Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

State and Local Mitigation Planning How-To Guide

FEMA 386-6 / May 2005

FEMA

COVER PHOTO: View looking north along Broadway during the 1975 flood in Milton, Pennsylvania. The flood crest reached 29.8 feet, and began a large scale urban renewal project to demolish hundreds of flood-prone buildings in the area.

Source: Milton Standard, September 1975 Commemorate Issue

STATE AND LOCAL MITIGATION PLANNING
how-to guide

Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning

FEMA 386-6 / May 2005

FEMA

Contents

the hazard mitigation planning process

Hazard mitigation planning is the process of determining how to reduce or eliminate the loss of life and property damage resulting from natural and manmade hazards. As shown in this diagram, the hazard mitigation planning process consists of four basic phases.

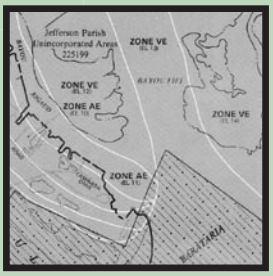
For illustration purposes, this diagram portrays a process that appears to proceed sequentially. However, the mitigation planning process is rarely a linear process. It is not unusual that ideas developed while assessing risks should need revision and additional information while developing the mitigation plan, or that implementing the plan may result in new goals or additional risk assessment.

organize resources

From the start, communities should focus on the resources needed for a successful mitigation planning process. Essential steps include identifying and organizing interested members of the community as well as the technical expertise required during the planning process.

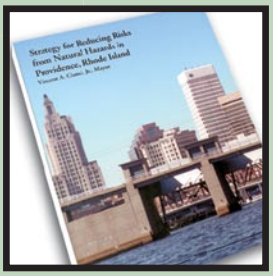
assess risks

Next, communities need to identify the characteristics and potential consequences of hazards. It is important to understand how much of the community can be affected by specific hazards and what the impacts would be on important community assets.



develop a mitigation plan

Armed with an understanding of the risks posed by hazards, communities need to determine what their priorities should be and then look at possible ways to avoid or minimize the undesired effects. The result is a hazard mitigation plan and strategy for implementation.



implement the plan and monitor progress

Communities can bring the plan to life in a variety of ways ranging from implementing specific mitigation projects to changes in the day-to-day operation of the local government. To ensure the success of an ongoing program, it is critical that the plan remains relevant. Thus, it is important to conduct periodic evaluations and make revisions as needed.

foreword

foreword

The Federal Emergency Management Agency (FEMA) has developed a series of mitigation planning "how-to" guides for the purpose of assisting Tribes, States, and local governments in developing effective hazard mitigation planning processes. The material presented in these guides is intended to address the needs of both large and small communities with varying degrees of technical expertise and financial reserves.

mit-i-gate\ 1: to cause to become less harsh or hostile; **2:** to make less severe or painful.

plan-ning\ : the act or process of making or carrying out plans; *specif:* the establishment of goals, policies and procedures for a social or economic unit.

The topic area for this guide is "Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning."

Other guides that have been developed by FEMA as part of the "how-to" series include:

- Getting started with the mitigation planning process, including important considerations for how you can organize your efforts to develop an effective mitigation plan (FEMA 386-1);
- Identifying hazards and assessing losses to your community, State, or Tribe (FEMA 386-2);
- Setting mitigation priorities and goals for your community, State, or Tribe and writing the plan (FEMA 386-3); and
- Implementing the mitigation plan, including project funding and maintaining a dynamic plan that changes to meet new developments (FEMA 386-4).

These four guides are commonly referred to as the "core four" as they provide a broad overview of the core elements associated with hazard mitigation planning. In addition to these "core four," FEMA has developed a series of supplementary "how-to" guides that are to be used in conjunction with the "core four" and address the following special topic areas:

- Evaluating potential mitigation actions through the use of benefit-cost review (FEMA 386-5);

DMA

Focus on Preparedness

Because of the increasingly devastating effects of natural disasters and the growing threats of manmade damages associated with terrorism, emergency personnel across the United States have increased their efforts to better protect their communities. This increased emphasis on pre-disaster planning and preparedness is a direct outgrowth of the Disaster Mitigation Act of 2000 (P.L. 106-390 [DMA 2000]), which amended the Robert T. Stafford Relief and Emergency Assistance Act.

DMA 2000 continues the requirement for a State mitigation plan as a condition of disaster assistance, while new language requires that Tribes and local jurisdictions now have a plan to be eligible for disaster assistance. Tribes can choose to follow the State planning requirements if they wish to be grantees for FEMA funding programs or the local planning requirements if they wish to apply for disaster funds through the State as subgrantees. Additionally, the new language emphasizes the need for Tribal, State, and local jurisdictions to closely coordinate mitigation planning and implementation efforts. Incentives to assist in the development of plans are also provided.

DMA also emphasizes coordination among agencies and public participation, important components of the hazard mitigation planning process. To this end, collaboration among Federal, Tribal, State, regional, and local agencies is critical to reducing disaster-related damage to historic properties and cultural resources and ensuring that communities can not only survive, but also thrive.

The integration of historic properties and cultural resources into comprehensive mitigation planning is critical to the spirit and intent of DMA 2000. Planning for historic properties and cultural resources within existing programs and policies can enhance a jurisdiction's ability to understand and document its vulnerability to natural and manmade hazards.

- Incorporating special considerations into hazard mitigation planning for historic properties and cultural resources, the topic of this how-to guide (FEMA 386-6);
- Incorporating mitigation considerations for manmade hazards into hazard mitigation planning (FEMA 386-7);
- Using multi-jurisdictional approaches to mitigation planning (FEMA 386-8); and
- Finding and securing technical and financial resources for mitigation planning (FEMA 386-9).

Why should you take the time to read these guides?

- It is more cost-effective to assess potential effects from a disaster and to implement preventative measures than to wait for a disaster to strike and then assess actual impacts;
- State and Federal aid is usually insufficient to cover the full extent of physical and economic damages resulting from disasters;
- A surprising amount of disaster damage can be prevented if you understand where and how these phenomena occur; and
- The impacts of both natural and manmade hazards can be reduced; response and recovery rates can be increased.

In addition, Tribes, States, and local communities are required to have FEMA-approved hazard mitigation plans in place to qualify for various FEMA grant programs, including the Hazard Mitigation Grant Program (HMGP) and the Pre-Disaster Mitigation Competitive Grant Program (PDM-C).

Who is the audience for this how-to guide?

This guide is designed for all practitioners involved in creating a hazard mitigation plan (e.g., planners and emergency managers). Why should planners and emergency managers consider historic properties and cultural resources? Because after a disaster, these

resources' special status as designated landmarks may complicate recovery efforts. However, these resources may also be assets that can help in creating mitigation plans with multiple community benefits.

This guide will be of value to citizens who love their communities and want to protect their historic and cultural assets. The guide will outline specific steps for how communities can harness their knowledge, talent, and energy to create a secure future for historic resources.

What are the benefits of hazard mitigation planning?

The goal of the "how-to" guides is not only to teach the mechanics of mitigation planning but also to demonstrate the real-world benefits of mitigation planning:

- Your community can become more *sustainable and disaster-resistant* through selecting the most appropriate mitigation actions, based on the knowledge you gain in the hazard identification and risk assessment process;
- You will be able to *focus your efforts on the hazard areas most important to you* by determining and setting priorities for mitigation planning efforts; and
- You can *save money* by providing a forum for engaging in partnerships that could provide technical, financial, and/or staff resources in your effort to reduce the effects, and hence the costs, of natural and manmade hazards.

These guides provide a range of approaches to preparing a hazard mitigation plan. While there is no one right planning process, there are several elements that are common to all successful planning endeavors, such as engaging citizens, developing goals and objectives, and monitoring progress. Select the approach that works best in your Tribe, State, or community.

The Goals of This Guide

This special-topic guide, *Incorporating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning,* will provide information and assistance to Tribes, States, and local governments on how to integrate historic preservation planning considerations into the hazard mitigation planning process to protect important historic properties and cultural resources from natural and manmade hazards. *This guide* will help your jurisdiction accomplish the following:

- Identify and pull together resources that enhance the planning team's capability for incorporating historic property and cultural resource considerations into the hazard mitigation plan;
- Determine which historic properties and cultural resources are likely to be damaged in a disaster and prioritize those most important for protection;
- Evaluate potential hazard mitigation actions for historic properties and cultural resources through the use of benefit-cost analysis and other decision-making tools; and
- Develop and implement a hazard mitigation plan that addresses historic properties and cultural resources.

Because each of the four mitigation planning phases is covered comprehensively in its own how-to guide, references to other publications in the series are often used in lieu of full explanations of a process or activity. Furthermore, this guide is intended as a general guidance tool for the broad audiences that are likely to comprise Tribal, State, and local mitigation planning teams, including government agencies, community interest groups, and cultural organizations.

introduction

introduction

Although a new and evolving concept, the importance of integrating historic property and cultural resource considerations into mitigation planning has been made all too apparent in disasters that have occurred in recent years, such as the Northridge earthquake in California, or the Midwest floods. The effects of a disaster can be wide-ranging—from human casualty to property damage to the disruption of governmental, social, and economic activity. Often not considered, however, are the potentially devastating effects of disasters on historic properties and cultural resources. Historic buildings and structures, artwork, monuments, family heirlooms, and historic documents are often irreplaceable, and may be lost forever in a disaster if not considered in the mitigation planning process. The loss of these resources is all the more painful and ironic considering how often residents rely on their presence after a disaster, to reinforce connections with neighbors and the larger community, and to seek comfort in the aftermath of a disaster.

In the wake of a series of tornadoes, many of Pierce City, Missouri's commercial historic buildings were heavily damaged.

Photo courtesy of the American Red Cross

Plan to Protect

Sometimes residents don't recognize how important their historic properties are until they are gone. When disaster strikes a community's historic downtown, the identity and economic vitality of the community can be wiped out in a single blow. Pierce City, Missouri, offers a poignant example. On May 4, 2003, tornadoes tore through Pierce City, a community of 1,800, destroying approximately 100 homes and close to 40 percent of the downtown businesses, including historic buildings that were more than a century old. Quotes from residents, contained in a newsletter from the American Red Cross, provided some insight into the devastation wrought:

> *"While most of the town survived, its heart has been damaged."*
>
> *"Our beautiful little town has been destroyed… Antique stores and boutiques occupied most of the downtown historic buildings. They have been reduced to piles of rubble… The National Guard Armory, where many fled to take shelter, collapsed on them."*
>
> *"It was the prettiest little town in Missouri, but now it's all gone, all the history, all its character—everything."*

Yesterday's Architecture, Tomorrow's Economy

The following are just a few examples of how historic preservation provides significant economic benefit:

In **Virginia**, according to the Mosby Heritage Area Web site, "Statewide reports indicate that every million dollars spent rehabilitating historic buildings in Virginia generates 15.6 construction jobs, 14.2 jobs in other sectors of the economy, and $779,800 in household earnings. That means that every million dollars spent on restoration in Virginia creates 3.4 more jobs and adds $53,500 more to local household incomes than the same amount spent on new construction." See http://www.mosbyheritagearea.org/Report/renovate.html.

In Richmond, property assessments in the Shockoe Slip historic district, an old residential neighborhood changing over to residential and commercial uses, increased 245% between 1980 and 1990, while the rate in the city as a whole was just 8.9% (according to *The Importance of Historic Preservation in Downtown Richmond: Shockoe Ship Area, a Case Study,* 1991).

The Virginia Tourism Corporation reports that visitors to historic homes stay an average of 3.6 nights and spend $497 per trip, while Civil War buffs following a car route tend to stay 4.1 nights and spend $547. The average pleasure visitor to Virginia stays 2.0 nights and spends an average of $249 per trip.

In **Florida**, the last three decades have witnessed the development of many historic preservation programs that have encouraged economic growth. According to *Economic Impacts of Historic Preservation in Florida* (available online from the Florida Department of State, Division of Historical Resources, Bureau of Historic Preservation (http://www.flheritage.com/files/economic_impact.pdf), the economic impact of historic preservation is $4.2 billion annually, including the following in 2000 alone:

- More than 123,000 jobs were generated in Florida from historic preservation activities;
- More than $657 million in State and local taxes were generated from spending on historic preservation activities with $317 million in income; and
- More than $3.7 billion was spent in Florida by tourists who visited historic sites.

In **Georgia**, according to *Profiting from the Past: the Economic Impact of Historic Preservation in Georgia,* the rehabilitation of historic properties from 1992 through 1996 created 7,550 jobs and $201 million in earnings wages for workers and profits for local businesses. "In 1996, tourists spent over $453 million on historic-related leisure activities, more money than they spent on evening entertainment, cultural events, or general sight-seeing activities." On average, heritage travelers stay almost two nights longer than other travelers.

Historic properties and cultural resources are also valuable economic assets that increase property values and attract businesses and tourists. Far from being at odds with economic development, preservation of these assets is often an important catalyst for economic development (e.g., historic downtown revitalization programs leading to growth in heritage tourism).

Historic preservation planning allows for the protection of historic properties and cultural resources before they are threatened with demolition or alteration. *Hazard mitigation planning* allows for the protection of life and property from damage caused by natural and manmade hazards. *Integrating* these two planning processes will help to ensure the future growth of safe and sustainable historic communities.

Key Terminology

Historic Preservation
The process of identifying, evaluating, protecting, preserving, and using historic properties "as a living part of our community life and development in order to give a sense of orientation to the American people" (preamble of the National Historic Preservation Act [NHPA]).

Historic preservation is a field that allows communities to preserve a sense of place, a unique identity, and a link to the past. It is an important tool not only for educating residents and visitors about the history of a place, but it can also help maintain community pride and a sense of belonging.

The historic preservation movement began as a reaction to the destruction of important historic properties. Similarly, the emergency management movement began as a reaction to the devastating effect of natural disasters. Over time, both fields have evolved in a similar manner. Today both movements are more proactive and planning-oriented, and focus on prevention.

Historic Property
Any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (National Register) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religions and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria. (Source: 36 CFR Part 800.16 [l][1].)

Cultural Resources
Non-living examples of objects acquired and preserved because of their potential value as examples, as reference material, or as objects of artistic, historic, scientific, educational, or social importance, either individually or as a collection.

Cultural resources include "moveable heritage," such as collections of artifacts, statuary, artwork, and important documents or repositories. Often housed in libraries, museums, archives, historical repositories, or historic properties, these resources range from three-dimensional examples such as sculptures, historic furnishings, family heirlooms, or textiles, to two-dimensional examples such as family records, written history or memorabilia, old photographs and maps, and other archival materials.

How do you use this and the other how-to guides?

Information from the "core four" guides (i.e., the first four guides in the how-to series that cover the four phases of the hazard mitigation planning process) has been summarized or adapted as it applies to historic properties and cultural resources. This guide, therefore, is to be used in conjunction with the core four guides.

The planning process for each community or jurisdiction is unique as each area will experience growth and change in a variety of ways. As a result, the step-by-step sequence outlined in this guide should be tailored to meet the needs of each jurisdiction. It should, however, be noted that the process illustrated in this guide is based on certain steps associated with successful planning processes.

Types of Information Found in the How-To Series

This guide, as well as the other guides in the how-to series, contains a wide variety of information, as explained below.

Evaluate Your Community and Test Your Knowledge

Evaluation tests are included to help you assess your jurisdiction's current planning process. In addition, the questions under "Test Your Knowledge" are designed to assess your comprehension and understanding of the material covered in the guide.

Icons

In order to aid the reader, the how-to series has developed a system of icons that should be used to interpret information contained in the sidebars. Specific icons are the following:

The **"Caution"** icon contains important information for avoiding common pitfalls that can lead to unsuccessful planning processes.

The **"DMA"** icon provides information relating to the hazard mitigation planning requirements outlined in the Disaster Mitigation Act of 2000 (DMA 2000) regulations.

The **"Glossary"** icon identifies terms and concepts for which a detailed explanation is provided in Appendix A – Glossary.

The **"States"** icon identifies guidance focused solely on the role of the State. Although much of the information will be the same for Tribal, State, and local governments, there are different requirements under DMA 2000 for Tribal, State, and local hazard mitigation plans. If a Tribe chooses to prepare a DMA 2000 State plan to be eligible for funding as a grantee, it should pay special attention to the States icon. Furthermore, States have additional responsibilities to assist local jurisdictions and Tribes in their planning efforts.

The **"Tips"** icon includes case studies and helpful hints that can be used in the planning process.

Library

A mitigation planning "Library" has been included in Appendix B. The library has a wealth of information, including Web addresses, reference sources, and other useful reference materials. All of the Web sites and references listed in the how-to guide are included in the Library.

Worksheets

Finally, to help track progress, worksheets have been developed to accompany activities in the guide. Blank worksheets are included in Appendix C – Worksheets. You can duplicate the blank forms in Appendix C and use them to organize your work as you implement the hazard mitigation planning process.

The remaining sections of this guide cover Phases 1 through 4 of the hazard mitigation planning process as they apply to historic properties and cultural resources.

phase 1

1 organize resources

Organizing resources to consider historic properties and cultural resources in the hazard mitigation planning process involves identifying and assembling the necessary technical information, funding, staff, and political and public support. The process cannot progress—much less succeed—without the marshaling of these resources.

The three steps discussed in this section to integrate historic properties and cultural resources into the hazard mitigation plan supplement the guidance provided in FEMA 386-1, *Getting Started: Building Support for Mitigation Planning*. These steps are described below:

Step 1. This step entails assessing the level of awareness and support for protecting these assets. This step also involves identifying resources for hazard mitigation related to historic properties and cultural resources.

Step 2. This step focuses on identifying and recruiting historic preservation and cultural resource experts to join the planning team, should such expertise not already be represented by the core planning team members.

Step 3. This section offers advice and provides useful tips on how to effectively engage the public during key points in the hazard mitigation planning process.

At the completion of this phase, you should have a clear sense of the community's level of support for historic preservation. In addition, you should have identified available sources of information, team members should have been recruited, and a public outreach campaign should have been developed.

National Register of Historic Places

With the passage of the National Historic Preservation Act (NHPA) in 1966, the National Register became the Federal government's official list of historic properties that have met certain evaluation criteria (see Criteria for Evaluation in Appendix A – Glossary) and are legally recognized as historically significant in American history, architecture, archeology, engineering, and culture. Both Federal and State agencies are involved in the maintenance and expansion of the National Register, which is administered by the Secretary of the Interior under authority of Section 101(a)(1)(A) of the NHPA and the National Park Service (NPS). Properties are usually listed through a process managed by State Historic Preservation Officers (SHPOs) or Tribal Historic Preservation Officers (THPOs). Typically, these properties are at least 50 years old and demonstrate a degree of integrity of historic materials sufficient to convey important historic information.

