustainability principles: unite economic, social equity, quality of life, disaster resilience, and environmental perspectives. Assign priorities to the goals and objectives so that there is a range of possibilities open in case some of them fall through and so the team knows which actions to take, and in which order. The goals should be positive statements of what is intended to be accomplished. By this point it will be clear that the goals set for a holistic recovery are broader and have more far-reaching implications than those for simply returning to the status quo.

This step will result in an agreed-upon set of desirable actions that have reasonable applicability to the community. (It should be noted that in practice, Steps 4, 5, and 6 likely will overlap.)

If, in reviewing the possible alternatives, it is determined that one would detract from one or more of the elements of sustainability as manifested in that community, then that alternative should be eliminated from consideration. Or, if it decides to proceed after analyzing the potential negative impacts, the community should take responsibility for the tradeoff it has made and somehow accommodate it, if necessary.

Step 7. Develop strategies for implementation. Working with the list of goals developed in Step 6, the recovery team reviews the tools, funding, and expertise available to achieve each of them. The team chooses those that meet the community's needs, expanding and tailoring as needed. For each goal, an implementation strategy will be developed that will include

- What is to be accomplished;
- The lead agency/entity and what they will provide or prepare;
- Partnerships that will make the action effective;
- Ways to obtain technical expertise and advice;
- Official local action needed (zoning, subdivision ordinances, building codes, etc.).
- Funding methods.

The team works to consolidate multiple sustainability objectives into each strategy–economic, environmental, social, quality of life, and mitigation.

This will produce a "package" associated with each community goal that outlines what is needed to achieve it.

Step 8. Plan for action. During this step the planning or recovery team drafts a complete plan for holistic recovery activities that fits into the recovery plan or becomes part of the community's comprehensive plan. The plan should have

- a budget,
- a schedule for team meetings, public participation, data collection, report writing, on-the-ground action,
- details for obtaining funding,
- a monitoring and review process,
- public review and comment.

Consideration should be given to coordination with other community plans and programs, such as existing comprehensive, development, capital improvement, drainage, transportation, housing, and recreation plans.

After public and agency/entity review, the plan should be revised and finalized.

Step 9. Get agreement on the plan for action.
In many instances, the state, county (parish), and local governments will need to formally adopt the plan of action into the recovery or comprehensive plan. Agreement likewise should be obtained from federal and state agencies as appropriate. Memoranda of Understanding are signed among partners. Other stakeholders, especially historically excluded groups, should be included in the process necessary to adopt the plan.

Step 10. Implement, evaluate, and revise.
These final steps set the stage for managing the recovery and ensuring that the community maximizes the opportunities that began as disaster. Having the persons and entities responsible for implementation of various aspects of the recovery actually involved in the decisionmaking about what strategies to use helps ensure that the activities specified will be carried out.

As recovery proceeds, it will be clear that some goals and strategies need to be modified. A formal monitoring process helps identify these needed changes and ensures that

Some Tools for Community Sustainability

- R Local redevelopment authority
- R Economic incentives
- R Loans for businesses
- R Housing authority
- R Capital improvements
- R Loan interest subsidy programs
- R Revolving loan funds for
- R Public investment
- R Redistricting
- R Subdivision regulations
- R Building codes
- R Special ordinances
- R Tax incentives
- R Transfer of development rights
- R Easements
- R Land purchase
- R Voluntary agreements
- R Planning
- R Retrofitting buildings
- R Habitat protection
- R Filter strips
- R Riparian buffers
- R Soil conservation & management
- R Ecosystem restoration
- R Zoning and rezoning
- R Public education and awareness campaigns and events
- R Special protection of critical facilities, utilities, networks
- R Valuing public spaces
- R Transfer of development rights
- R Limiting public investment in hazardous areas
- R Relocation out of hazardous areas
- R Preservation of natural floodplain, coastal, wetland, other functions
- R Private-public partnerships and networks
- R Ombudspersons
- R Targeted workshops

certain efforts are not simply abandoned when an unforeseen obstacle is reached. It is good to invite stakeholders to participate in annual reviews and to help develop indicators of progress.