In its broadest sense, the National Register is a planning tool that highlights the importance of properties worthy of preservation due to their local, State, Tribal, or national significance. The listing currently contains information on more than 77,000 formally listed properties.

Many types of properties can be considered historic. These include:

- Buildings—including residential, commercial, industrial, and agricultural constructs;
- Structures—such as dams, bridges, canals, tunnels, or bandstands;
- Objects—such as signs, monuments, markers, or statuary;
- Sites—such as gardens, estate grounds, battlefields, landscapes, and archeological sites; and
- Districts—such as neighborhoods, commercial areas, or college campuses. Sometimes a listing is made for a grouping of buildings that lack individual distinction but together have been judged to be significant.

Step 1. Assess Community Support

Before proceeding with Step 1, it is important for your planning team to first develop a broad definition of historic properties and cultural resources. As the planning effort includes input from a broad cross-section of community members, varying definitions for what constitutes a historic property/cultural resource may be encountered (see Appendix A – Glossary). Your planning team can refine the broad definition as you receive this input. Once agreement on the definition has been reached, it should form the basis for identifying the properties and resources that will be assessed in Phase 2.

As the planning team determines the readiness of the community to undertake the hazard mitigation planning process, it is important to assess the level of knowledge, support, and resources available for carrying out hazard mitigation efforts for historic properties and cultural resources. If it is determined that public officials and citizens do not consider it important to address historic properties and cultural resources in the hazard mitigation plan, then activities suggested in Step 1, Task C in FEMA 386-1, *Getting Started: Building Support for Mitigation Planning* should be reviewed in an effort to raise awareness and build support for overcoming obstacles.

Assessing Community Awareness of Historic Properties and Cultural Resources

The following questions can be used to determine the level of public support and awareness of historic properties and cultural resources in the community:

- How much do appointed or elected officials and citizens know about historic properties and cultural resources in hazard areas?
- Do officials and citizens understand that steps can be taken to reduce damage to historic properties and cultural resources from hazards?
- Is there a difference between the perceived risk by the community and the actual risk to historic properties and cultural resources in the event of a disaster?
- Do elected and appointed officials understand how local, State, and Federal levels each support the protection of historic properties and cultural resources?

- Who in the community will be affected by the mitigation actions implemented to protect historic properties and cultural resources?
- Which members of the community will most benefit from mitigation actions?
- Who in the community may resist and why?
- Is there a historic preservation office or department in your community? Is there staff with historic preservation capabilities with whom you can collaborate?
- Is there an existing historic preservation plan in the community, State, or Tribe?
- If there is a comprehensive plan, does it contain a historic preservation or conservation element?

The following methods can be used to obtain answers to these key questions:

- Conduct interviews with local officials and citizens;
- Examine local newspapers;
- Participate in community meetings;
- Visit local historical societies, museums, and architectural review boards; and
- Develop and distribute questionnaires/ surveys.

Significant historic properties sometimes have a simple design, such as this typical frontier school house built in 1910 in South Pass City, Fremont County, Wyoming.

Source: Library of Congress, Prints & Photographs Division, HABS, HABS WYO, 7-SOPAC, 19-9 and 19-6

In addition, if a community contains a locally designated historic district or one that is listed in the National Register, it is more likely than not that many residents will already be conversant with preservation issues and appreciate the importance of protecting historic properties and cultural resources from disasters. In such areas, local historical societies, neighborhood groups, and individual advocates may already be promoting the preservation of historic properties.

Properties Less Than 50 Years Old

While properties in the National Register are typically 50 years old or older, those properties that are less than 50 years old will qualify if they are integral parts of historic districts that do qualify or they fall into certain special categories. For a description of these categories, see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation.*

State Historic Preservation Officer (SHPO)

In cooperation with Federal agencies, SHPOs are responsible for directing and conducting a comprehensive statewide survey of historic properties and maintaining inventories of such properties under Section 101(b)(3) of the NHPA. These State officials maintain important information on historic properties in inventories and in statewide historic preservation plans, and are required to have qualified preservation professionals on staff. Federal agencies are directed in Section 110 of the NHPA to cooperate with SHPOs in establishing programs to locate, inventory, and nominate historic properties to the National Register. A State historic preservation office typically will have a designated SHPO and a deputy SHPO, and will likely have a support staff comprising archeologists, historians, planners, architects, and archivists. The structure of a preservation office differs from State to State and Tribe to Tribe.

Tribal Historic Preservation Officer (THPO)

A THPO is the Tribal equivalent of a State Historic Preservation Officer. The THPO may assume a role parallel to that of State government in administering the national historic preservation program on Tribal lands. Tribes will tailor their programs to accommodate Tribal values and address Tribal priorities. The 1992 Amendments to the NHPA recognized the Tribes' growing capabilities in historic preservation and the Tribes' rightful place in the national program. Specifically, the 1992 Amendments provide for Tribes, at their request, to assume responsibilities for such functions as identifying and maintaining inventories of culturally significant properties, nominating properties to the National Register, conducting Section 106 review of Federal agency projects on Tribal lands, and administering educational programs on the importance of preserving historic properties.

Resources Available for Hazard Mitigation

Many resources are available for the preservation and protection of historic properties and cultural resources. Enlisting the aid of the State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Officer (THPO) at the start of the hazard mitigation planning process will be invaluable for identifying available resources, and for determining which agencies or individuals may have the capabilities to implement mitigation actions, provide funding, etc. The following section focuses on three key sources to consult to obtain more information on available resources: SHPO/THPOs, archivists or collections managers, and planners.

- **SHPO/THPOs.** Section 106 of NHPA requires the SHPO/THPO to provide comment and to be consulted with on federally funded undertakings—including local actions using Federal funds or requiring Federal approval—that may affect historic properties listed in, or eligible for listing in, the National Register (please see Appendix A – Glossary and Appendix B – Library for more information on SHPO/THPO responsibilities). SHPOs and THPOs generally maintain lists or databases of significant historic properties and cultural resources.

  It is important for your team to establish and maintain an open line of communication with the SHPO/THPO, especially if the planning area includes Tribal lands or areas historically associated with Native American groups. SHPO/THPO office staff may be able to help your team identify nearby communities that have faced similar challenges in incorporating historic property and cultural resource considerations into hazard mitigation plans.

  It is a good idea to contact your SHPO/THPO directly at the start of the hazard mitigation planning process. When doing so, you should provide a brief description of your planning project and any known historic properties in the community. Although the SHPO/THPO may respond directly, he or she most likely will delegate this task to the staff member most familiar with your community's needs. This staff member will be the primary contact throughout the hazard mitigation planning process.

  Do not be surprised if the SHPO/THPO does not respond instantly. Many, if not most, SHPO/THPO offices are understaffed and under-budgeted, with many other

communities and projects demanding their attention. It is not uncommon to wait one month or longer before receiving a response to initial formal inquiries.

- **Archivist or collections manager at the local museum.** Over the past decade, cultural institutions have made great strides in developing disaster preparedness plans. These documents will assist in understanding the range and scope of cultural resource assets in the affected area, and will ensure that the initial inventory includes special collections.
- **Planners at local or regional planning offices.** The local or regional planning office is a good source of information on historic properties that have been surveyed or designated as historic at the local level. If your community is a Certified Local Government (CLG), it should be the repository for local survey data. Also, historic properties and cultural resources may be identified in the preservation element of the local comprehensive plan or capital improvement plan. Local or regional transportation departments and planning associations may also have previously identified historic

Historic Preservation Element in Comprehensive Plans

Comprehensive plans provide a framework for regulating the built environment. State regulations define the elements that a plan must contain. These elements typically include:

- Future land use element;
- Housing element;
- Economic development element;
- Capital improvement element;
- Transportation element; and
- Conservation element.

The policies in the comprehensive plan are intended to minimize incompatible use, avoid urban sprawl, provide for adequate infrastructure facilities, prevent damage or disruption to natural resources, and preserve the character of the community. These policies and their related goals and objectives provide a vision for the community's future. The conservation element typically encompasses the protection of natural resources as well as historic properties and cultural resources. This element includes an analysis of the effects of future land use on historic properties and cultural resources and policies, goals, and objectives for preserving these resources. This element will also discuss local mechanisms such as Historic Preservation Commissions that designate and protect historic properties and cultural resources under jurisdictional zoning authority.

See Appendix A

The Glossary contains more information on the following major pieces of legislation that affect historic preservation initiatives:

- The National Historic Preservation Act (NHPA), particularly Section 106 and
- The National Environmental Policy Act (NEPA).

Historic Property and Cultural Resource Survey

A process by which historic properties and cultural resources that are potentially significant to the community are documented. Typically a survey involves the collection of documentary photography and completion of survey forms to describe each property or resource. This description includes its landscape (if a property), construction materials, geographic location, and potential significance (see sample survey on page 2-15 and Step 3 in Phase 2 for more details on conducting a survey).

Cultural Resource Inventories

Counties (e.g., in Florida) sometimes have a county-wide cultural resources inventory, which also resides with the SHPO's office, that may include vulnerability determinations and preservation recommendations. SHPOs may also have grant funding available to undertake these types of broad surveys.

properties and cultural resources. If a community has already identified priorities for future preservation, hazard mitigation planning can be integrated into existing and ongoing preservation planning efforts.

Certified Local Governments

Local governments strengthen their local historic preservation efforts by achieving Certified Local Government (CLG) status from the NPS. NPS and State governments, through their SHPOs, provide technical assistance and small matching grants to these communities. In turn, NPS and States gain the benefit of local government partnership in the national historic preservation program. Another incentive for participating in the CLG program is the pool of matching grant funds SHPOs set aside to fund CLG historic preservation subgrant projects—at least 10% of the State's annual Historic Preservation Fund (HPF) grant allocation. Grant funds are distributed through the HPF grant program, administered by NPS and SHPOs.

Projects eligible for funding and the criteria used to select them are developed annually by the SHPO. Funding decisions are made by the State, not NPS. Among the kinds of activities funded are the following: architectural, historical, and archeological surveys; oral histories; nominations to the National Register; staff work for historic preservation commissions; design guidelines and preservation plans; public outreach materials such as publications, videos, exhibits, and brochures; training for commission members and staff; and rehabilitation or restoration of National Register listed properties.

Step 2. Build the Planning Team

Whether you have an established team or are in the process of forming one, it is important to assess the team members' expertise and capabilities to address historic properties and cultural resource considerations and fill in any gaps. Individuals or agencies to consider adding to your planning team include:

- State and regional agencies that plan for historic properties and cultural resources, including your SHPO and State archivist;
- Tribal representatives, including your THPO (as noted previously, it is important to identify Tribal nations that may have an important historical relationship with your planning area);
- State, regional, and local historical societies;
- Historic preservation planners knowledgeable about Federal and State preservation legislation, local ordinances, and possible funding sources;

- Preservation architects and other professionals who specialize in the rehabilitation and restoration of historic structures;
- Professional and amateur archeologists and/or archeology departments of universities and colleges in your region;
- Local museums, libraries, archives, and repositories of collections, art, books, and artifacts;
- Non-profit historic preservation organizations and historic neighborhood organizations;
- Businesses and development organizations for historic commercial districts and "Main Street" programs; and
- Federal government agencies, such as FEMA, the National Park Service (NPS), and the National Archives.

Preservation Task Force

If substantial community support and interest is shown for protecting local historic properties and cultural resources, your planning team may wish to establish a dedicated historic and cultural resource preservation task force or committee. This task force or committee would be charged with reporting back to the larger hazard mitigation planning team.

Including Living Ties to the Past – Traditional Cultural Properties

Native American Tribal nations and other ethnic or social groups, even from a great distance, may feel a strong cultural connection with certain historic properties and cultural resources, including what are known as Traditional Cultural Properties (TCPs). TCPs are defined as historic properties that are eligible for inclusion in the National Register because of their association with the cultural practices or beliefs of a living community. These practices are rooted in that community's history and are important in maintaining the continuity of traditional beliefs and practices—in essence, the cultural identity of the community.

Examples of places important to sustaining the traditional beliefs of a community might include "vision quest" sites important to Tribal groups of the northern plains, or sand bars along the Rio Grande River that help maintain ceremonial practices of the Sandia Indians. Other examples include urban neighborhoods that are the traditional home of a particular cultural group. For example, Honolulu's Chinatown embodies the distinctive cultural value of the city's Asian community in its architecture, landscaping, signage, and ornamentation.

Some communities may have several different histories and collections of historic properties and cultural resources; however, not all of these may be formally documented. Many social and ethnic groups may lack official published histories or historical societies, but nevertheless have a strong connection to specific resources. It is therefore important to make an additional effort to research and identify communities with alternative histories and to include these communities and their resources in the hazard mitigation planning process.

Mount Shasta, a sacred site to northern California Tribes.

Source: NSBO, http://www.byways.org

View of Devil's Tower, near the Belle Fourche River in Wyoming, taken in 1888. This site is sacred to several Native American Tribes.

Source: Library of Congress, Prints & Photographs Division, LC-DIG-ppmsc-02642

If these individuals or representatives from the listed agencies do not have time to join your team, then establish an ongoing dialogue with them throughout the planning process.

It is important to ensure that the assembled planning team includes interested citizens and local experts as well. It may be helpful to contact your SHPO for referrals of qualified individuals. An equitable and diverse representation on your planning team will enhance your planning efforts and help build community support for hazard mitigation.

Use **Worksheet #1: Expand the Planning Team** to identify others to invite to join your planning effort (see Appendix C for a blank worksheet).

Step 3. Engage the Public

There are several ways to obtain public input on the protection of historic properties and cultural resources during your hazard mitigation planning process. Frequently used methods include public meetings, questionnaires, and visual definition surveys. Public meetings are useful for educating the community on the overall hazard mitigation planning process, for identifying historic properties and cultural resources, for obtaining input on the various hazard mitigation alternatives available for protecting these resources, and for keeping the public up to date on the progress of your implementation efforts. For these reasons, your team should, at a minimum, develop a schedule for holding meetings at certain key stages in the hazard mitigation planning process. These key stages are:

- At the beginning of the planning process to inform the public of your planning efforts and to hear about what historic properties and cultural resources are important to the community;
- At the conclusion of the risk assessment to report on your findings;
- When developing your goals and discussing alternative mitigation actions for your mitigation strategy; and
- As you implement the plan to inform the public of progress made to date.

Public Participation

A carefully designed public participation process can often ensure that critical information about certain types of historic properties and cultural resources reaches the project team. For example, in many communities across the United States, selecting members of the project team who are fluent in Spanish is a basic but important step that influences the success of the information gathering process. This is true because many cultures place emphasis on teaching about the importance of certain types of historic properties and cultural resources through oral history and tradition, rather than relying upon traditional written source materials. This transmission of cultural information often occurs through that community's native language, which may not be English. Without a critical ear attuned to this different mode of communication, the information gathering process may result in an incomplete, narrowly drawn picture of the heritage of all groups within a given geographic area, which in turn diminishes your hazard mitigation plan being actively embraced and used by the community as a whole.

Meetings could be held in conjunction with open gatherings of historical societies and historic preservation groups, neighborhood and social or ethnic organizations, or planning advisory groups or municipal governments. If residents are invited to participate in the process early on and to recount local history on their terms, there is a better chance that implementation of the plan will succeed. Local input is especially important for the valuation of local resources; even when a local structure is not eligible for listing in the National Register, it may still be very important to the community.

If controversy is expected, it may be advisable to hold the public meeting at a neutral location, such as a church hall, using a trained facilitator. For increased credibility, all public meetings (whether controversial or not) should be advertised (consider using stakeholders, creating posters for display, and contacting media sources as options for advertising the meetings).

San Francisco 1906 earthquake and fire, April 18-21.
Source: NOAA/NGDC

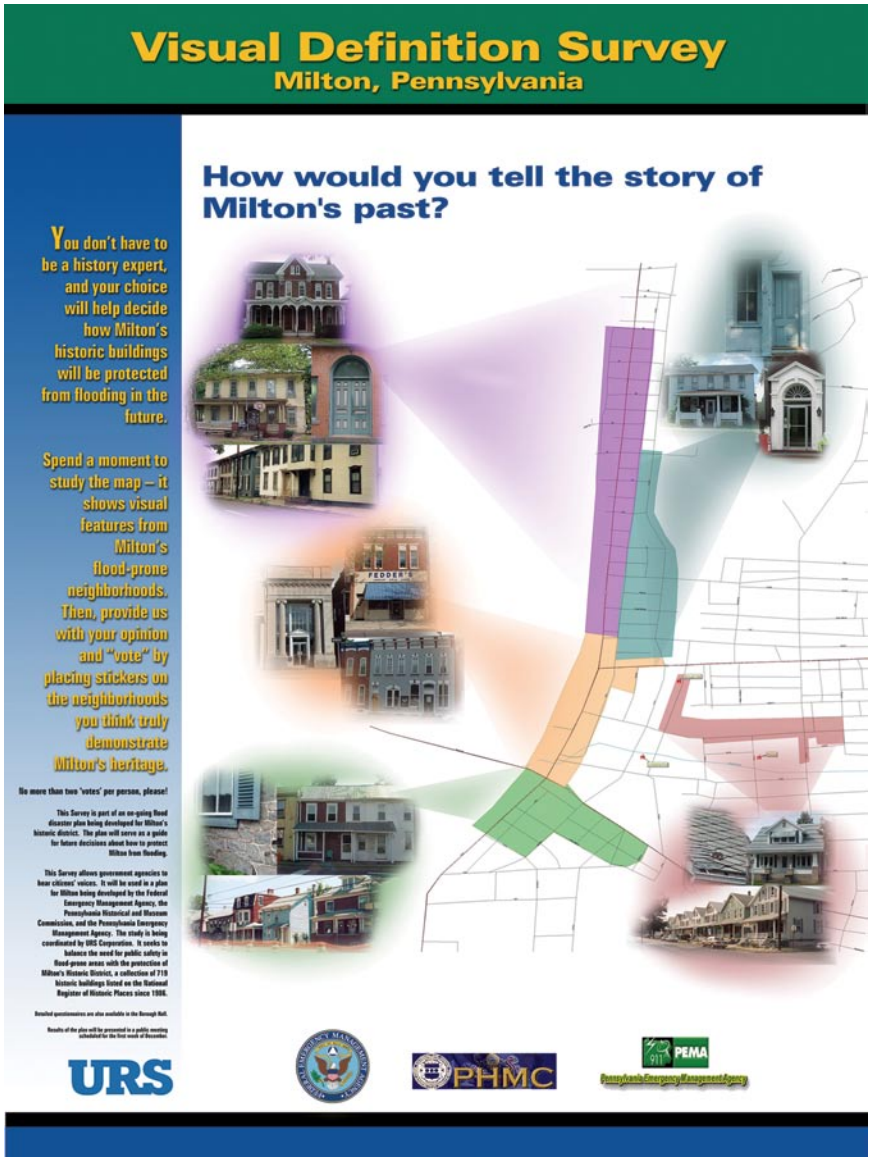
Dramatic Graphics as a Powerful Tool for Public Outreach

Presenting graphic material from past disaster events can help members of a community visualize the potential impacts that a modern-day disaster may have on its historic properties and cultural resources.