A FINAL WORD

Throughout the nation, localities and state and federal agencies have become accustomed to thinking in terms of "building in" hazards mitigation during many of the activities that take place during disaster recovery. Compared to only five or ten years ago, there is now more widespread acceptance among policymakers, hazards managers, and the public that reducing disaster losses before they happen is preferable to cleaning them up and paying for them over and over again. This progression has been helped not only by improvements in mitigation techniques and technology but also by the advent of federal disaster programs and policies that provide legal, technical, and financial support for taking these sensible, long-term, cost-saving measures.

Disaster losses continue to rise, however, and disasters seem to be getting bigger and more expensive. It is clear to experienced hazards managers that the nation can no longer afford to consider hazard mitigation in isolation from other aspects of community (and national) well-being. A broader context is needed to ensure that the attempts society makes to protect itself from hazards are not simply creating burdens for someone or someplace else, or simply postponing this year's medium-sized disaster in favor of a really big one some years down the road.

Incorporating the concept of "sustainability" into disaster recovery—and indeed into all possible aspects of hazards management—is a logical next step in the progression that began with the "building in" of mitigation into disaster recovery. Sustainability can provide an enlarged framework for examining potential mitigation measures—and any other community concerns—in a wider context. This broader context would have the advantage of being able to draw from a wider range of constituencies and types of expertise than hazard mitigation alone is able to, consolidate more problem-solving into a single effort, and most important, have a better likelihood of long-term success because numerous factors would be considered in developing an approach to the local concern, rather than just a narrowly focused one.

Using the sustainability-based, holistic recovery framework described in this handbook may have an unexpected result: a community may well discover that some of the hazard mitigation options that would previously have been regarded as admirable are no longer the best choice. When examined in the broad context of sustainability, not all mitigation is good. But there are still many options for reducing future losses from disasters that will meet the sustainability criteria. Indeed, options that do so will be the most effective mitigation in the long run.

Besides advancing ideals that improve the disaster resilience, livability, and appeal of a locality, this approach can also help local residents to think and rethink their community goals and the kind of place they want their grandchildren to inherit. It encourages each locality to perform its own carefully considered balancing act of risk vs. protection, cost vs. benefit, and today vs. tomorrow.

GLOSSARY

100-year floodplain—the area of a floodplain that historically and statistically has a 1% chance of significant inundation in any given year or the area of inundation by the "100-year" flood (also known as the "base flood").

affordable housing—housing that costs no more than 30% of a household's gross income, including mortgage payments or rent, taxes, insurance, and utilities.

charrette—an intensive planning and/or design workshop involving people working together under compressed deadlines. Charrettes provide an interactive forum in which planners, designers, community representatives, and other interested and appropriate parties participate in proposing alternative visions that can help the group understand, evaluate, and determine future plans and options.

coastal zone—the area along the shore where the ocean meets the land as the surface of the land rises above the ocean. This land/water interface includes barrier islands, estuaries, beaches, coastal wetlands, and land areas having a direct drainage to the ocean.

Community Development Block Grants (CDBG)—administered by the Department of Housing and Urban Development (HUD). The objective of the CDBGs is to develop viable urban communities by providing decent housing and a suitable living environment and by expanding economic opportunities, principally for low-to moderate-income people. Disaster-related assistance can be eligible under this program depending on state priorities; mitigation activities have been funded under this program.

Community Rating System (CRS)—a voluntary system under the National Flood Insurance Program in which communities undertake planning and regulatory activities beyond NFIP minimum requirements in order to obtain credits that earn premium reductions on the flood insurance for policies held by their residents and property owners. These activities are delineated in the CRS guidelines but fall under four categories: public information; mapping and regulatory activities; flood damage reduction; and flood preparedness. The premium reductions come in a series of 5% steps based on points earned under the system.

density—the average number of persons, household, or dwellings per acre of land.

disaster housing—temporary housing supplied by emergency management officials to disaster victims whose homes are no longer inhabitable due to damage sustained in a declared disaster (formerly called temporary housing).

disaster declaration—a Presidential determination that a jurisdiction of the United States may receive a federal aid as a result of damage from a major disaster or emergency.

disaster—a major detrimental impact of a hazard upon the population and economic, social, and built environment of an affected area. Logically, a natural disaster results from the impact of a

natural (as opposed to human-caused or technological) hazard upon the built environment of an affected area.

earthquake—a sudden motion or trembling of the earth caused by the abrupt release of slowly accumulated strain upon tectonic plates; also called a seismic event.

Economic Development Administration (EDA)—part of the Department of Commerce, the federal agency that assists communities with grants and technical assistance for economic development.

emergency period—the period commencing immediately with the onset of a natural disaster during which a community's normal operations, such as communications, transportation, and commerce, are disrupted or halted, and ending when danger from the hazard itself has ceased and initial response activities, such as search and rescue and debris clearance and removal, have commenced, at which point the community can begin to restore normal services and functions.

emergency response plan—a document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

environmentally sensitive areas—places that contain significant natural resources and/or resource values that may warrant protection.

exposure—the measure of people, property, or other interests that would be subject to a given risk, such as a hazard event.

federal coordinating officer (FCO)—the responsible official appointed by the President, Federal Emergency Management Agency Director, or Federal Emergency Management Agency Associate Director for Response and Recovery who initiates action immediately to ensure federal disaster assistance is provided in accordance with the declaration, applicable laws, regulations, and the FEMA-State Agreement.

Federal Response Plan (FRP)—facilitates the federal response to disasters in the United States, territories, and other jurisdictions; it outlines the planning assumptions, policies, and concepts of operations, organizational structures, and specifies responsibility assignments of federal departments and agencies before and during disasters.

Federal Emergency Management Agency (FEMA)— an executive agency whose mission is to reduce the loss of life and property and protect the nation's critical infrastructure from all types of hazards through a comprehensive program of mitigation, preparedness, response and recovery.

Federal Insurance and Mitigation Administration (FIMA)—the FIMA is the branch of FEMA that administers the National Flood Insurance Program (NFIP), providing flood insurance to individuals and communities.

flash flood—a flood occurring with little or no warning where water levels rise at an extremely fast rate.

Flood Insurance Rate Map (FIRM)—as defined under the National Flood Insurance Program, an official map of the community delineated both the Special Flood Hazard Areas and the risk premium zones applicable to the community.

floodplain management—as defined under the National Flood Insurance Program, the operation of an overall program of corrective and preventive measures for reducing flood damage, including, but not limited to, emergency preparedness plans, flood control works, and floodplain management regulations.

floodplain management regulations—as defined under the National Flood Insurance Program, zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain ordinance, grading ordinance, and erosion control ordinance), and other applications of the police power. The term describes such state or local regulations, in any combination thereof, which provides standards for the purpose of flood damage prevention and reduction.

fuel—combustible plant material, both living and dead, that is capable of burning in a wildland situation; any other flammable material in the built environment that feeds wildfire.

geographic information system (GIS)—computer software that links geographic information (where things are) with descriptive information (what things are like).

ground failure—permanent deformation of the soil, including faulting, consolidation, liquefaction, or landslides. Ground failure can cause extensive damage to buildings and lifelines, and development in areas prone to ground failure should be avoided.

habitat—the place where a plan or animal species naturally lives and grows; its immediate surroundings.

hazard mitigation—a sustained action taken to reduce or eliminate long-term risk to people and property from hazards and their effects.

hazard mitigation state plan—a plan required to be developed to describe the state procedures for administering the Hazard Mitigation Grant Program.

hazard identification—the process of defining and describing a hazard, including its physical characteristics, magnitude and severity, probability and frequency, causative factors and locations or areas affected

Hazard Mitigation Grant Program (HMGP)—authorized under Section 404 of the Stafford Act, it provides funding for cost-effective hazard mitigation projects in conformance with the post-disaster mitigation plan required under Section 409 of the Stafford Act. Section 404 authorizes the President to contribute up to 75% of the cost of mitigation measures that are determined to be cost-effective and substantially reduce the risk of future damage or loss in states affected by a major disaster. The remaining 25% of the cost may be a combination of state, local and other non-federal contributions.

hazard—an event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss; also, loosely, the product of risk, vulnerability, exposure, and the capacity of humans to respond

historic resource—a structure, object, or place that has historic significance or contributes to the historic significance of a district; includes landmarks, objects, or structures that are included in a historic resources inventory.

holistic recovery—a recovery from a disaster that takes into account all the principles of sustainability in decisionmaking and action.