Whose History Is It Anyway?

Deciphering the importance of historic properties and cultural resources can sometimes be a difficult and daunting task, and must be approached with caution and sensitivity. Part of this difficulty comes from one's own cultural perspective, or "world view." Like a tinted lens in a pair of glasses, this process can result in seeing people only from the point of view of one's own culture. Commonly called ethnocentrism, this misperception can result in a dominant cultural group completely looking past what is critically important to another cultural group. For example, in the American Southwest, simple memorials such as roadside crosses within Hispanic communities may not be perceived by those outside the Hispanic community as anything of importance, and certainly nothing worth preserving. But these objects, called "descansos" (literally "places of rest") reflect the continuation of a tradition brought to the United States by Spanish colonists in the 17th century. Originally erected at places where a funeral procession paused to rest on the journey between church and cemetery, these memorials have become a symbol of interrupted journeys and deaths as a destination along our highways. To Hispanic community members, humble objects such as these often serve as tangible links to beliefs, customs, and practices that mark the existence of one or more living communities.

For more information, see "Introduction/Dios da y Dios quita" from *Descansos: An Interrupted Journey,* Rudolfo Anaya, Juan Estevan Arellano, and Denise Chavez (Del Norte, 1995).



Display poster used to solicit input from Milton residents.

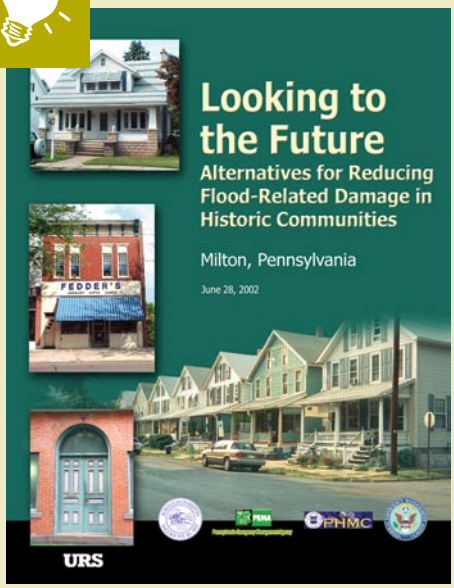
Source: *Looking to the Future, Alternatives for Reducing Flood-Related Damages in Historic Communities,* Milton, Pennsylvania, June 2002

Other methods for garnering public input on historic properties and cultural resources include the use of brief questionnaires and a Visual Definition Survey display poster (see example). In the Visual Definition Survey, residents "vote" using a multi-voting system (described in FEMA 386-3, *Developing the Mitigation Plan,* pp. 2-26 to 2-27) on the types and locations of historic properties and cultural resources they feel best demonstrate local history and contribute to a distinctive sense of place.

An Inclusive Planning Process

Without early and frequent public participation, your hazard mitigation planning effort may provoke misunderstandings and objections from some community members. Although public meetings convened by your hazard mitigation planning team or historic preservation task force can provide a forum for public input, they may not be enough to bridge the gap. Consider other opportunities for public input—for example, engaging a local interest group in an open-ended dialogue, attending open meetings of other organizations, or encouraging their members to attend an upcoming meeting of your hazard mitigation planning team. For community members who are unable to participate because of other commitments, outreach in the form of short postcards to solicit input, or a project Web site or poster board, may help them feel included in the hazard mitigation planning process.

A Community Success Story



Source: *Looking to the Future, Alternatives for Reducing Flood-Related Damages in Historic Communities,* Milton, Pennsylvania, June 2002

The Borough of Milton, Pennsylvania, is a flood-prone community located on the Western Branch of the Susquehanna River. The Borough contains a large historic district that has endured a long history of repetitive flooding. To reduce long-term damage from flooding events, the Borough considered acquisition and demolition of some of the district's oldest structures. Although many citizens remembered the devastation brought on by past flooding, they also remembered the unfortunate wound inflicted on their community by the demolition of over 400 buildings—many of them historic—following the 1972 flood.

To address flooding while adopting a preservationist approach, the Borough of Milton worked with concerned citizens, preservation advocates, a regional planner, and representatives from the Pennsylvania Emergency Management Agency (PEMA) and Pennsylvania Historical and Museum Commission (SHPO) on the development of a community-based hazard mitigation planning process that actively incorporated information about historic properties. Working with FEMA, a team of historians, a preservation architect, and a hazard mitigation planner, the Borough organized and sponsored a series of public meetings to identify and focus on broad, common goals for mitigation actions that will result in improved protection of the Borough's historic properties.

More information on Milton's planning process for historic flood-prone properties is online at http://www.fema.gov/ehp/milton.shtm.

Summary

By the end of Phase 1, you should have collected readily available information on existing efforts to protect historic properties and cultural resources, building your understanding of the level of support that exists in your community for protecting these assets. You will also have established a balanced planning team comprised of members with cultural resources expertise and knowledge of the planning area. In addition, you should have identified a variety of approaches for engaging the public in the planning process. Relationships formed at this stage of the planning process will be valuable throughout the creation and implementation of the hazard mitigation plan.

In Phase 2, your team will identify hazards that affect local historic properties and cultural resources, inventory those properties and resources, and create a method for deciding which resources are preservation priorities. It will also assess the vulnerability of these assets and estimate the associated amount of potential loss.

This is the end of Phase 1. Before proceeding to Phase 2, please take a moment to answer the following questions to determine if you have adequately assessed the resources needed to move

forward with integrating historic property and cultural resource considerations into the hazard mitigation plan. These are followed by a Review Test that you should use as a learning aid to better understand the topics covered in Phase 1.

Evaluate Your Community

- What are the obstacles to historic properties and cultural resource preservation in your community? How will you overcome them?
- Are there any gaps in the range of interests and expertise represented on your planning team? If so, who will be added to your team to fill those gaps?
- What additional outreach is needed to inform the public about your planning efforts to integrate historic properties and cultural resources in your hazard mitigation plan?

Review Test (Select one answer for each question.)

1. What types of resources may be considered historic?
   a. Buildings such as houses, schools, churches, and factories.
   b. Cemeteries, battlefields, and gardens.
   c. Bridges, dams, and canals.
   d. All of the above.
2. A State Historic Preservation Officer is:
   a. A State archivist or records manager.
   b. A person designated by the Governor of each State who is responsible for carrying out historic preservation programs under State and Federal law.
   c. Responsible for protecting historic properties in State parks.
   d. All of the above.
3. A Tribal Historic Preservation Officer is:
   a. Equivalent of a SHPO, but responsible for historic properties and cultural resources on Tribal lands.
   b. A resource that can help you develop information regarding traditional cultural properties.

c. A person who can help you understand the distinctions between generally recognized historic properties and properties of importance to Native American or Indian communities.

d. All of the above.

4. Early and active input from the public is needed to:

a. Gain support for historic preservation and address community concerns and misconceptions.

b. Determine the best time of year to undertake renovations.

c. Find someone who knows what a SHPO is.

d. None of the above.

(Answers in Appendix D – Answers to Review Tests.)

phase 2

2

assess risks

Overview

In Phase I, you identified, assembled, and organized the resources necessary for integrating historic properties and cultural resources into the hazard mitigation plan. In Phase 2, "Assess Risks," your team will use these resources to conduct a risk assessment of the historic properties and cultural resources located in your jurisdiction.

There are four primary steps associated with conducting risk assessments that this Phase of the guide will cover:

Step 1. Identify the hazards that can affect your community.

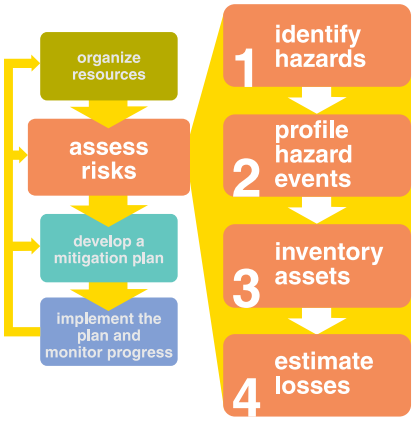
Step 2. Profile hazards to determine hazard-prone areas and magnitude of each hazard.

Step 3. Inventory the historic properties and cultural resources vulnerable to those hazards, assess vulnerability of these assets, and establish preservation priorities by determining which assets are most valuable to the community.

Step 4. Estimate the associated amount of potential losses.

To assist you through Steps 3 and 4, the primary focus of this section, the guide includes worksheets filled in with sample information.

At the end of Phase 2, your planning team should have a clear picture of the historic properties and cultural resources that are important to the community; how vulnerable these resources are to hazards; and the cost of their loss, replacement, or repair due to a hazard event. The end-product of this phase will be a prioritized list (or preservation hierarchy) of historic properties and cultural resources for protection in the community.



Risk Assessment

Measuring the potential for property damage, economic loss, injury, and death that may result from both natural and manmade hazards. Specifically, it involves identifying potential hazards and assessing a community's ability to survive them, diminish their impact, or avoid them completely. Risk assessment is central to the hazard mitigation planning process, and is described fully in FEMA 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Losses.*

Geographic Effects of Hazards

Some hazards will affect the entire planning area (e.g., winter storms, tornadoes, and droughts), and others will only affect certain geographically determined areas (e.g., floodplains, seismic zones, and urban-wildland interface zones).

Steps 1 and 2. Identify and Profile Hazards

Since hazard identification is essential to the mitigation plan, it is likely that the planning team has already identified the hazards that are likely to affect the jurisdiction and has already developed a hazard profile. This information should be used as the starting point for accomplishing Steps 3 and 4 of the risk assessment process as it relates to historic properties and cultural resources. There is no need to repeat Steps 1 and 2, as the goal is to integrate cultural resource considerations into the existing hazard mitigation planning process. In addition, Steps 1 and 2 are described in FEMA 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Losses.*

In preparation for Step 3, review the identified hazards that exist within the planning area and their profiles.

Step 3. Inventory Historic Property and Cultural Resource Assets

In this Step, the historic properties and cultural resources that are most likely to be affected by a hazard event will be determined. Specifically, your planning team will:

- Develop and map a general inventory of historic property and cultural resource assets located in the planning area.
- Overlay the map of identified hazards developed in Step 2 of the risk assessment process with the general inventory map of historic properties and cultural resources in the planning area. This will provide the needed data for identifying which properties and resources are located in hazard-prone areas.
- Review the map of historic properties and cultural resources located in hazard-prone areas and determine the number and value of these assets.
- Compile property data and characteristics for each resource that may be potentially impacted. This can be accomplished either by using a geographic information system (GIS) or by conducting a survey. Note: this information will be needed to accurately estimate potential losses in Step 4 of the risk assessment process.

- Review the property data and characteristics of each property and establish preservation priorities. This information will be incorporated into Phase 3 of the hazard mitigation planning process.

Before starting Step 3, there are a few considerations to keep in mind with regard to assessing the vulnerability of historic properties and cultural resources.

1. Characteristics of Historic Properties and Cultural Resources

In determining a community's preservation priorities, an assessment should be made of each resource's vulnerability potential. Unfortunately, there is no easy formula for predicting how a historic property or cultural resource will perform during a disaster. For example, determining which structural systems in buildings will be superior is dependent upon a wide variety of factors, most particularly, the type of hazard confronted.

In addition, the age of a structure cannot be considered a predominant factor in determining whether a resource will perform well in a disaster. It is often assumed that older structural systems and materials used in historic buildings will perform far worse than recent code-driven construction. This is not always the case, as some historic structural systems were designed with far greater structural support than necessary.

Rehabilitation and Alteration

As you read this guide, keep in mind the following clarifications. Rehabilitation has one meaning in the preservation planning context and another in the context of hazard mitigation planning. When design experts talk about rehabilitation, they usually mean taking actions that help preserve the distinctive character of a historic building while allowing for reasonable change to meet new needs. In the hazard mitigation context, when mitigation planners mention rehabilitation, they mean retrofitting a structure or taking steps to reduce its vulnerability to hazards (e.g., flood-proofing or seismic strengthening).

Another key word to keep in mind is alteration. Alteration usually has a negative connotation—when a historic structure or resource is said to be altered, it may be taken to mean that the structure has changed to the extent that it no longer is considered historic. In hazard mitigation planning, however, altering a structure to protect it from a hazard or hazards means doing something positive—that is, changing or strengthening a structure to better withstand future hazard events while at the same time minimizing the impact these changes have on the structure's historic integrity.

Vernacular Historic Construction Methods

Buildings designed without the aid of an architect or engineer can sometimes better withstand damage from certain types of disasters than modern construction techniques. These properties may actually be able to outperform recent construction in certain disaster events because their essential structural systems may be better able to sustain lateral vibrations and pressure than buildings constructed more recently. Examples of such traditional "over design" include the nineteenth-century stone or brick masonry bank barns commonly found throughout the Mid-Atlantic region. Reinforced with heavy timber framing, these barns typically possess a structural capacity far exceeding their actual use. On the other hand, the structure of some historic buildings may emphasize flexibility over strength. These buildings may be able to withstand the seismic force from an earthquake quite well by dissipating it throughout a larger area of the building. Examples of this type of construction are the small-scale wood-frame houses built in the San Francisco Bay Area during the late nineteenth century.

Accounting for Peculiar Design Advantages and Vulnerabilities

You should consult a qualified structural engineer or a design professional with experience in historic building rehabilitation to conduct a detailed evaluation of historic properties in your inventory. Since financial resources will likely not permit a detailed assessment to be carried out on each historic property, you should focus on conducting your inventory first in the most significant hazard-prone areas, and then refer to your preservation hierarchy (see Task B in the next section) for the order in which you can complete your inventory over time.

Cultural Museum Disaster Preparedness – No Lack of Information!

Over the past decade, concerted efforts by conservation professionals have resulted in a wealth of information to help cultural museums design effective plans to better protect their unique assets. The Heritage Emergency National Task Force is one of the oldest efforts of this type. This coalition was formed in 1995 to help libraries and archives, museums, historical societies, and historic sites better protect their collections from natural disasters. The Task Force is sponsored by the non-profit Heritage Preservation, Inc. and FEMA. The organization provides a wealth of technical information on disaster response and salvage on its Web site: http://www.heritagepreservation.org.

The Central New York Library Resources Council has prepared a publication entitled *In the Face of Disaster—Preparing for Emergencies in Central New York: A Self-Planning Manual for Disaster Prevention, Response, and Recovery in Libraries, Museums, and Cultural Institutions of Central New York State.* This document provides step-by-step instructions and worksheets to institutions on how to complete a customized disaster plan and includes three major components: prevention, response, and recovery. See the Central New York Library Resources Council Web site for more information: http://clrc.org.

One of the nation's premier art museums, the Getty Museum, located in Los Angeles, California, is also extraordinarily active in providing information about disaster preparedness and response. The Getty Conservation Institute serves the conservation community through its support of scientific research, education and training, model field projects, and the dissemination of information. In addition to many on-line educational articles, the Institute publishes useful guides such as *Building an Emergency Plan.* For more information on these resources, go to: http://www.getty.edu/conservation.

Other educational institutions provide high-quality information on the care and treatment of cultural resources damaged through disasters. For example, a Web site entitled "Conservation OnLine" (also known by its acronym CoOL), is sponsored by Stanford University. This site provides detailed information on the care and treatment of specific materials. It also provides hotlinks to other Web sites that contain useful case studies, information about disaster plans by type of museum or institution, and bibliographic references. See the CoOL Web site at http://palimpsest.stanford.edu.

Similarly, specific types of collections can better withstand the direct effects of different disaster types. For example, paper records are not affected by vibrations associated with earthquakes, and certain types of art collections, such as stone sculptures, are usually not damaged by significant flooding.

Lastly, just because a historic property or cultural resource has survived the test of time does not necessarily mean it is hazard-resistant. On the contrary, a number of factors may make historic resources uniquely vulnerable to disaster-related damage. For example, historic buildings may have been constructed in locations without any forethought of possible future hazard events. These include buildings sited in floodplains, or those built along early transportation corridors, such as canals. Furthermore, a disaster may compound damage already sustained from poor maintenance or inappropriate alteration.

2. Threat of Terrorism and Other Manmade Hazards

In recent years, another factor has markedly contributed to the unique vulnerability of historic properties and cultural resources—the threat of terrorism. The high visibility, significance, and public accessibility of many historic resources make them attractive targets for terrorists. Many resources are symbolic on a local, State, Tribal,

or national level, with some serving a governmental or other type of public function. In evaluating the threat from terrorism, it is important to identify why a resource is significant. Properties important to a certain social group may be targeted by enemies of that group. Moreover, many historic buildings lack the terror-resistant features included in many of today's new buildings—defensible spaces, flame-retardant materials, and blast-resistant windows (see FEMA 386-7, *Integrating Manmade Hazards into Mitigation Planning* for more details on manmade hazards).

Assess Building Vulnerability in a Multi-Hazard Context

The characteristics that enhance performance during one type of hazard event may be the very features that make it vulnerable to damage from another type of hazard event.

3. Learning From Historic Disasters in Local Communities

It is recommended that your planning team research the community's past experience with disasters. Beyond providing an indication of the community's resiliency and response, such a study may reveal how local building traditions were adapted over time as a result of disaster events. From the recent post-disaster experiences of other communities, your team may glean valuable information about how well historic properties and cultural resources withstand a disaster, and how they can be protected from future disasters.

Jefferson and Allen Avenues, St. Louis, Missouri, after the tornado, May 27, 1896.

Source: NOAA Photo Library, Historic NWS Collection

Above all, learning from the disaster experiences of local communities will help to identify and evaluate hazard mitigation alternatives for potential implementation. Historical information on local disasters may be found in a variety of sources, including:

- Disaster reports and qualitative financial statistics archived by FEMA or a State emergency management agency (SEMA);
- Published local and regional histories;
- Unpublished historical information, including collections of memoirs, diaries, oral histories, and historical photographs; and
- Newspaper and magazine accounts of the disaster.

See Appendix B

Additional information regarding historic building construction, performance, and treatment standards is provided in the Library Appendix of this guide.

Procedures and Techniques

Task A. Determine the proportion and value of historic property and cultural resource assets in your community located in hazard-prone areas.