HOME investment partnerships program—a program sponsored by the U.S. Department of Housing and Urban Development that provides permanent housing for low-income homeowners or renters in large cities and urban counties. Funds can be used for acquisition, new construction, and rehabilitation.

housing types—types of housing units, such as single-family detached, rowhouses, condominiums, and apartments.

hurricane—part of a family of weather systems known as "tropical cyclones." Depending on the strength of the winds extending in a counter-clockwise formation from the eye of the hurricane, it can be classified as a Category 1 to Category 5 hurricane, with 5 being the most severe.

increased cost of compliance (ICC)—ICC coverage is a component of the standard flood insurance policy that provides up to $15,000 coverage for complying with the cost of meeting substantial damage requirements or toward eliminating flood damage to a structure that has had repetitive flood insurance claims paid.

Individual and Family Grant Program (IFG)—a FEMA program that provides monetary aid to individuals and families to meet disaster-related expenses for necessary items or for serious needs.

infrastructure—the utilities and other basic services of a community essential for the development, operation, and growth of a city and/or that have a direct impact on the quality of life, including transportation systems, regional dams, bridges, communication technology such as phone lines or Internet access, water supplies and sewer treatment facilities, etc.

Interagency Hazard Mitigation Team—in the aftermath of a Presidentially declared disaster, the team appointed through the Federal Coordinating Officer to examine the impact of the disaster in a timely fashion and to identify specific opportunities for hazard mitigation uncovered by its investigation.

Interagency Hazard Mitigation Team (IHMT)— the mitigation team usually activated after major disasters, pursuant to the Office of Management and Budget directive and subsequent Federal Interagency Agreement. Shortly following a Presidential declared disaster, the IHMT, composed of federal, state, and local officials, develops a report identifying post-disaster mitigation opportunities and common post-disaster recovery policies.

land use—the way in which land is used; generally described in terms such a size of lot, size and location of structure on the lot, and activities taking place within a structure. Also, activities not directly associated with land, such as housing construction, population growth, traffic flow and job development are influenced by the way land is used.

lifeline systems—public works and utilities, such as electrical power, gas and liquid fuels, telecommunications, transportation, and water and sewer systems

l**iquefaction**—the temporary loss of shear strength in a water-saturated, cohesionless soil deposit, or temporary transformation of unconsolidated materials into a fluid mass.

livability—a generally subjective terms used variously to describe whether an areas feels safe and/or comfortable to those who live, work, and play there; partially based on what the surroundings are and whether goods and services are provided in a satisfactory manner.

magnitude—a measure of the strength of an earthquake or the strain of energy released, as determined by seismic observations.

major disaster—as defined under Public Law 93-288, any natural catastrophe (including any hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or any fire, flood, or explosion in any part of the United States, which in determination of the President, causes damage of sufficient severity and magnitude to warrant major disaster assistance under the Stafford Act.

mitigation—sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects.

mixed-use—for an individual site, "mixed use" combines residential with commercial or industrial uses; mixed use areas include town centers, main streets, and designated nodes are areas along corridors.

multi-objective management—a holistic approach to hazard management that emphasizes the involvement of multiple distinct interests in solving land use problems related to the hazardous area. For instance, parks and recreation interests might advocate for a greenbelt along a river corridor, while tourism interests may see in the same idea a new business opportunity, and fiscal conservatives see savings to be gained in local expenditures for infrastructure in a vulnerable area.

mutual aid agreements—agreements among local, state, regional, and/or national agencies to reduce duplication and increase the effectiveness of emergency response and other post-disaster activities. Such agreements are often used to provide supplemental staff assistance after a disaster.

National Environmental Policy Act (NEPA)—passed by Congress in 1969, established a national policy for the protection and maintenance of the environment by mandating a planning process that all federal agencies must follow. As it pertains to disasters, NEPA requires that FEMA carry out its responsibilities in a manner that ensures that all practical means and measures are used to protect, restore, and enhance the quality of the environment or to avoid or minimize adverse environmental consequences (44 *CFR* Part 10).