You will use **Worksheet #2: Determine Extent and Value of Historic Properties** (see the example on page 2-7 and blank worksheet in Appendix C) for this task to determine the proportion and value of historic property and cultural resource assets located within those areas, or in the case of community-wide hazards, those that are most vulnerable to the identified hazards. Your inventory should not only identify properties and resources that merit protection, but also demonstrate other factors, including economic value. Worksheet #2, which was adapted from Worksheet #3a from FEMA 386-2, will help your team develop this determination.

Introduction to Worksheet # 2

To place the value of historic properties in perspective, show what percentage of the total structures in the identified hazard area are historic. The total number of structures in the hazard area should have already been tabulated by the mitigation planning team. The number and value of historic properties and cultural resources should also be computed as a percentage of the total assets in the community. You will be able to compute the percentage of historic properties and their value after completing **Worksheet #3: Inventory Historic Property and Cultural Resource Assets**. In the example included below, 15% of the historic residential structures represents 20% of the total value of the residential stock. See FEMA 386-2 for more information.

1. Determine the location of historic property and cultural resource assets within hazard-prone areas.

The simplest way to determine which historic and cultural resource assets are located in hazard-prone areas is to use GIS. If your team has access to GIS, it should overlay the community's base map onto a map of historic properties and cultural resources. This composite map should then be overlain onto a map identifying the location of hazard-prone areas in the community, such as floodplains. The resultant map will reveal which historic properties and cultural resources are located in hazard-prone areas, and precisely where they are situated, by street and parcel.

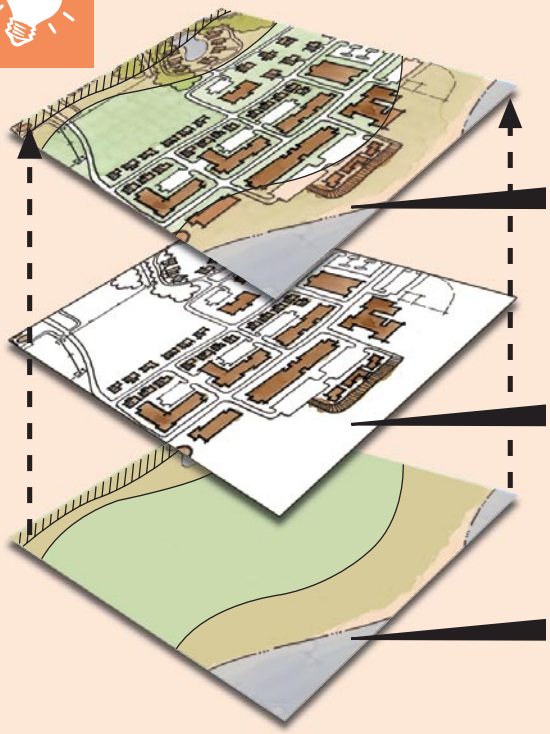
To determine the specific hazard threats posed to each historic and cultural resource, your team should repeat the last overlay

Date: *January 3, 2007*

Fill in Columns 1, 2, 5, 7, 8, and 11. Fill in Columns 4 and 10 after completing Worksheet #3. Divide Column 1 by Column 2 and multiply by 100 to calculate the percentage of properties in the hazard area (Column 3). This process can be used to determine the percent value of properties within the hazard area (Column 6), the percentage of historic properties in the community (Column 9) and their percent value (Column 12).

Type of Structure	Number of Properties			Value of Properties			Number of Properties			Value of Properties		
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
	# of Historic Properties in Hazard Area	# of All Properties in Hazard Area	% of Properties that Are Historic	$ Value of Historic Properties in Hazard Area	$ Value of All Properties in Hazard Area	Property Value of Historic Properties as % of Total Property Value	# of Historic Properties in Community or State	# of All Properties in Community or State	% of Properties that Are Historic	$ Value of Historic Properties in Community or State	$ Value of All Properties in Community or State	Property Value of Historic Properties as % of Total Property Value
Residential	*150*	*1,000*	*15%*	*$3 M*	*$15 M*	*20%*	*400*	*2,000*	*20%*	*$60 M*	*$250 M*	*24%*
Commercial												
Industrial												
Religious/ Non-profit												
Gov't												
Education												
Total												

Creating a Composite Map



using hazard-specific maps, i.e., maps identifying seismic zones, flood hazard areas, etc. For some hazards, such as hurricanes and tornadoes, a GIS layer will not be available.

If your team does not have access to GIS, hazard boundaries can be hand-drawn on a map depicting the location of historic properties and cultural resources. Your planning team may want to take the locations of historic properties recorded on tax maps or U.S. Geological Survey (USGS) quadrangle maps, and map them directly onto paper copies of floodplain maps, USGS earthquake hazard maps, or other hazard-related maps.

Geographic Databases and Data Sharing

Obtaining or creating GIS-based information is important because it will help your team locate concentrations of historic properties and cultural resources, and also better define the level of risk faced by your historic properties and cultural resources. For example, GIS data will show if historic properties are located in floodplains, in active earthquake zones, etc. In addition, other planning initiatives can be placed in a GIS, which can help your team identify impacts to historic properties and cultural resources that have occurred over time.

Hurricane and storm surge damage in Galveston, Texas, September 1-10, 1900.

Source: NOAA Photo Library, Historic NWS Collection

2. Compile a detailed inventory of what historic properties and cultural resources can be damaged by a hazard event.

At this point, you will be able to compile a detailed inventory of all of the historic properties and cultural resources found within each of the identified hazard areas in your community. Run a query and sort your results by the characteristics—e.g., age and type of construction—listed in **Worksheet #3: Inventory Historic Property and Cultural Resource Assets**.

Introduction to Worksheet #3

Your planning team will be using Worksheet #3 throughout the remainder of Phase 2 (see the example worksheet on page 2-10 and blank worksheet in Appendix C). It is designed to help the team organize the information it collects on historic properties and cultural resources, and can be used to establish preservation priorities. Based on Worksheet 3b from FEMA 386-2, Worksheet #3 has been adapted specifically for use in assessing historic properties and cultural resources.

For each hazard identified in Step 1, your planning team should make a photocopy of Worksheet #3 and fill in the name of the specific hazard at the top of the sheet (e.g., flood, hurricane, and earthquake). As your team progresses through Phase 2, information will be supplied to complete the remainder of Worksheet #3.

For each hazard identified in Step 1, your team will use the information from its inventory to fill in Columns 1–8 of Worksheet #3. At a minimum, your team should consider collecting the following information on historic properties and cultural resources identified in the inventory:

1. Name and Address/Location of Asset Subject to Hazard;
2. Date of Construction/Creation;
3. Type of Property/Type of Resource;
4. Square Footage;
5. Structural System;
6. Primary Material(s) of Property/Primary Materials of Resource;
7. Current Function (for Properties);
8. Current Condition; and

Make a copy of a blank worksheet for each hazard of concern. Fill in the name of the hazard and the date. List the name and address of vulnerable historic properties and cultural resources in Column 1. For each property/cultural resource (row) fill out Columns 2 to 10 to complete the information about the asset. For Columns 11 to 15, use results from Worksheet #5 to fill in the applicable columns. For Column 16, use the ranking from Column 7 of Worksheet #4. See the Building Data Requirement table below to determine what additional columns to add to this worksheet, depending on the hazard.

Examples of the types of information to fill in for Columns 3, 5, and 6:

Column 3: Type of Property/Resource (include, but not limited to, buildings, structures, objects, sites, and districts)

Column 5: Structural System (e.g., concrete, wood frame, and steel)

Column 6: Primary Material(s) of Property/Resource (e.g., brick veneer, concrete, and plaster)

Building Data Requirements by Hazard

Building Characteristics	Flood	Earthquake	Tsunami	Tornado	Coastal Storm	Landslide	Wildfire
Building Type/Type of Foundation	■	■	■		■		
Building Code Design Level/Date of Construction	■	■	■	■	■		■
Roof Material				■	■		■
Roof Construction				■	■		■
Vegetation							■
Topography	■				■	■	■
Distance from the Hazard Zone	■		■		■	■	■

Inventory Historic Property and Cultural Resource Assets (page 2 of 3)

Hazard: *Flood*

Date: *January 8, 2007*

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
Name and Address of Asset Subject to Hazard	Date of Construction/ Creation	Type of Property/ Type of Resource	Square Footage	Structural System	Primary Material(s) of Property/ Resource	Current Function/Use	Current Condition	Is Owner Interested in Mitigation? (Yes/No)
Hazardville Opera House 50 Main Street	*1905*	*Commercial Building*	*40,000*	*Concrete*	*Brick veneer, concrete, plaster ceiling*	*Community Center*	*Good*	*Yes (Town is owner)*
Lehman Gardens Corner of Main and North	*1840*	*Park*	*43,560*	*N/A*	*Marble statues, Granite gravestones, metal historic streetscape furniture, heirloom roses*	*Public Garden*	*Excellent*	*Yes (Town is owner)*

Column 1	Column 10	Column 11	Column 12	Column 13	Column 14	Column 15	Column 16
Name and Address of Asset Subject to Hazard (same as previous page)	Level of Property Vulnerability (High, Medium, Low)	Loss to Structure ($)	Loss to Contents ($)	Loss of Function or Use ($)	Displacement Cost	Total Loss for Hazard Event	Level of Community Value for Ranking Purposes (High, Medium, Low)
Hazardville Opera House 50 Main Street	*Medium*	*$300 K*	*$150 K*	*$30 K*	*$190 K*	*$670 K*	*Medium*
Lehman Gardens Corner of Main and North	*High*	*N/A*	*$20 K*	*N/A*	*N/A*	*$20 K*	*High*

9. Building Characteristics (for Properties) (Building Type/Type of Foundation, Roof Materials, Roof Construction, Vegetation, Topography, Distance from the Hazard Zone).

Additional information to collect for your inventory includes:

- Tax ID Number;
- Distinguishing Characteristics; and
- Party Responsible for Maintenance.

The first eight items in this list correspond to the first eight columns in Worksheet #3. The building characteristics needed for the ninth item will depend on the hazard type. See the Building Data Requirement table on page 1 of Worksheet #3 for applicable data and add the necessary number of columns to the worksheet.

This information should be entered into a computerized database in order to run queries and analyses. A spreadsheet modeled on Worksheet #3 can serve the purpose, as this data should eventually be imported into, or linked to, a GIS. If limited time is available to address all of the historic properties and cultural resources contained in your community, consider using representative properties for initial planning purposes.

Conducting a Survey of Historic Properties and Cultural Resources

If an existing inventory of historic properties and cultural resources is not available, or is inadequate, your team will have to conduct its own survey. (This inventory will prove to be an invaluable source of information for both the hazard mitigation planning process and other planning efforts.)

Although the prospect of conducting a survey of historic properties and cultural resources may seem daunting, several resources are available to assist you (e.g., you can enlist the aid of a variety of individuals, from volunteers and students to professionally qualified consultants). Moreover, several public sector professionals are available to provide guidance to your team on appropriate methodologies, funding sources, etc. Among the most important resources to tap into is the Survey Coordinator from the SHPO/THPO office, as they can assist in determining the focus for such a survey.

Additionally, your team should consult the Hazards Profile developed in Step 2 to ascertain the areas that have been identified as having a significant hazard threat. These areas should receive

Survey Guidelines

Many local and State planning and preservation offices have published guidelines on how to conduct a survey of historic properties. Readily available guidelines describe the qualifications and experience of individuals who should conduct the survey, what kind of photographic documentation is required, and what types of information are needed to complete the survey forms. One of your most useful sources of information for conducting your survey will be National Register Bulletin 24, *Guidelines for Local Surveys: A Basis for Preservation Planning,* accessible at http://www.cr.nps.gov/nr/publications/bulletins/nrb24.

Saving Time and Resources

If you cannot complete a comprehensive survey of historic properties and cultural resources located within the planning area, consider what you can do with the time available. For example, by simply examining old maps, you can identify areas where it is highly likely historic properties will be found. Additionally, taking digital photographs of representative historic properties and streetscapes may also be useful. While these activities won't yield a comprehensive inventory, they will help to make a good start.

Rapid Visual Screening for Seismic Zones

A tool available to help you quickly identify, inventory, and rank buildings most at risk from a seismic event is called rapid visual screening. This methodology uses a form for a "sidewalk survey" which the screener fills out based on visual observation of the building from the exterior, and if possible, the interior. The form includes space for documenting building identification information, including its use and size, a photograph of the building, sketches, and documentation of pertinent data related to seismic performance, including the development of a numeric seismic hazard score. To learn more about this methodology, see FEMA Publication 154, *Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook.*

Don't Develop Your Mitigation Options Without a Definitive Survey

Initial or windshield surveys can miss historic buildings or potentially historic buildings. A very important building may be located within an otherwise non-important block and lose out as a result. Disasters may also yield additional information/reveal previously hidden materials that were not readily visible before (buildings surveyed as non-historic could lose a later exterior cladding, revealing the original historic facade, as happened in the California Northridge earthquake in 1994.)

high priority for the initial survey effort, with less threatened areas to be surveyed in subsequent project phases.

Note that a historic property and cultural resource survey may be undertaken for one property or one set of resources, or for several thousand. Also note that the process for identifying below ground archeological properties will differ from an aboveground architectural survey. Surveys undertaken for archeological sites often include limited sampling and an examination of historic land use patterns. Surveys for cultural resources, such as museum collections, will also differ. While the effort and techniques are variable, the goal for such surveys is always to document important information about these resources.

Information received during the survey will be recorded on inventory forms. These forms often vary in design from State

Be Comprehensive

Your plan should also account for historic properties and cultural resources that are yet undiscovered. Certain types of historic properties—particularly those not yet identified or conserved—are also uniquely vulnerable to hazard events. During some hazard events, archeological resources previously buried or submerged in water may become exposed. For example, prehistoric sites along waterways may be unearthed by erosion due to flooding. Once-buried wells, privies, cellar holes, graves, building foundations, and artifacts may become flooded or exposed during a seismic event. A shipwreck might become dislodged or damaged by wave action. Archeological resources made of organic materials are especially vulnerable if they are located adjacent to waterways prone to flooding.

Eroded fields in Chilton County, Alabama, April 1937.

Source: Library of Congress, Prints & Photographs Division, FSA-OWI Collection, LC-USF34-025394-D DLC

to State. Regardless of whether your team is surveying a few properties/resources or is surveying districts containing large concentrations of resources, standard information should be collected and recorded on the inventory forms.

To make sure you have not missed any important piece of information in your survey, consult the various experts you identified in Phase 1, Worksheet #1.

Consider a Variety of Features

When surveying historic properties, include secondary buildings, landscape features and setting, archeological sites, and any art, artifact and antique collections, etc.

Field Surveys in Milton, Pennsylvania

The community worked with consultants to survey the historic properties vulnerable to floods. The community selected 100 properties to survey in its National Register-listed historic district, using a field survey form developed for this project. The consultants later input the results of the survey into a database that was linked to a GIS program for analysis.

URS
URS Corporation
200 Orchard Ridge Drive, Suite 101
Gaithersburg, MD 20878

Hazard Mitigation / Historic Demonstration Project

Field Survey

August 2001

Resource No.: 40
State: PA
City: Milton

1 Name(s) of resource:

2 Address/location:
38 Broadway

3 First floor elevation: 464.42

4 Estimated Elevation? Yes Sub-Zone 3

6 Preservation hierarchy: 2

7 Reproduction value:

8 Current use: apartment building

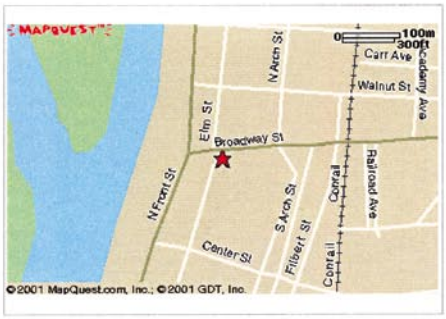
9 Original use: apartment building

10 Date of construction (or estimate): c. 1885

11 ○ Representative example

Building Type or Style: italianate

9 Location map with North at top



14 Plan shape: rectangular

15 Building type Late 19th C Commercial

16 Total square footage:

16a Estimated Square Ft?

17 Number of stories: 3

18 Major Changes: Date and explanation:
● Altered ○ Moved 1st Floor, new doors and
○ Addition ○ Destroyed windows

19 Type of construction: brick bearing

20 Foundation type: stone

21 Foundation materials: pier with infill

22 Chimney placement: no chimney observed

23 Chimney placement:

24 Roof type: flat

25 Roof material: multi-up/tar & gravel

26 Exterior material(s): BRICK
brick, wood

27 Window types:
double-hung sash (2/2 w/ curved top, 1/1 + 2/1 frame
dh -new and a new plate glass display window

29 Significant Architectural Features
3 story, 7 bay wide commercial block
-1 remaining original storefront w/ recessed entrance, divided-light section above dorrway and large plate-glass display window, wood brackets + cornice along top of windows
-brick segmented arches w/ keystones above windows, star-end tie rods, corbelled brick arcade at cornice
-1st floor 'restoration' w/ 2/2 and 2/1 DH windows, matching brackets + cornice
-original 2/2 DH windows on upper floors

30 Statement of Significance
This 3-story brick commercial block is representative of the style of commercial building constructed in Milton after the 1880 fire.

Federal Emergency Management Agency
Region III

PHMC
Pennsylvania Historical and Museum Commission
300 North Street Harrisburg, PA 17120

PEMA
Pennsylvania Emergency Management Agency

Source: *Looking to the Future: Alternatives for Reducing Flood-related Damages in Historic Communities,* Milton, Pennsylvania, June 2002

New Curatorial Facility at Timucuan Ecological & Historic Preserve

It is important to remember that some cultural resources—such as works of art, books, or historic documents—may be located in buildings that are not historic. For example, four national park units in Northeast Florida recently collaborated on construction of a new curatorial building to house their museum collections. Timucuan Ecological and Historic Preserve and Fort Caroline National Memorial, located in Jacksonville, are jointly managed, as are Castillo de San Marcos National Monument and Fort Matanzas National Monument, located an hour south in St. Augustine.

A unique sharing of resources between the parks made the facility possible. Although the Castillo had the money to fund its own building, all of its parkland is at or near sea level, between the Intercoastal Waterway and the Atlantic Ocean. After Hurricane Floyd threatened Northeast Florida in 1999, and park staff had to scramble to move the museum collection to higher ground, Castillo superintendent Gordie Wilson realized that "… we were putting people and collections at risk on a regular basis." He looked at other space in St. Augustine, but the low elevation of the whole city, as well as cost and lease agreements of rental space on a higher floor, ruled out that option. Wilson approached Timucuan Superintendent Barbara Goodman, knowing that Timucuan Preserve contains land above the 100-year floodplain.