National Flood Insurance Program (NFIP)—makes flood insurance available to property owners in exchange for the local adoption and enforcement by their community of floodplain management ordinances that regulate new and substantially damaged or improved development in designated flood hazard areas.

National Historic Preservation Act (NHPA)—consideration of cultural resources by federal agencies is mandated under Section 106 of the NHPA, as implemented under 36 *CFR* Part 800. Requirements include identifying significant historic properties that may be impacted by a proposed project.

National Earthquake Hazards Reduction Program (NEHRP)—created by Congress in 1977 to mitigate earthquake losses by providing technical and educational assistance to communities threatened by earthquakes. NEHRP is intended to mitigate earthquake losses through development and implementation of seismic design and construction standards and techniques; technical assistance materials, education and risk reduction programs; centers addressing specific aspects of the earthquake problem, and dissemination of earthquake information.

natural hazards—hurricanes, tornados, storms, floods, tidal wave, tsunamis, high or wind-driven waters, volcanic eruptions, earthquakes, snowstorms, wildfires, droughts, landslides, and mudslides.

pedestrian-oriented development—development designed with an emphasis primarily on the sidewalk and on pedestrian access to the site and building, rather than on auto access and parking.

planning for post-disaster reconstruction—the process of planning (preferably before an actual disaster) the steps the community will take to implement long-term reconstruction with one of the primary goals being to reduce or minimize its vulnerability to future disasters. These measures can include a wide variety of landuse planning tools, such as acquisition, design review, zoning, and subdivision review procedures. It can also involve coordination with other types of plans and agencies but is distinct from planning for emergency operations, such as the restoration of utility service and basic infrastructure.

preparedness— ensures that people are ready for a disaster and will respond to it effectively; it includes steps taken to decide what to do if essential services break down, developing a plan for contingencies, and practicing that plan.

probability—the numeric likelihood of an event. Theoretically, the probability of the occurrence of an event is between zero (indicating that the event never occurs) and one (indicating that the event always occurs).

Project Impact—a FEMA initiative to demonstrate the economic, social, and environmental benefits of pre-disaster mitigation to states, local communities, businesses, and individuals. It emphasizes long-term mitigation at the local level through partnerships with businesses, industry, residents, and non-governmental organizations.

Public Assistance—the supplementary federal assistance provided by the Federal Emergency Management Agency under Section 406 of the Stafford Act to state and local governments or

certain private, non-profit organizations (other than assistance for the direct benefit of individuals and families). PA deals with repair, restoration, and replacement of damaged public infrastructure and facilities and damage to private non-profit facilities.

reconstruction—the long term process of rebuilding a community's destroyed or damaged housing stock, commercial and industrial buildings, public facilities, and other structures.

recovery—the process of getting back to normal after a disaster. It includes restoring public or utility services (electricity, water, communications, and public transportation), perhaps starting during but extending beyond the emergency period. Short-term recovery does not include the reconstruction of the built environment, although reconstruction may commence during this period. Long-term recovery (see reconstruction) is the process of returning all aspects of the community to normal functioning and, to the extent possible, to conditions improved over those that existed before the disaster.

redevelopment—usually used to refer to rebuilding the community's economic activity after a disaster. It is different from economic recovery in that it goes beyond the process of merely restoring disrupted economic activity to the creation of new economic opportunities and enterprises in the aftermath of the recovery period, particularly including those that arise as by-products or direct outcomes of the disaster itself. A famous historic example of this last phenomenon would be the way in which the city of Chicago reshaped much of its economy and urban design in the aftermath of the Great Chicago fire of 1871.

response—activities that address the immediate and short-term effects of an emergency or disaster. Response activities include immediate actions to save lives, protect property, meet basic human needs, and restore water, sewer, and other essential services.