The new curatorial facility was designed in 2001, and constructed in 2003. The result is a new 3,500-square-foot building, funded through the Castillo 80% Fee Demo program and located near Timucuan headquarters at approximately 40 feet above sea level.

The building contains two large rooms to store archives and three dimensional objects separately, as well as a much needed work area, a research room, and an office. The facility is climate- and humidity-controlled and has fire suppression and alarm systems.

Collections consist primarily of archeological objects systematically excavated from the parks as well as a large archival collection encompassing much of the history of Castillo de San Marcos. Historical objects, such as books, household goods, and architectural fragments from the Castillo are also contained in the collection.

Timucuan Ecological and Historic Preserve building, sited 40 feet above sea level, safely houses museum collections of four national parks in Jacksonville, Florida.

Photo courtesy of the National Park Service

The collections for Timucuan and Fort Caroline were previously stored in two cramped rooms with limited air conditioning, minimal humidity control, and a security system in only one area. The rooms had both exceeded their storage capacity and contained no work space. The Castillo and Fort Matanzas collections were stored in a stand-alone Bally Building at sea level.

Had the new building not been completed by spring 2004, park staff from both facilities would have been hurriedly moving collections prior to the rash of hurricanes that hit Florida later in the summer. Instead, the collections were already safe and staff could spend time securing other facilities and park resources. The four parks' museum collections are now stored according to NPS guidelines and these unique cultural resources will no longer be deteriorating in poor environmental conditions and subject to potential tidal surges.

Finally, remember that a survey without input from community members is a survey that lacks legitimacy. Therefore, it is extremely important to solicit the input of the public early in the survey process.

Once the survey is completed, the next task is to determine which of the identified properties/resources are most important to the community, and to set preservation priorities accordingly.

Sensitivity of Information

Some information on historic properties and cultural resources may be so highly sensitive or private that it should not be included in the publicly available hazard mitigation plan. Examples include **specific locations of culturally sensitive archeological sites and the value of significant archival collections, museum contents, or artifacts.** Moreover, you should treat any information you find on the vulnerability of critical infrastructure and on security plans and systems as highly sensitive. Sensitive information should not be included in the main body of the mitigation plan, but rather in an addendum to which access is controlled. For guidance on how to protect sensitive information contained within your inventory, see Phase 4, Consideration 1: Sensitivity of Information.

Task B. Establish preservation priorities.

Once the inventory of historic properties and cultural resources is complete, your team will be tasked with answering the following question: "Which property/resource would the community miss most if it were lost?"

In attempting to answer this question, your team will need to determine the value the community places on these historic properties and cultural resources. Whereas some communities define themselves by skyscrapers, others may identify themselves with a particular landscape, neighborhood, or even sculpture. These assets are considered to be "preservation priorities." Not only do these icons provide invaluable information about the past, but their loss would also provoke a public outcry. In addition to providing a "sense of place," they may also serve as potentially valuable economic centers, commercial cornerstones, or important pieces of infrastructure. Examples include the retention of historic buildings along a river's edge incorporated into a regional "riverwalk" system, or archeological sites in a flood-prone area protected and integrated into a neighborhood environmental education and discovery center. Thus, preservation of properties and resources like these would be conducive to strengthening and maintaining a sustainable community—a general goal of the hazard mitigation plan.

In Task B, the goal for your team is to establish a working hierarchy of preservation priorities for the community. Once established, these preservation priorities (also referred to in this guide as a preservation hierarchy) will provide a basis for important planning decisions that will be made by the planning team in Phase 3 of the hazard mitigation planning process—the part of the process when mitigation actions are evaluated. By viewing this hierarchy in conjunction with information on hazards, the community can

Artistic and Cultural Collections

Consider **artistic and cultural collections that are valuable assets to your community**. Many communities have created mitigation plans that focus on the uniqueness of artistic or cultural collections, and use these to achieve economic development and tourism goals. In some cases, this may represent the entire community, such as the Taos Pueblo in Taos, New Mexico. In other cases, museums that house such collections focus on particular types of cultural resources, such as the B&O Railroad Museum in Baltimore, Maryland. Other institutions may highlight significant events in a jurisdiction's history, such as the Johnstown Flood Museum in Johnstown, Pennsylvania, or may display a wide range of historic records and artifacts related to the formation and development of a town or region. An excellent example of this type of museum is the Filson Historical Society in Louisville, Kentucky, which is home to an extensive collection of original manuscripts, Daniel Boone's famous "Kill a Barr" carving, handmade quilts, Civil War artifacts, photographs and prints, and the most extensive collection of antebellum portraiture in Kentucky.

Storage Procedures

Developing appropriate storage procedures for moveable heritage (e.g., collections of artifacts, special collections of a local library, school, or college, and written histories) will likely be an important part of your plan. For example, you may wish to relocate significant items stored in hazard-prone areas or buildings to less hazard-prone areas.

Communicate Regularly With Your Planning Team

Throughout the priority-setting process, you must communicate regularly with members of your hazard mitigation planning team. If goals and objectives whose implementation could threaten historic properties or cultural resources are advanced, you will want to voice your concerns and resolve potential conflicts. An example of this would be the selection of a structural diversion mitigation alternative that would result in the demolition of a significant number of buildings in a designated historic district. Conversely, if you find that preservation potentially complements other mitigation goals, you will also want to make that known. An example of this might be the acquisition of land that achieves multiple community goals, such as preserving open space, maintaining natural features, and enhancing recreational opportunities.

consider ways to reduce disaster-related damage with a view to also preserving a community's character. Given the potential abundance of information on historic properties and cultural resources in a community, setting preservation priorities is essential. Although each resource in your inventory may have an interesting story to tell, it is unlikely the community has the immediate ability to provide each historic property and cultural resource an equal level of attention in the hazard mitigation plan. To establish your preservation hierarchy, you will first determine the community value of each historic property and cultural resource, then organize your results by order of priority.

If you are having trouble creating a preservation hierarchy, consider asking for advice for a creative solution from a local planner, professional mediator, or a college class studying community planning.

Introduction to Worksheet #4

You will use **Worksheet #4: Determine Community Value for Historic Property and Cultural Resource Assets** (see the example on page 2-19 and blank worksheet in Appendix C) to determine the level of community value. To arrive at this overall value, your team must first rank each asset in the categories listed in Columns 1–6 of Worksheet #4, which roughly correspond to the variables listed above. Then, qualitatively add the results of Columns 1–6 and fill in Column 7. Record this total in Column 16 of Worksheet #3. Although these two worksheets use rankings of high, medium, or low, any range of numbers, colors, symbols, or other signifiers can also be used to ascribe value.

1. Determine community value.

While all of a community's historic properties and cultural resources are important, some do a better job in visually reflecting the community's history, some are more important to the local economy, and some are better able to convey important information about the past. Moreover, the significance of some assets may not be immediately obvious to the outside "expert." What may strike an outsider as an unimpressive artifact or piece of property may in fact be highly meaningful to the community. Thus, a variety of variables (e.g., economic importance or public sentiment) contributes to the overall value each historic property and cultural resource in your inventory holds for the community.

List the name and address of vulnerable historic properties and cultural assets. For each asset (row), fill in Columns 1 to 6. Define High, Medium, and Low for Columns 3, 4, 5, 6, and 7 at the bottom of this worksheet (optional). Fill in Column 7 by qualitatively adding Columns 3 to 6. Enter the results of Column 7 in Column 16 of Worksheet #3.

Name and Address of Asset	Column 1 Historic Designation (National Register, Local Landmark, etc.)*	Column 2 Geographic Context of Significance (National, Tribal/ State, Local)	Column 3 Level of Significance (High, Medium, Low)	Column 4 Public Sentiment (High, Medium, Low)	Column 5 Economic Importance (High, Medium, Low)	Column 6 Degree of Integrity (High, Medium, Low)	Column 7 Total Level of Community Value (High, Medium, Low)
Hazardville Opera House *50 Main Street*	*NR-Listed*	*State*	*High*	*Low*	*Medium*	*Low*	*Medium*
Carruth House Museum *22 Primrose Lane*	*Local Landmark*	*Local*	*High*	*Medium*	*Low*	*High*	*Medium*
Carruth Archives *35 North Street*	*Not Listed*	*State*	*Medium*	*Medium*	*Low*	*Medium*	*Low*
Lehman's Garden *Corner of Main and North*	*NR-Listed*	*National*	*Medium*	*High*	*High*	*Medium*	*High*
Downtown District *(Main Street)*	*NR-Listed*	*Local*	*Medium*	*High*	*High*	*Medium*	*Medium*

*The designation level does not automatically correlate to the level of community value for ranking purposes.

New Uses for Old Structures

The structure pictured here is not what immediately comes to mind when we think of a historic property, yet it has great community value. Constructed circa 1850, this acorn-shaped gazebo is located in downtown Silver Spring, Maryland, and is all that remains of the estate that gave this city its name.

Photo by Mark Edwards, URS Group, Inc., 2005

Another unusual structure valued by its community is the Transfer House in Decatur, Illinois, built in 1895 to serve streetcar riders from the center of a downtown intersection. After streetcar service ended in 1936, the Transfer House serviced the bus lines. When the square was reduced in 1962 in the name of highway building, the Transfer House was moved to nearby Central Park. It languished there, serving as a shopper's resting place and, in season, as Santa's headquarters, until 1970. It was then renovated for use of the Downtown Decatur Council as offices and public information center.

Top: Vintage postcard illustration of the Transfer House, Decatur, Illinois.
Bottom: Renovated Transfer House in Central Park, Decatur, Illinois.

Source: H. George Friedman, Jr.; postcard collection
http://www-faculty.cs.uiuc.edu/~friedman/decatur/Decatur.htm

A Great Source of Information – State Historic Preservation Plans

As a condition of the receipt of Federal matching funds from NPS, SHPO offices are required to develop what are known as State historic preservation plans. These plans help guide each State's approach to the identification, evaluation, and protection of historic properties. These plans integrate historic preservation into broader planning systems at local, regional, and State levels.

Each of these plans has a statewide focus, and usually describes key organizations that are active in historic preservation in each State. Each plan requires broad public involvement to ensure that the vision, issues, and goals of each plan are truly representative of a broad cross-section of the State. Preservation-relevant information on social, economic, political, legal, and environmental conditions, and trends, is an important component of each plan. Including information about these conditions is important, and helps shape how each State develops its program priorities, and carries out its historic preservation activities. Each plan also includes information on a wide range of historic properties, and often identifies specific property types that will be a special focus of preservation activities. Such plans may also contain information on cultural resources, if these resources are of concern to the public and professionals across the State.

State historic preservation plans represent broad statements of public policy regarding historic preservation. Your hazard mitigation planning team should employ these State historic preservation plans as general information guides, rather than technical encyclopedias that represent the sum of all knowledge regarding historic properties in a given State. Used in conjunction with data from State inventories, National Register listings, and historic context data, they represent invaluable information sources that should be actively used in shaping your hazard mitigation plan.

You should contact your SHPO office directly to obtain the most up-to-date version of this document, which is often available via the Internet. The NPS' Historic Preservation Program Planning unit also provides readily accessible and updated information on these plans, as well as contact information in each State. Information current as of October 2004 is included at: http://www.cr.nps.gov/hps/pad/stateplans/planlist.htm.

Due to the profusion of such variables, determining community value is not a science; however, it is still possible to approach the task in a structured way. Often local jurisdictions and States have already developed information that will help you determine community value of certain properties and resources. Local governments, private non-profit historic preservation organizations, and SHPO offices have often developed plans that specify some of this information. As part of this task, you should check with your local historic preservation planner or SHPO for this information.

As you work with your community in setting preservation priorities, you may identify additional variables that factor into what the community considers valuable. By understanding how historic properties and cultural resources are important in other areas of

Unique Preservation Priorities

The values you use to establish your preservation priorities are unique to the community. It is possible that your community's preservation values may conflict with those of the larger jurisdiction, such as the county or State. For example, while your community may focus its preservation efforts on the oldest historic properties, State preservation goals may highlight the need to better protect and enhance more modern examples of historic properties, such as early 20th century residential communities. In such cases, you do not have to accept the priorities of the larger jurisdiction. Rather, you should document in your plan the process you followed to determine your preservation priorities. In this way, it will be clear to the community, county, State, or anyone else who reads the plan why you are pursuing a given course of action.

Community Value of Cultural Resources

In developing your preservation priorities or hierarchy, it may not be easy to determine the community value of cultural resources, such as archival collections and other moveable objects. There are, however, some basic questions you can answer to help you understand how some cultural resources may hold a greater value than others. For example, does the resource contain information relating to the surrounding community? Is it highly usable?

Usability of a cultural resource is one key characteristic to consider. Is the resource organized or curated in such a way that its important information can be accessed by the public? If your cultural resource is an archival collection, does it have a finding guide?

In addition, you may wish to evaluate how unique your cultural resource is. For example, is the information contained in a collection unique or is it duplicated in another collection stored at another institution or site?

your community's life, you will be able to make a more informed choice about how to best protect those historic properties and cultural resources. The following list of variables acknowledges FEMA's desire to encourage communities not only to consider the historic significance and informational value of an asset, but also to take into account other factors when making decisions about historic properties and cultural resources, such as economic potential. These variables are:

- Public Sentiment;
- Economic Importance;
- Geographic Context of Significance;
- Level of Significance; and
- Integrity.

The next section will discuss each of these variables in depth. Careful consideration of these variables in relation to the resources contained in the inventory will help to determine the overall value of the community's historic property and cultural resource assets.

2. Determine overall community value.

By now, your planning team should have considered and evaluated a range of factors to determine the overall community value of the historic properties and cultural resources contained in its inventory. These would include public sentiment, potential economic importance, geographic context level, type of significance, and integrity. Taken together, all of these factors will be combined to generate an overall community value for each asset. Perhaps your community feels that it is appropriate to put more emphasis on one category than another; if so, you can consider the use of weighted multipliers.

Throughout your assessment of these factors, your planning team has been recording on Worksheet #4 the degree to which each factor contributes value to each asset within your inventory. To determine the overall community value of a specific asset, combine all the ranks assigned to that asset across all the factors noted in Columns 1–6 of Worksheet #4. This composite rank is your overall community value for that asset. You should record the value first in Column 7 of Worksheet #4 and then in Column 16 of Worksheet #3.

With the establishment of your preservation hierarchy, you are now ready to revisit the hazards you identified back in Step 1 and estimate the losses to the resources prioritized in your preservation hierarchy in Step 4.

Variables for Developing Community Value

Public Sentiment

Your assessment of public sentiment should be based on actual input from the public, rather than just your intuition. Public input will help you identify those resources held in high regard by the community (some of which may not strike an outsider as particularly impressive), as well as those which create less public sentiment, yet are still significant in their own right. You may have recorded the level of public sentiment towards your community's historic properties and cultural resource as you researched in Phase 1 what has been done to date to protect these assets, and later as you undertook your inventory in Step 3 of Phase 2. If your team has determined the level of public sentiment for an asset in your inventory, that level should be entered into Column 4 of Worksheet #4.

If your team does not know how the community feels about certain assets, there are a variety of methods that can be used to gather community input. Three effective methods are public meetings, questionnaires, and visual definition surveys. At public meetings, interested individuals have an opportunity to express their thoughts and reach consensus. In the questionnaire, respondents may be requested to list significant structures known to them. In the visual definition survey, community members are asked to place adhesive stickers on a large poster board of their community to highlight areas they believe to be of high significance. Once you obtain the public's input, enter your results in Column 4 of Worksheet #4.

Economic Importance

Historic properties and cultural resources do considerably more than provide a community with a unique sense of place. They can also provide an important attraction for potential residents and tourists. Examples include historic buildings used as museums and educational centers, as well as larger geographic areas such as Pike's Place Market Historic District, a healthy, bustling community of merchants and residents in Seattle, Washington. Furthermore, neglected historic properties may be eligible for tax credits and other incentives for proper rehabilitation. Most importantly, these

Disasters and Heritage Tourism

The rain from Tropical Storm Alberto fell for 11 days. In one day alone, the town of Americus, Georgia, was inundated by 21 inches of rainfall. The commercial district of the town of Montezuma, Georgia, comprising 60 historic buildings, found itself covered by 14 feet of water. By the time the 500-year flood event ended, President Clinton had declared 78 counties in the State eligible for Federal disaster assistance.

Federal officials estimated damage at over $1 billion. Agricultural losses alone exceeded $100 million. Approximately 50,000 people fled their homes. The floods damaged more than 18,000 buildings, and destroyed more than 250 historic buildings. Thirty-three people perished. These numbers alone, however, do not fully convey the devastating impact of Tropical Storm Alberto upon the State of Georgia and its economic infrastructure.

Although one local newspaper reported that some considered Montezuma a ghost town that couldn't come back…it did come back. A combination of Federal, State, and private non-profit funding was used to rebuild the town, which learned that historic preservation can be the foundation of economic and physical growth. The effort, in turn, brought a new industry—heritage tourism—to Montezuma, generated new life to the downtown area, and helped bring citizens together in a common cause. But if the communities wrecked by Tropical Storm Alberto had taken action well before the flood, they might have been able to reduce damages and losses from the flood.

historic properties and cultural resources are nonrenewable and cannot be replaced or replicated. While potential economic importance is not the only reason a historic property should be prioritized, it is an important consideration in the decision-making process. Often local decision-makes are unaware of the economic potential of these properties. Showing decision-makers how these properties can be economic assets will help in ensuring that they are considered for preservation and enhancement as part of the hazard mitigation planning process.

Examining local and regional planning data may give you an idea of the potential economic importance of the historic properties and cultural resources in your inventory. Are some of your properties located in a zone targeted for redevelopment and future investment? Are they already an important anchor of the local economy? Answers to these questions will help you understand how historic properties and cultural resources can contribute to a community's economic future.

Economic Importance of Historic Properties and Cultural Resources

Thought should be given to the role these resources play in creating a diversity of housing options (e.g., converting warehouses into apartment lofts) and generating additional benefits to the community (e.g., serving as a revitalization engine).

Once the economic importance of assets in the inventory has been determined, it should be entered into Column 5 of Worksheet #4.

Historic Designation

Historic properties and cultural resources in a community may already have been designated as such under local historic preservation ordinances, State landmarks, or the National Register. It is likely, though, that many historic properties have not yet been evaluated. These properties should not automatically be discounted. It is important, therefore, to recognize past efforts and indicate designation or lack thereof of each asset in the inventory in Column 1 of Worksheet #4.

Evaluating Significance

Geographic Context of Significance (National, Tribal/State, Local). One way of determining significance is to evaluate properties or resources using a prescribed set of criteria. One of the best available sets is the Criteria for Evaluation developed by NPS, which is used to determine a historic property's eligibility for listing in the National Register. The basis for a historic property's significance rests on one or more of the following four factors (additional information is provided in Appendix A – Glossary):

- Events important to broad patterns of our history;
- Lives of persons important in our past;
- Architectural and engineering design and construction; and
- Information important in prehistory or history.

Historic contexts can help your team evaluate the significance of properties contained in your inventory. Specifically, a historic context is used by historians to compare a specific property type with other similar historic properties. Historic contexts that have been developed over the past two decades are usually on file in SHPO and THPO offices, and in some cases in local historic preservation agencies.

Historic Contexts

Documents that specify certain themes, geographic areas, and chronological periods that provide perspective to evaluate a historic property's significance. Historic contexts have been developed on a variety of geographic levels or scales. The geographic scale selected may relate to a pattern of human development, a political subdivision, or a cultural area. For example, a local historic context represents an aspect of the history of a town, city, county, cultural area, or region. A State historic context allows evaluation of a historic property when it represents an aspect of the history of the State as a whole. A national context would be employed when a historic property represents the history of the United States and its territories as a whole. Regardless of the scale, the historic context establishes the framework through which decisions about the significance of related historic properties can be made.

NPS has made extensive information on historic contexts available to the public, including information on approximately one-third of the 77,000 historic places listed in the National Register. As components of Multiple Property Submissions (MPS), information on groups of properties is available via the Internet. For more information, go to http://www.cr.nps.gov/nr/research/contexts.htm.

As your team creates a list of preservation priorities, the process of establishing significance must be handled with care and diligence. Ultimately, there is no easy litmus test for defining significance; some of the challenges your team may face are described in the sidebar to the right. The careful use of a rigorous evaluation process and established criteria will help achieve community consensus in this important portion of the inventory process.

Once the geographic context of significance of historic properties and cultural resources has been determined, the significance level should be entered into Column 2 of Worksheet #4 - the geographic context level.

Defining Significance

Not all historic properties and cultural resources in your inventory will be equally significant or exceptional, however much they may appear to be. Properties with more significance than others might be those that are easily identifiable with historic trends, or that serve as exceptional examples of an architectural form or style. Among this subset of resources, you must still make comparisons. For example, although buildings associated with important historical figures may already have been identified and evaluated, their levels of significance may not have been compared.

Significant buildings might not always be large and impressive, but may actually be quite modest, such as a row of workers' houses with simple front porches, closely set to the street. Although humble-looking, they may contain design elements that evoke a bygone era. Indeed, certain features may define a building's character and link it with its historical past or architectural style—its ornate exterior construction materials, its interior room organization, or its placement within a working agricultural landscape. On the other hand, other features of the same building may contribute little to an understanding of the building's history or overall significance.

Likewise, cultural resources with little value on the open market may be priceless to your community—for example, diaries or artwork produced by early residents, or an original first edition of the local newspaper from its inception 150 years ago. Other cultural resources may be valuable for their sheer rarity—an irreplaceable sculpture collection, a set of rare books, or antiques that once belonged to some renowned person.

The process of defining significance will take time and careful analysis. For example, although an important labor leader was born and raised in a certain house in your community, it may be the small apartment where he formed his labor union that is the more significant site. In another example, although a community has many streets containing examples of post-World War II suburban housing, it may be the street with the largest intact collection of the same type of house, with the same type of landscape, built by the same developer, which has the greater level of significance. Thus, the street nicknamed "Ranch House Heaven" would merit greater recognition in the evaluation process due to its abundance of ranch houses. Because it so thoroughly typifies a postwar ranch-house streetscape, it serves as an important example of postwar housing. In summary, training a critical eye on the evaluation process will ensure success in your efforts.

Level of Significance (High, Medium, Low). Whereas the geographic context of significance helps you understand where a property or resource is important, the level of significance helps you understand just how important that property or resource is. In other words, is the resource simply a representative example of a particular property type or historic trend, or is it an important and exceptional example?

When determining community value, it is useful to look at the level of significance of a historic property or cultural resource. The level of significance will provide you with some important information about the character and nature of the resource, which may prove useful as your team proceeds to define overall community value. For the purposes of this guide, the level of significance is defined in the following manner: High = Exceptional property or resource important to maintaining the unique character of the community; Medium = Important representative example which contains some unique details; and Low = Important, but other representative examples exist in the community. Fill in the level of significance in Column 3 of Worksheet #4.

Once you have determined the designation (or lack thereof) and level of significance, you may wish to consider combining the two variables. For example, you might categorize historic properties as "National Register Listed-Local Significance" or "Unevaluated-Regional Significance."

Closely tied to level of significance is the integrity of a historic resource, discussed in the following section.

Integrity

After assessing the geographic context and level of significance of the historic properties and cultural resources in the inventory, the next step is to assess the integrity of those assets. Simply put, the integrity of a historic property is how well it conveys its significance. Remember that integrity focuses on the features of a historic property, and is not the same as condition, which pertains to appearance. The ability of a historic building to "tell its history"—to demonstrate historic themes and trends in a certain place and time period—heavily depends on its integrity.

The Seven Aspects of Integrity

The National Register uses seven aspects of integrity to assess the eligibility of a historic property. Even if you are not assessing National Register eligibility, an understanding of these seven aspects of integrity will help guide you through determining the overall integrity of a historic property. These seven aspects of integrity are location, association, setting, materials, design, feeling, and workmanship. More information on assessing integrity is available from NPS in Chapter Seven of its Bulletin #15: *How to Apply the Criteria for National Register Evaluation,* found online at http://www.cr.nps.gov/nr/publications/bulletins/nrb15/nrb15_7.htm.

Assessing Your Conservation Needs

Professional associations such as the American Institute for the Conservation of Artistic and Historic Works (AIC) maintain an extensive guide of qualified conservators experienced in a range of specialties, including books and paper, photographic materials, objects, paintings, architecture, wooden artifacts, and textiles. These conservators may be able to assist you in assessing the current conservation needs of your cultural resources, and may also be able to help you develop a site-specific disaster emergency plan for cultural resources. This free guide is available directly through AIC as well as on its Web site, located at http://aic.stanford.edu/public/select.html.

Renovation or Modification May Not Diminish a Building's Integrity

Someday, a recent remodeling or alteration might itself be considered historic. Therefore, significant architectural features may not always date from the time of original construction. For example, the relatively recent addition, in 1920, of wood clapboard siding on a remodeled log cabin dating back to 1840 does not necessarily diminish the building's physical integrity. The siding in itself may be a historic design element and may not diminish the integrity of the property as a whole. For more information on this topic, see NPS Technical Brief #35, *Understanding Old Buildings: The Process of Architectural Investigation* by Travis McDonald, at http://www.cr.nps.gov/hps/tps/briefs/brief35.htm.

Blythewood has three distinct sections: the 1820s main block (center), 1880s shed-roofed addition (left), and 1920s Colonial Revival addition (right). Prince Georges County, Maryland.

Photo by Craig Tuminaro, URS Group, Inc., 2005

Summarizing Survey Results

Communities summarize the results of historic property integrity evaluations in a variety of ways. For example, the City of Chicago recently completed an ambitious project—a citywide survey of historic properties. More than 17,000 buildings or structures were identified as having at least a minimal level of significance. In order to better understand the significance and integrity of all of these properties, the City developed a color-coding system in which red properties were significant on a City, State, or national level, and orange properties were significant on a community or neighborhood level. As it turned out, only 300 of the 17,000 properties were categorized as "red," with 9,600 categorized as "orange." The system also assigned categories of green, yellow-green, and yellow to represent different degrees to which buildings had undergone alterations. Finally, "blue" properties were those constructed too recently to be considered for evaluation for significance, but whose significance may be reevaluated as time passes.

When evaluating integrity, it is important to document and evaluate all contributing historic design features. The removal or replacement of important design elements, such as windows and siding, may prevent a historic property from depicting some of its historic and architectural themes.

This process may also afford your team with an opportunity to evaluate the current condition of cultural resources, especially in regard to their ability to withstand hazard-related damage. While some museums and other repositories may have already begun this process, there is a wealth of information available to assist in this effort.

Once you have evaluated the integrity of each historic resource in your inventory, you should indicate the degree of integrity in Column 6 of Worksheet #4.

Not All Historic Properties and Cultural Resources are Created Equal

You should resist the temptation to consider every historic property and cultural resource as equally important in your preservation hierarchy. Remember that you are creating a preservation hierarchy that will help planners prioritize mitigation actions in the hazard mitigation planning process. As difficult as it may be to consider, some properties and resources in the hierarchy will need to be less of a priority than others. In the case where the area is small, intact, original enough, or of high integrity, then every historic property and cultural resource may rate as equally important.

Mapping Historic Properties and Cultural Resources

If you have a number of historic properties and cultural resources, your team may wish to create a map to display these. This map can be created by color-coding the community value assigned to each asset on a base map or using a GIS (see GIS discussion on page 2-8). A glance at the completed map will reveal a bell-curve distribution of community value for resources: a few resources of either high or low value, and several of average (medium) value. Likewise, you will find this same bell-curve distribution among the individual factors that comprise community value (e.g., a few resources of very high or low integrity, and many of average integrity).

Ultimately, this mapped preservation hierarchy will serve as an invaluable aid to your planning team as it attempts to prioritize mitigation options during the mitigation planning process. For example, highly significant areas, where preservation is a top priority, may be the focus of intensive mitigation efforts, whereas less significant areas may not require such concentration of effort.

This is the end of Step 3 of Phase 2. Following are questions you should ask yourself to determine if you have adequately addressed preparing your inventory and preservation hierarchy. These are followed by a Review Test you should use as a learning aid to help you check your understanding of key terms and concepts in inventorying assets.

Evaluate Your Community

- Is GIS being used for the hazard mitigation plan? Does a GIS database already exist for historic properties and cultural resources?
- If a GIS inventory does not exist, do you have an inventory in another format? If so, is it complete and up to date? Who manages and updates the inventory?
- Have you been able to show on a map—using GIS or by hand—which resources lie in areas affected by more than one hazard?
- Were you able to evaluate the vulnerabilities to different hazards of the historic properties and cultural resources in your inventory? If not, where can you find assistance to assess vulnerabilities?
- Did your preservation priorities conflict with other community plans and policies? If so, have you worked out these conflicts?
- Have you clearly justified your preservation priorities and created a record of your evaluations?

Review Test (Select one answer for each question.)

1. Where can you check to make sure you have all the existing data you need on historic properties and cultural resources in your community?

   a. Your local planner.

   b. SHPO/THPO office.

   c. Local and State non-profit historical and cultural organizations.

   d. All of the above.

2. A GIS is useful for:

   a. Providing rules of order for contentious public meetings.

   b. Producing maps that display many types of data that are tied to a particular location.

   c. Telling you where you can find more information on historic properties and cultural resources.

   d. None of the above.

3. If a GIS is not available, you should:

   a. Give up.

   b. Compile your data on a computerized spreadsheet based on Worksheet #3.

   c. Plot the location of historic properties and cultural resources by hand on a USGS map or a flood map of your community.

   d. Undertake the actions described in b and c.

4. The level of community value for ranking purposes is based on:

   a. An exact mathematical formula.

   b. The geographic context of significance only.

   c. The best judgment that the team makes after evaluating an array of variables that contribute to community value.

   d. None of the above.

5. A property can be considered historic and worthy of consideration in the hazard mitigation plan only if it is listed in the National Register, a State landmarks list, or a local landmarks list.

   a. True.

   b. False.

6. Which of the following, in your opinion, should rank first in the preservation hierarchy? Second? Third? State your reasons.

   a. A block of bungalows, some of which have been greatly altered, that were designed by a prominent local architect and date back to the 1920s.

b. A privately owned house that is listed as a local landmark and that serves as an outstanding example of the Queen Anne style.

c. The library, which was constructed in 1890, is listed in the National Register, contains diaries and photographs of the community's founders, and is an excellent example of the Neoclassical architectural style.

d. None of the above.

(Answers in Appendix D – Answers to Review Tests.)

Hazards US (HAZUS)

FEMA's Mitigation Division recently released HAZUS-MH MR1 (HAZUS-Multi-Hazard Version 1.1), an updated and revised version of HAZUS-MH, a powerful risk assessment software program for analyzing potential losses from floods, hurricane, winds, and earthquakes. Included with the new release are an updated version of the Building Inventory Tool (BIT), the Inventory Collection Survey Tool (InCAST), and the Flood Information Tool (FIT). These three data input tools have been developed to support data collection. InCAST helps users collect and manage local building data for more refined analyses than are possible with the national level data sets that come with HAZUS. InCAST was released in 2002 with expanded capabilities for multi-hazard data collection. BIT allows users to import building data and is most useful when handling large datasets (over 100,000 records), such as tax assessor records. FIT helps users manipulate flood data into the format required by the HAZUS flood model.

Federal, Tribal, State, and local government agencies and the private sector can order HAZUS-MH free-of-charge from the FEMA Distribution Center.

Please visit the FEMA Web site for more information: http://www.fema.gov/hazus/.

Step 4. Estimate Losses

Step 4 will address the question "Which historic properties and cultural resources would result in the most financial damage to the community in the event they were damaged or destroyed?" In this step, your team will bring together the information gathered in Steps 1–3 to estimate the potential losses to the community's historic properties and cultural resources due to hazard events. To do this, your team will need to assess the level of damage as a percentage of structural and content replacement value, and functional and displacement value. See **Worksheet #5: Estimate Total Losses for Historic Properties and Cultural Resources** (see the example on page 2-31 and blank worksheet in Appendix C) for this step.

Before you begin to estimate losses, first check to see if these calculations have not already been made as part of the hazard mitigation planning effort. If so, you can simply use these estimates, making appropriate adjustments for historic values.

Additionally, you are strongly advised to review FEMA 386-2 before delving into Step 4 of Phase 2. The loss estimation tables provided in Step 4 of FEMA 386-2 should be used to complete Task A. These tables have been adapted from various sources, including Means Square Foot Cost publication, Hazards U.S. (HAZUS), and FEMA's Benefit-Cost Analysis module. For more a detailed analysis, refer to the source(s) listed for each table.

In using these tables, you will find that loss estimation tables have been developed for floods, earthquakes, and coastal storms, but not for tornadoes, landslides, tsunamis, and wildfires. In these cases, you can base your loss estimations either on the full value of historic properties and cultural resources located within a given hazard area or on past community experience with those types of

Make a copy of this worksheet for each hazard of concern. Note the date and the hazard at the top of the worksheet. List each historic property or cultural resource asset. For each asset (row) calculate the structure, contents, function, and displacement losses. Enter each loss and total loss on Worksheet #3, as indicated.

Name/ Description of Structure	Structure Loss					Contents Loss				
	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure (Worksheet 3, Column 11)	Replacement Value of Contents (Professionally Appraised for Historic Contents)	X	Percent Damage (%)	=	Loss of Contents ($) (Worksheet 3, Column 12)
Hazardville Opera House	$1,000,000	X	30	=	$300,000	$500,000	X	30	=	$150,000
Carruth Archives	$200,000	X	20	=	$40,000	$250,000	X	20	=	$50,000
Downtown District	$3,000,000	X	30	=	$900,000	$750,000	X	30	=	$225,000
Lehman Gardens	N/A	X	N/A	=	N/A	$200,000	X	10	=	$20,000
		X		=			X		=	
		X		=			X		=	
				Total Loss to Structures	$1,240,000				Total Loss of Contents	$445,000

Name/ Description of Structure	Loss of Function Cost					Displacement Cost					Structure Loss + Content Loss + Function Loss + Displacement Cost (Worksheet 3, Column 15)
	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	=	Total Function Loss ($) (Worksheet 3, Column 13)	Displace-ment Cost per Day ($)	X	Displace-ment Time	=	Total Displacement Cost ($) (Worksheet 3, Column 14)	
Hazardville Opera House	$1,000	X	30	=	$30,000	$1,000	X	190	=	$190,000	$670,000
Carruth Archives	$300	X	22	=	$6,600	$100	X	126	=	$12,600	$109,200
Downtown District	$5,000	X	30	=	$150,000	$7,500	X	190	=	$1,425,000	$2,700,000
Lehman Gardens	N/A	X	N/A	=	N/A	N/A	X	N/A	=	N/A	$20,000
		X		=			X		=		
		X		=			X		=		
				Total Loss of Function	$186,600				Total Displacement Cost	$1,627,600	$3,499,200
											Total Loss for Hazard Event

Loss Estimation Tables

A loss estimation table projects the losses likely to be sustained due to a specific type of hazard event (e.g., floods) based on observed past damages. Estimated losses are provided for different magnitudes of the hazard and are expressed as a percentage of replacement cost.

Using Loss Estimation Tables

Currently, no standardized loss estimation table or damage curve exists for historic properties and cultural resources. Therefore, the loss estimation tables provided in FEMA 386-2 should only be used as a broad planning tool for estimating losses to historic properties and cultural resources. You may wish to develop alternative tools for loss estimation, or highlight historic properties slated for detailed loss analysis in the future. Moreover, loss estimation tables and standardized damage curves represent the cumulative data on average loss gathered from many thousands of hazard-prone buildings. Many of these buildings may not be representative of the historic buildings in your community. For example, they may be of more recent construction or of a different construction method. Although loss estimation tables and standardized damage curves are an imperfect tool, they may still be an important aid in the hazard mitigation decision-making process.

Estimating Seismic Rehab Costs

FEMA has two publications to aid your team in estimating seismic rehabilitation costs. FEMA 156, *Typical Costs for Seismic Rehabilitation of Existing Buildings Volume 1 – Summary,* and FEMA 157, *Typical Costs for Seismic Rehabilitation of Buildings Volume 2 – Supporting Documentation.* Both publications can be ordered through the FEMA Publications Warehouse by calling 1-800-480-2520.

hazards. For example, if your community is vulnerable to wildfires, your estimate of loss to a wildfire would be based on the number of assets, such as infrastructure, timber, and other community resources, that were destroyed in past wildfire events. For further explanation on how to use these tables, see FEMA 386-2 page 4-3.

Task A. Determine the extent of damages.

It is important to remember that potential losses to a historic property or cultural resource go beyond the immediate dollar value of materials and labor needed for repair. Your total estimate of the costs of expected losses will take into account several different types of losses, including the following:

- Losses to Historic Properties or Cultural Resources (Column 11 of Worksheet #3);
- Losses to the Contents of the Historic Properties (Column 12 of Worksheet #3);
- Losses to the Use and Function of Historic Properties or Cultural Resources (Columns 13 of Worksheet #3); and
- Losses due to Displacement Costs (Column 14 of Worksheet #3).