Richter Scale—the Richter Scale is a numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935. Small or microearthquakes can have negative magnitude values. In theory there is no limit to the upper scale an earthquake can reach, but because of rock strength there is an actual upper limit of slightly less than 9.

risk assessment—a process or method for evaluating risk associated with a specific hazard. It is defined in terms of probability and frequency of occurrence, magnitude and severity, exposure, and consequences.

risk—the probability of an event's or condition's occurring.

Section 404 of the Stafford Act—authorizes the Hazard Mitigation Grant Program, which provides funding for cost-effective, environmentally sound hazard mitigation measures.

seismic zone—a generally large area within which seismic design requirements for structures are uniform.

seismicity—the likelihood of an area being subject to earthquakes.

Small Business Administration (SBA)—in a Presidential or SBA-declared disaster, SBA can provide additional low-interest loans for mitigation measures up to 20% above that for which an eligible applicant would otherwise qualify.

Special Flood Hazard Areas (SFHAs)—areas designated on Flood Insurance Rate Maps (FIRM) in which specific National Flood Insurance Program requirements apply.

Stafford Act—the Robert T. Stafford Disaster Relief and Emergency Assistance Act, (Public Law 100-107), was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974 (Public Law 93-288). The Stafford Act itself was amended by the Disaster Mitigation Act of 2000, signed into law October 10, 2000 (P.L. l06-390). It is the statutory authority for most federal disaster response activities, especially as they pertain to the Federal Emergency Management Agency and its programs.

state coordinating officer—the individual appointed by the governor to act in cooperation with the Federal Coordinating Officer to facilitate disaster response and recovery efforts.

state mitigation plan—a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state. It includes a description of actions needed to minimize future vulnerability to hazards.

state hazard mitigation team—composed of key state agency representatives, local units of government, and other public or private sector bodies or agencies. The purpose of the team is to evaluate hazards, identify strategies, coordinate resources, and implement measures that will reduce the vulnerability of people and property to damage from hazards.

State Hazard Mitigation Officer (SHMO)—the representative of state government who is the primary point of contact with state and federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

sustainability—the ability or capacity to keep something going, or the state of being durable, or able to persist over time. Disaster resilience is one of the six principles of sustainability.

sustainable development—The World Commission on Environment and Development's (the Brundtland Commission's) classic definition is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

sustainable recovery—a recovery from a disaster that takes into account all the principles of sustainability in decisionmaking and action; see "holistic recovery."

sustainable redevelopment—incorporates the concepts and practices of sustainable development into some parts of the disaster recovery process.

urban wildfire—a fire moving from a wildland environment, consuming vegetation as fuel, to an environment where the fuel consists primarily of buildings and other structures.

urban/wildland interface—a developed area occupying the boundary between an urban or settled area and a wildland characterized by vegetation that can serve as fuel for a forest fire.

volunteer agency—any chartered or otherwise duly organized tax-exempt local, state, or national organization or group that provides needed services to the states, local government, or individuals in coping with a disaster.

vulnerability—the measure of the capacity to weather, resist, or recover from the impacts of a hazard in the long as well as short term.

watershed management—the implementation of a plan or plans for managing the quality and flow of water within a watershed, the naturally defined area within which water flows into a particular lake or river or its tributary. The aims of watershed management are holistic and concern the maintenance of water quality, the minimization of stormwater runoff, the preservation of natural flood controls, such as wetlands and pervious surface, and the preservation of natural drainage patterns.

wildland—an area in which development has not occurred (except for some minimal transportation infrastructure, such as highways and railroads) and any structures are widely spaced and serve largely recreational purposes.

This glossary was compiled from several sources, including

Schwab, Jim; Kenneth C. Topping, Charles C. Eadie, Robert E. Deyle, and Richard A. Smith. 1998. Planning for Post-Disaster Recovery and Reconstruction. PAS Report No. 483/484. Chicago, IL: American Planning Association. 346 pp.

Federal Emergency Management Agency. 2000. Rebuilding for a More Sustainable Future: An Operational Framework. FEMA Report 365. Washington, D.C.: Federal Emergency Management Agency.

Rueter, Patty. 1998. Town Centers: Why? What? How? Portland, OR: Portland State University, School of Urban and Public Affairs, Institute of Metropolitan Studies, Community Fellowship Program.