In Task A, you will calculate the expected losses to the structure and content, along with the functional loss and displacement cost. In Task B you will add these losses together to obtain total loss estimates for each asset and for the hazard as a whole.

Worksheet #5 will help guide you through the four types of calculations required to estimate losses to structures, contents, functional downtime, and displacement. You will make these calculations for each hazard identified in Step 1 of this risk assessment.

1. Estimate losses to structure.

Before you can calculate the estimated percent damage to a structure, you must first determine the replacement value of the resource. As discussed below, arriving at the replacement value of historic properties and cultural resources requires careful consideration of historic design features.

While several methods exist for determining a fair market value for historic properties, especially buildings, no established method is available for determining a replacement value for historic

properties. It is a difficult task to place a dollar value on the craftsmanship exhibited by many historic properties, particularly when the types of materials and skilled labor that went into such work are no longer readily available. It is nearly impossible to provide an accurate valuation when craftsmanship is truly unique. Assigning a replacement value to certain cultural resources, such as works of art, original photographs, or documents may be even more difficult.

Despite this challenge, defining a reasonable replacement cost allows historic properties and cultural resources to more effectively be integrated into the hazard mitigation planning process. Replacement values for historic properties and cultural resources can vary significantly. For example, methods for treating historic properties and cultural resources following a disaster can deviate significantly, ranging from standard repair and rehabilitation to a more careful (and often more expensive) level of museum-quality conservation or restoration. Moreover, the costs of materials required for rehabilitation often vary widely from region to region.

As you develop an idea of the replacement value of your historic properties and cultural resources, it is important to remember that these resources are non-renewable resources—they cannot truly be replaced by duplicates or facsimiles.

One way to determine replacement values for what are essentially irreplaceable resources is to combine standard cost estimating techniques used for new construction with approximate costs of post-disaster rehabilitation based on the *Secretary of the Interior's Standards for Rehabilitation of Historic Structures*. These guidelines, as well as other guidelines from NPS, will also help in determining replacement values for historic properties. Of great assistance will be the documentary photographs and field notes you took during your survey of the property in Step 3. For appraising cultural resources, it may be necessary to work with a professional appraiser or experienced conservator. Reviewing insurance policies may also help you to estimate their replacement value. More detailed methods for replacement valuation are described in the section that follows.

Replacement Value

A replacement value represents the approximate cost of the contemporary reconstruction of an existing building, structure, or cultural resource. The replacement value is used in determining the cost-effectiveness of various hazard mitigation alternatives.

Involvement of Property Owner in Determining Replacement Value

Owners may also be a valuable source of information on the replacement value of historic properties and their contents. Some institutions or landowners, however, may be hesitant to reveal the actual value of their properties. These owners should be assured that they can provide planners with the dollar values they require for planning purposes, but that the amount will be classified as sensitive and not included in the plan. Additionally, if it makes the owners more comfortable, they can cite a value range—between $100,000 and $120,000, for example—instead of a precise value, or state the value of the contents as a percentage of the structure's value.

Some institutions may not know the value of their artifacts or parts of their collections. In these cases, they can report the percentage of their holdings that are considered unique or irreplaceable. This figure can still be useful in prioritizing mitigation actions.

Recommended Methods for Replacement Valuation of Historic Properties

In estimating losses to a building, you must first determine the replacement value of a historic property. One recommended method for determining the replacement value of historic properties is to organize information in a standard valuation format using a common construction costing guide, such as the one published by RS Means. Such costing guides place buildings and structures into several different quality-based categories of per-square-foot construction costs, based on such factors as height and level of detail and craftsmanship.

How do I determine a replacement value of a historic property?

Using a common construction costing guide, you should:

- Determine the appropriate style category to which the property belongs by examining the pictures provided in the guide. Look for similar design features, as well as level of ornament and detail.
- Establish a basic square-foot cost based on the basic structural system, using extra costs for other structural features such as chimneys and porches. These extra costs classifications are listed in the guide.
- Use the local construction cost multipliers provided in the guide to find the construction cost multiplier appropriate for your community; use this figure to calculate your final cost.

For unique property features, consider using additional multipliers specific to your community or site-specific cost exceptions.

You may notice that some of the new buildings in your community resemble certain historic structures. This is not surprising, since certain popular architectural styles have often been revived throughout history. Because many contemporary buildings or structures listed in the RS Means guide and other similar construction costing guides are alike in basic external appearance to historic buildings and structures, it is relatively easy to place many historic properties into different categories of construction costs.

However, due to the high level of architectural detail that is often present in historic properties, many historic buildings and structures should be placed into a higher Means or construction guide category indicating a higher level of detail or construction quality. In addition, you should adjust your estimate to account for local construction costs and any unique or site-specific characteristics. For example, certain exceptions and allowances should be made for unique decorative features, such as curved glass windows, turrets, or detailed cornices. A qualified preservation architect, a contractor experienced in historic building rehabilitation, or other appropriate design or construction professionals will be able to assist you in the development of site-specific or unique cost exceptions and allowances.

Perhaps your community has some highly unusual, one-of-a-kind historic properties and cultural resources for which there is no easy comparison or cost category. These might include places and structures as diverse as a sod house, a traditional cultural landscape feature, or a unique example of commercial roadside sculpture. For these truly unique assets, you should make a list of their most unusual or unique aspects. For example, a property may serve as the venue for an annual community cultural gathering, or be an exceptional example of architecture that draws

tourists regionally or nationally. Once you have compiled your list of unusual features, examine it for those items which have a well-defined dollar value. This may include annual costs associated with the continual upkeep of unique design features. When standard cost estimating techniques are inadequate for determining a replacement value for a highly unusual historic property, you can explore alternative methods of replacement valuation. If you do decide to pursue other methods, remember to keep a written paper record justifying your decisions.

If your community is undertaking a large-scale hazard mitigation plan encompassing hundreds or even thousands of historic properties, it may lack the time, money, or other resources needed to develop detailed individualized replacement costs, especially those requiring multiple cost exceptions for historic design features. Although these more detailed estimates provide a greater degree of accuracy, your community can instead develop a specialized multiplier for each historic property that you add to the standard estimated replacement value for similar standard, modern construction to account for locally unique cost considerations. This multiplier should be based on the average costs of potential post-disaster rehabilitation of historic design features found in the *Secretary of the Interior's Standards for Rehabilitation*. Such a multiplier will be useful if many of your community's historic properties have similar or typical historic features.

To formulate this community-specific multiplier, you may want to investigate a variety of local or regional sources, such as the following:

- Insurance claims and post-disaster reports for historic properties and cultural resources in your community, or for similar properties facing similar hazards in other communities in your region.
- Local, State, or Federal financial incentive programs, that encourage appropriate rehabilitation of historic properties (e.g., tax credits for rehabilitation). Do the figures used by these programs accurately reflect the potential costs for post-disaster rehabilitation? Could these figures be used in support of a multiplier for your project?
- Your SHPO/THPO, as well as local professionals experienced with historic buildings, may be able to tell you the typical features and costs associated with rehabilitating local historic properties.

The needs of your community will determine whether you choose to establish a multiplier or pursue a more detailed analysis. Should you choose the multiplier, community needs will also determine the means by which you gather cost data to develop the multiplier.

Remember that you probably will not find a perfect match for every historic property in your preservation hierarchy. This means that replacement value data generated using either a costing guide or a multiplier will be approximate, and not exact. The replacement cost you assign to an essentially irreplaceable resource is, at best, imperfect. If you encounter concerns about replacement valuation, you can remind those concerned that many other factors about a historic property or cultural resource can influence the decision-making process.

Once you have determined the structural replacement value of each historic property and cultural resource (when applicable) in your preservation hierarchy, you should multiply it by the percent damage expected to occur from a particular hazard event using the loss estimates tables in Step 4 of FEMA 386-2. Record that value in Column 11 of Worksheet #3.

2. Estimate losses to contents of historic properties and cultural resources.

An additional consideration for estimating losses to historic properties is the replacement valuation of their contents. Many historic commercial and residential buildings contain items similar in value to those found in more contemporary buildings and structures. Certain historic properties, however (particularly museums, community centers, and historic sites), may contain valuable art, antiques, and furnishings, as well as other rare historic items. If your inventory does not list these cultural resources separately, you should include them in the contents valuation for the historic property. For these unique contents, it may be necessary to consult an antiques dealer or appraiser to determine their value or check existing insurance policies. In addition, important cultural resources such as archives or art may be located within a building that is not considered historic.

Once you have determined the replacement value of the contents of a historic property, you should multiply it by the percent damage expected to occur from a particular hazard event using the loss estimates tables in Step 4 of FEMA 386-2. The product of this calculation will be the costs expected to be incurred by a community due to losses to the contents from that hazard event. For example, if the library's content replacement value equals $225,000 and it is expected that 10 percent of its contents would be damaged by a 100-year flood, then estimated losses to these contents from such a flood would be $22,500.

Once you have estimated the content loss to the historic property or cultural resource, you should record that value in Column 12 of Worksheet #3.

3. Estimate losses due to functional downtime and displacement time.

To estimate losses due to functional downtime and displacement, you are referred to pages 4-4 and 4-5 of FEMA 386-2. Losses due to functional downtime are the costs associated with the amount of time a historic property is out of business, or the amount of revenue from visitors that would be lost if a site were destroyed. To determine tourism losses, the loss of revenue is calculated

Collections and Objects Damaged by a Disaster

To determine eligibility for FEMA funding for stabilization and treatment of collections and objects of exceptionally significant value after a disaster, see FEMA's Collections and Individual Objects Policy at http://www.fema.gov/rrr/pa/9524_6.shtm.

from the time the business is closed through the day the business resumes operations. As stated before, you can count either loss of revenue per day or loss of operating budget per day (based on the annual operating budget). To calculate functional downtime losses, multiply the average daily operating budget by the number of days that the business is closed.

Displacement costs are associated with the amount of time a business or service is displaced from its original location. A standard of $1/square foot for rent, $500/month of additional costs, and a $500 one-time cost for the initial move can be applied. While these are the default values for a residential structure, higher costs can be applied as long as the applicant can support higher values through receipts or estimates. To derive displacement costs, calculate the daily displacement cost and multiply by the number of days the business or service would operate in its temporary location.

Once you have calculated losses due to functional downtime and displacement costs, you should record those values in Columns 13 and 14, respectively, of Worksheet #3.

Task B. Calculate the total loss for each hazard.

Now that you have completed all the calculations in Worksheet #5 for each historic property and cultural resource in your preservation hierarchy, sum the dollar value of the calculated losses to arrive at the total estimated damage for each hazard event. Transfer this information to Column 15 of Worksheet #3.

Summary

With the completion of your calculations in Worksheet #5, you should have a good idea of which historic properties and cultural resources are subject to the greatest potential damage and which hazard event would produce the greatest potential losses. This information will aid you in prioritizing your mitigation actions in Phase 3.

This is the end of Step 4 of Phase 2. Following are questions you should ask yourself to determine if you collected sufficient data to carry out your calculations to estimate losses. These are followed by a Review Test to help you distinguish among the different types of costs involved in estimating losses.

Functional Downtime

The functional downtime is the number of days that a business would be closed due to damage from a hazard event before it could resume in another location.

Displacement Time

Displacement time is the number of days a business or service would operate away from its original location due to a hazard event.

Displacement Cost

Displacement cost is the expense for a business or service to be relocated to another structure because of a hazard event. This cost can include the rent for temporary building space per month and a one-time cost to set up operations in the new place.

Evaluate Your Community

- Were you able to assess the costs of each potential hazard event for each resource on your inventory? Where will you look for missing information?
- Did you determine the replacement value for unique historic properties?
- Did you remember to estimate the replacement value for contents in museums, community centers, or historic sites?
- Does your loss estimate include functional downtime and displacement costs?

Review Test (Select one answer for each question.)

1. Before you can calculate the estimated percent damage to a structure you must first determine the _____ value.

   a. expected.

   b. replacement.

   c. market.

   d. historic.

2. To calculate losses due to displacement, multiply the displacement cost per day by _____.

   a. the number of customers who stop by.

   b. the cost of all the utilities for one month.

   c. the number of days out of business.

   d. one month's rent.

3. If you do not have loss estimation tables available it is acceptable to use historic data for your loss estimation.

   a. True.

   b. False.

   c. Only if you project the historic data into present value.

   d. If FEMA gives you approval to do so.

4. To determine the value of unique resources such as historic artifacts, antiques, or valuable art to calculate the content loss, you can:
   a. Consult an antiques appraiser.
   b. Check existing insurance policies.
   c. Both a and b.
   d. None of the above.
5. Functional loss is:
   a. The cost of not being able to operate your business following a disaster.
   b. The measure by which a historic property fails to meet the standards of a modern building code.
   c. Damage to a structure caused by a natural or manmade disaster.
   d. Both b and c.
6. Displacement cost is:
   a. The cost of moving your house out of a floodplain.
   b. The cost of putting a structure back on its foundation after it has been displaced by a flood.
   c. The cost for a business or service to be relocated to a temporary location after its normal location is damaged by a natural or manmade disaster.
   d. None of the above.

(Answers in Appendix D – Answers to Review Tests.)

phase 3

3 develop a mitigation plan

Overview

In Phase 3 you will identify mitigation actions and implementation strategies for protecting your identified historic properties and cultural resources. This process consists of four major steps:

Step 1. Develop mitigation goals and objectives for your preservation hierarchy.

Step 2. Identify, evaluate, and prioritize actions.

Step 3. Prepare an implementation strategy.

Step 4. Document the mitigation planning process completed for historic properties and cultural resources.

The steps you will take in Phase 3 for protecting your identified historic and cultural resources parallel those for creating the hazard mitigation plan to address the other assets in the community. For a more detailed review of those steps, please refer to FEMA 386-3, *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies.*

Step 1. Develop Mitigation Goals and Objectives for Historic Properties and Cultural Resources

Before you identify mitigation actions for protecting historic properties and cultural resources in your community, your team must develop a set of goals and objectives. These will be used as the basis for developing appropriate mitigation actions.

Goals

General guidelines that explain what you want to achieve. They are usually broad policy statements and represent long-term, global visions. The following are examples of goal statements:

- Our community will develop ways to protect significant historic properties and cultural resources from future flood events.
- Our community will use historic properties as an economic development tool for community growth.

Objectives

Define strategies or implementation steps for attaining the identified goals. Unlike goals, objectives are specific and measurable. The following are examples of objectives:

- Protect structures in the historic downtown area from flood damage.
- Rehabilitate houses in a hurricane-prone residential historic district.

Mitigation Actions

Specific actions that help you achieve your goals and objectives. The following are examples of mitigation actions:

- Elevate three historic structures located in the historic district.
- Replace historic windows with stronger glass; new window design will match historic design.

Procedures and Techniques

Task A. Review and analyze the findings from your risk assessment.

1. Review the findings from your risk assessment.

A review of the findings from your team's risk assessment (Phase 2) will help you formulate goals and objectives that address the vulnerability of community assets. You should review the findings from each step of the risk assessment. For additional information on reviewing the findings of your risk assessment, you are referred to pages 1-2 through 1-4 of FEMA 386-3.

You should take the following steps to complete your review of the risk assessment findings:

- Note conditions in the community that contribute to hazard effects.
- Note the hazard characteristics.
- Note which historic properties and cultural resources identified in Phase 2 are located in hazard areas. Cross reference this with your preservation hierarchy, which you developed in Step 3 of Phase 2.
- Identify building design and construction vulnerabilities of hazard-prone historic properties and cultural resources. Use the results from **Worksheet #3: Inventory Historic Property and Cultural Resource Assets** from Phase 2.
- Review the community value, the composite map of vulnerabilities, and estimated losses to identify the most vulnerable areas. Again, turn to your results from Worksheet #3, Phase 2.

2. Develop a list of problem statements based on these findings.

Based on your team's review of the risk assessment, you should next develop a list of problem statements for each hazard. By the time you are done, you may find that you have a long list of problem statements to address.

Several examples of problem statements are provided below:

- The historic lighthouse is threatened by erosion and coastal flooding.
- The downtown historic district is threatened by multiple hazards, including earthquakes and wind storms. Repetitive

hazard-related loss has encouraged disinvestment, and current zoning tools do not promote economic growth in the neighborhood.

- The town's oral history archives are currently stored in a basement, which is prone to flooding and is not safe from fire.
- Property owners are not aware of hazard-related threats to historic properties.

Task B. Formulate goals.

1. Develop proposed goal statements.

Group your problem statements and see what common theme runs through them in order to begin formulating goals. One way to formulate your goals is to turn these problem statements into positive statements of what you want to do to create a stronger community, State, or Tribe. For more information on developing goal statements please refer to pages 1-5 and 1-6 of FEMA 386-3. Remember that your goal statements should not identify specific mitigation actions, but identify the overall improvements you want to achieve. Example general goals follow:

- Enhance the ability of vulnerable historic properties and cultural resources to withstand the impact of hazards while maintaining their integrity.
- Minimize losses to areas of high economic value, including local landmarks in the downtown district.
- Encourage and support efforts to identify, evaluate, and designate historic properties and cultural resources.

2. Review existing plans and other policy documents to determine if your goals conflict with other plans.

In Phase 1, your team collected existing plans (preservation plans, comprehensive plans, zoning and economic development plans, transportation plans, etc.) and other policy documents. Review these documents to ensure that their priorities do not conflict with the ones you have established for your community's historic properties and cultural resources. You do not want to spend time and energy on formulating goals, objectives, and mitigation actions for protecting your community's historic properties and cultural resources only to discover that they conflict with other community plans. This is particularly true for historic properties, which are sometimes considered as an afterthought in other planning decisions. When you encounter such conflicts you do not have to

Individual Structures of High Significance

If you are focusing on a single structure of high significance, check to see if it is included in an existing Historic Structure Report, Cultural Landscape Report, or Master Plan which outlines preservation priorities. Certain cultural resource collections may also have existing conservation and care plans associated with them.

abandon a goal or the objectives and mitigation actions that stem from them, but you do need to address the conflict to develop common goals. Such goals may include protecting private property and critical public facilities, avoiding disruptions to the local economy, and sustaining local character and identity.

Task C. Determine objectives.

Objectives are more specific and narrower in scope than goals. They expand on the goals and provide more detail on the ways to accomplish them. Please review page 1-7 of FEMA 386-3 for more detail on determining objectives.

The following objectives shape the strategy for implementing one of the example goals listed in Task B, "Enhance the ability of vulnerable historic properties and cultural resources to withstand the impact of hazards while maintaining their integrity."

Objective 1: Assess appropriate methods to retrofit historic properties and protect cultural resources.

Objective 2: Promote the use of existing incentive programs such as Federal and State income tax credits and preservation easements.

Objective 3: Disseminate best management practices for protecting historic properties and cultural resources.

Task D. Gather public input.

Once you have developed your goals and objectives you need to share them with the public and gather their input. Input from the public is important for shaping and refining your goals and objectives, and for reaching community consensus on them. Allowing community members to participate in the planning process will give them a sense of ownership about the plan that will enhance their support for the plan and its implementation. As part of this effort, it is recommended that you review pages 1-8 through 1-10 of FEMA 386-3, which provide additional information on how to gather public input at this point in your planning process.

While many in the community may agree with the proposed goals, the planning team may still encounter strong differences of opinion among some community members regarding how historic properties and cultural resources fit into the hazard mitigation plan. Ensuing debates could be emotionally charged. If at this point, despite your outreach efforts throughout the planning process, community divisions or professional differences between

members of the planning team, or among government officials, arise over historic properties, cultural resources, and hazard mitigation, your team may wish to work with a neutral arbitrator or alternative dispute resolution specialist who can objectively describe the issues, goals, and objectives of multiple interest groups, and help achieve consensus.

This is the end of Step 1 of Phase 3. You should ask yourself the following questions to determine if you have adequately developed mitigation goals and objectives for incorporating your historic properties and cultural resources into your hazard mitigation plan. These are followed by a Review Test that you should use as a learning aid to help you become familiar with the concepts of hazard mitigation.

Evaluate Your Community

- Have you done a thorough job of evaluating other plans and policy documents to identify potential conflicts with your preservation goals?
- Have you gathered public input to shape and come to consensus on goals and objectives for historic properties and cultural resources?

Review Test (Select one answer for each question.)

1. Goals are:
   a. General, broad, long-term visions of what your community wants to achieve.
   b. Implementation of strategies or steps that are measurable.
   c. Specific measures, with a specific timeline and budget, to fix a specific problem.
   d. All of the above.
2. Objectives are:
   a. General, broad, long-term visions of what your community wants to achieve.
   b. Implementation of strategies or steps that are measurable.
   c. Specific measures, with a specific timeline and budget, to fix a specific problem.
   d. All of the above.

3. Actions are:

   a. General, broad, long-term visions of what your community wants to achieve.

   b. Implementation of strategies or steps that are measurable.

   c. Specific measures, with a specific timeline and budget, to fix a specific problem.

   d. All of the above.

(Answers in Appendix D – Answers to Review Tests.)

Step 2. Identify, Evaluate, and Prioritize Actions

In Step 2, you will identify, evaluate, and prioritize mitigation actions to address the goals and objectives you developed. As part of the evaluation process for determining which actions work for your community, State, or Tribe, your planning team will assess the levels of financial, staffing, and other resources you can devote to implementing your identified actions. The process of identifying, evaluating, and prioritizing mitigation actions is covered in more detail in FEMA 386-3, Step 2, and summarized below as it applies to integrating historic property and cultural resources into the hazard mitigation plan.

Procedures and Techniques

Task A. Identify alternative mitigation actions.

In Task A, your planning team will identify specific mitigation actions to address the goals and objectives that you developed. In identifying possible mitigation actions you must evaluate a range of mitigation approaches. Such an alternatives analysis is necessary to determine the varying impacts and costs associated with each action. Additionally, the Federal government mandates that such an analysis be performed for projects that entail Federal involvement or funding (e.g., National Environmental Policy Act analyses). Many States also mandate a similar alternatives analysis for State involvement.

For this task you will use **Worksheet #6: Identify Alternative Mitigation Actions for Historic Properties and Cultural Resources** (included in Appendix C) and follow the instructions located at the end of Task A. You are also referred to **Worksheet Job Aid #1: Alternative Mitigation Actions by Hazard**, found in Appendix C.

NEPA

One of the most important laws to comply with is the National Environmental Policy Act (NEPA). Signed into law by President Nixon in 1969, NEPA establishes the broad national framework for protecting the environment, including historic properties. NEPA's basic policy is to ensure that all branches of government give proper consideration to the environment prior to undertaking any major Federal action that significantly affects the environment. The NEPA process subsumes the review of proposed actions under an array of other Federal laws. To achieve improved project streamlining, NEPA and NHPA requirements are sometimes combined. For more on NEPA and NHPA, see Appendix A – Glossary.

Worksheet Job Aid #1 will help you evaluate a variety of potential hazard mitigation options for historic properties and cultural resources.

A number of approaches exist for reducing hazard-related losses to historic properties and cultural resources. In some cases, one action can protect against multiple hazards; in others, a combination of actions may be needed to protect one resource. The alternatives you identify should provide some measure of structural or physical protection to historic properties and cultural resources while maintaining historic integrity and a sense of place.

The types of mitigation actions chosen will vary from jurisdiction to jurisdiction, depending on the types of historic properties and cultural resources found, and the ability to implement one potential action over another. Generally, mitigation actions for historic properties and cultural resources fall into the following five categories:

1. Prevention.
2. Property and resource protection.
3. Structural diversions.
4. Public education and awareness.
5. Natural resource protection for historic landscape features and archeological sites.

See pages 3-8 to 3-22 for an explanation of the five categories of mitigation actions you should consider in determining which actions work for your community.

Consider All Potential Mitigation Actions

You don't want some good ideas not to be considered because of concerns over funding. At this point in the planning process all ideas should be considered and evaluated.

Evaluating Mitigation Actions for Cultural Resources

Certain types of cultural resources, such as artwork, archival collections, and collections of artifacts, are uniquely vulnerable to hazard-related damage. You will want to evaluate a variety of mitigation actions to protect these cultural resources and develop appropriate storage procedures.

One aspect of cultural resource protection you should take into consideration is the impact that mitigation actions applied to buildings may have on the cultural resources stored or displayed within those buildings. Another important consideration is the relationship a resource has with its setting.

Mitigation Action Category #1: Prevention

Preventive mitigation actions involve the pre-emptive reduction of hazard-related loss through specific administrative measures taken very early on in the land development process.

Preventive mitigation actions include performance standards and regulatory actions, both of which influence the ways in which land is developed and buildings are constructed. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.

Performance Standards. Performance standards require that buildings and their components be durable enough to survive certain levels of stress from different hazard events. Ensuring compliance with performance standards will help reduce the likelihood that design elements of historic buildings and other structures located in hazard-prone areas will experience hazard-related damage. However, without careful analysis and creative design, character-defining features of these structures may be unnecessarily sacrificed in an attempt to bring them up to an enhanced code or performance standard.

In meeting performance standards, you should consider design options that attempt to maintain historic design elements while also providing enhanced strength and performance. For example, sometimes the structural systems of a building or structure may be replaced with modern materials. At other times, though, structural systems are an important, character-defining feature that should be preserved in place. In these cases, such as with a historic bridge, you may want to consider the introduction of new structural elements while leaving old ones in place, or making repairs to the existing structural system.

Older buildings that are eligible for listing in the National Register, if stripped of their original, historic building material, may lose their eligibility and the potential historic preservation tax credits that go with it. It is important to evaluate the replacement and replication of design elements alongside planning and community goals, including the use of your hierarchy or priority list.

Performance Standards for Historic Buildings

Many enhanced building codes and performance standards in hazard-prone areas were developed for contemporary construction. It is important to allow for flexibility in the design of retrofits and rehabilitations of historic buildings.

Regulatory Actions. Regulatory actions include building codes, zoning and subdivision regulations, design and site plan review, easements, floodplain buffers, and open space requirements. The introduction of regulatory measures to prevent the construction of buildings in hazard-prone areas can be a useful mitigation alternative.

Regulatory actions can provide your community with an opportunity to ensure that future growth and development avoid or minimize risk of hazard-related damage. It is important, however, that your team examine the potential impact of regulatory actions on the future of existing historic communities. For example, the introduction of setbacks in a historic community where buildings are typically set close to the lot line may result in new construction that

disrupts the unique sense of place important to many historic districts. Additionally, regulatory actions that prevent or limit growth in hazard-prone areas may lead to disinvestment in, and even abandonment of, historic areas. This is particularly important in communities with large concentrations of historic properties in the floodplain.

Thoughtful use of regulatory action can both promote economic growth and encourage disaster-resistant design. For example, in hazard-prone areas, a balanced combination of density controls or overlay zones with preservation-friendly investment incentives can foster economic growth while keeping new construction and population growth at reasonable levels. Design review and site plan review can lead to new construction that is both disaster-resistant and adheres to the scale, setting, materials, and sense of place of a particular historic district.

State Building Codes for Historic Structures

Some States have developed building codes that are specific to the rehabilitation of historic buildings. You should check to see if your State has such a code, or consider using another existing code as a springboard for discussion about code compliance.

Representative examples of such codes are the State of Maryland's Building Rehabilitation Code (available online at http://www.dnr.state.md.us/education/growfromhere/lesson15/mdp/smartcode/smartcode00.htm) and the State of New Jersey's Uniform Construction Code of Rehabilitation Subcode. This code (New Jersey Administrative Code, Title 5, Chapter 23, Subchapter 6) is available online at http://www.state.nj.us/dca/codes/rehab/index.shtml. Both codes offer alternative codes for the repair, renovation, and reuse of buildings that otherwise would not have met existing codes without a prohibitive amount of investment.

Other codes include alternative methods of performance analysis (e.g., the ABK methodology described in Appendix A for seismic-prone buildings), regional codes (e.g., the State Historical Building Code in California) and national codes (e.g., the Universal Code for Building Conservation).

National Flood Insurance Program (NFIP) and Historic Structures

The NFIP provides relief to historic structures by waiving new construction and substantial improvement requirements of the program. This exclusion from the new construction requirements serves as an added incentive for property owners to maintain the historic character of the designated structure.

The NFIP floodplain management requirements contain the following two provisions intended to provide relief for historic structures located in **Special Flood Hazard Areas**. Communities have the option of using either provision for addressing the unique needs of historic structures:

- In the definition of "substantial improvement" at 44 CFR 59.1, "alteration to an historic structure does not constitute a substantial improvement, provided that the alteration will not preclude the structure's continued designation as an historic structure." The same also applies to historic structures that have been "substantially damaged."
- The other provision of the NFIP floodplain management regulations that provides relief for historic structures is 44 CFR 60.6(a). This provision states "Variances may be granted for the repair or rehabilitation of historic structures upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as a historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure."

However, NFIP floodplain management requirements could apply to additions to historic structures if they are located in a **floodway**. All structures, including historic structures, must comply with the floodway encroachment provisions of Section 60.3(c)(10) and (d)(3) of the NFIP regulations. For example, any addition to a historic structure that expands the square footage of the structure beyond its existing footprint must comply with the regulatory floodway criteria. Under these regulations, any addition to a historic structure that results in a rise of the Base Flood Elevation will be prohibited.

Many contemporary building codes include standards for minimizing damage from hazard events. Code sections on retrofitting offer one such example. Frequently, these codes are intended for contemporary building materials and construction techniques, so it is important that you allow considerable flexibility in applying them to historic buildings.

You may want to bring together a building code official and a design professional to discuss possibilities for code compliance. Their discussion may yield creative design solutions that comply with the basic tenets of the building code while retaining character-defining historic features. Flexibility and willingness to compromise will be key.

Mitigation Action Category #2: Property and Resource Protection

This category includes basic property improvements performed by the owner, including retrofitting, elevation, relocation, and acquisition.

Basic Property Improvements. Property owners can often undertake a variety of relatively simple improvements to reduce hazards facing their property. Although these improvements provide limited protection from hazard-related damage, they have minimal impact on character-defining design features and are relatively low in cost.

Basic property improvements include floodproofing, elevating and retrofitting utility systems, creating safe rooms, and anchoring and relocating furniture and other vulnerable contents. For example, heirlooms and other cultural resources may be removed from flood-prone basements and stored in safer locations. In turn, flood-prone basements may themselves be renovated so that they can be flooded without damage to the building or foundation.

Retrofitting. Retrofitting entails the replacement or rehabilitation of building and structural systems to improve their ability to withstand structural forces. Retrofitting of historic structures can be highly intrusive because of the risk of removing character-defining design elements, or having them obscured with incompatible modern materials. It is possible, however, to design retrofitting projects in which character-defining features are preserved in place and retrofitting measures are hidden from view. In addition, reproduction of historic facades or design elements using modern materials may conform to the *Secretary of the Interior's Standards for Rehabilitation* and also maintain the National Register eligibility of a historic building.

For buildings and structures identified as vulnerable to **earthquake hazards**, structural retrofitting may be particularly useful. Seismic retrofits include the following actions:

- Introduction of sub-foundation dampers that can absorb sudden pressure.
- Reinforcement of foundation and wall connections.
- Replacement of older structural elements with modern materials.
- Reinforcement of structural connections by "sistering" old connections with new patches.
- Bracing of parapets and anchoring of nonstructural elements.

Seismic Retrofit Publications

There are several publications that provide information on seismic retrofit, including ASCE 31, *Seismic Evaluation of Existing Buildings* and FEMA 356, *Prestandard and Commentary for the Seismic Rehabilitation of Buildings.* Additionally, FEMA's forthcoming publication on seismic retrofits provides additional guidance on decision-making for seismic-prone historic properties. This guide contains information about multiple retrofit design options. In addition, this guide contains specific information about both baseline and complex tools for understanding historic building systems. Factors which might trigger the use of more complex evaluation tools include a building with highly significant and unique historic design features, unusual geologic conditions, or a difference of opinion about the outcome of baseline evaluation results.

FEMA 312, *Homeowner's Guide to Retrofitting* and FEMA 348, *Protecting Building Utilities from Flood Damage* are two publications that provide specific information on protecting structures from flood damage.

In areas prone to **wind and coastal storm events**, retrofitting projects should pay particular attention to the following:

- The strength of roofing joists and connections.
- The strength of window glass, frames, and shutters. For example, shatter-resistant glass or storm shutters could be installed.
- The construction of the foundation, particularly in areas prone to repetitive or high-velocity flooding.

To reduce the threat of damage from **fire**, retrofitting projects should consider the following:

- Upgrading mechanical and fire-protection systems.
- Balancing the need to conform to current codes and the preservation of character-defining features. For example, the seemingly random placement of modern pull-boxes, sprinklers, and sirens may disrupt the interior and historic ambience of an eighteenth-century house museum. Creative input from a preservation architect, however, may allow you to conceal fire-protection improvements and thus retain a historic sense of place inside the building.

To address vulnerability to **manmade hazards**, such as terrorism, the following retrofitting measures should be considered:

- ***Access control:*** Access can be controlled by retrofitting certain physical aspects of a building, structure, or site, or by enhancing security at points of potential entry:
  - *Security measures:* Security measures include screening visitors and limiting or prohibiting access. Although limiting public access may reduce the significance of certain historic properties and cultural resources, use of alternative public interpretation programs can still allow public involvement. For significant public spaces, work with curators and building managers to explore ways to control rather than prohibit access.
  - *Site planning and landscape design:* Although historic landscape features often contribute to the character of a site, they may not work well for controlling access. In these cases, you should ask an experienced landscape architect to design new site elements that restrict ingress while still complementing and retaining historic landscape features. For specific advice on how to design new site features for

historic properties, refer to the *Secretary of the Interior's Standards.*

- *Architectural and interior space planning:* Although interior spaces—particularly those with a high amount of human traffic, such as lobbies—can be retrofitted to serve as control points, in many historic buildings, these spaces are themselves character-defining features. To find creative solutions for adding architectural design features that control access but also preserve important features, try consulting an experienced preservation architect.

- ***Blast resistance:*** In addition to controlling access, ensuring a certain level of blast resistance may be important in retrofitting a historic structure. When recommending blast-resistant walls or window systems, you should see that their design does not conflict with existing character-defining exterior elements. Many historic buildings are significant because of exterior design qualities, while structures such as bridges are notable for exposed structural elements.

- ***Lighting improvements:*** Improved lighting may also enhance the security of a historic

Balancing Historic Preservation and the Nation's Security

Shortly after the terrorist attacks of September 11, 2001, concrete Jersey barriers were placed around the famous monuments and buildings of Washington, DC, and access to many monuments was restricted or prohibited altogether. Although the barriers provided immediate security, they were visually incompatible with DC's famous historic architecture. Moreover, access restrictions gave the perception that cultural sites were off limits. This perception, combined with the general perception that the nation's capital was a terrorist target, led to a decline in tourist activity and, consequently, tourist revenue.

In an attempt to strike an appropriate balance between increasing security and retaining the city's unique urban design, the National Capital Planning Commission formed an Interagency Task Force, whose work resulted in *Designing for Security in the Nation's Capital* (October 2001), which grew into *The National Capital Urban Design and Security Plan* (October 2002). The Plan provides specific guidance for design improvements that enhance the city's traditional open, pedestrian environment while still providing enhanced security. For example, the Plan calls for the use of hardened benches, landscaping elements such as vegetation, discrete bollards, and concrete planters to serve as security features for Federal facilities, monuments, and museums. While these improvements are clearly contemporary, they use forms and materials that are compatible with their nineteenth and early twentieth century monumental settings. The urban design features recommended by the Plan not only enhance protection and security, but also fit the city's traditional sense of place. The Plan is available on line at http://www.ncpc.gov/publications_press/publications.html.

Integrating Modern Materials into Historic Structures

Working with a highly experienced preservation architect, you can develop structural interventions that do not obscure historic design elements of a historic structure, but rather introduce modern and aesthetically rich elements that help to protect the property. For example, during a mechanical renovation of the Library of Congress in Washington, DC, new fire protection systems were integrated into the existing historic design. Sprinklers were placed in the middle of decorative floral rosettes. This illustrates how modern elements can be successfully integrated into historic fabric.

When recommending retrofitting as a mitigation action, you should ensure that new designs and new materials not obscure existing significant historic features, and retrofitting should reference important historic design elements. New hazard mitigation measures for historic properties can provide an opportunity to enhance your community's architecture while highlighting the past. More information about the appropriate design of additions to historic properties is available from your SHPO and NPS at http://www2.cr.nps.gov/tps/standguide/rehab/rehab_newadd.htm.

property or cultural resource. Before altering the lighting in and around a historic resource, however, you must consider the potential impact that interior and exterior lighting systems may have on historic elements. In highly significant interior spaces, lower lighting may be an important historic feature.

Elevation. One of the most common methods of protecting flood-prone buildings, elevation involves raising a building so that its lowest floor is above the Base Flood Elevation (BFE), or the 100-year flood zone. Where less intrusive elevation is desired, historic buildings can be elevated to below the BFE while integrating other property protection measures to reduce vulnerability to hazard-related damage.

A Local Success Story in South Carolina

113 Calhoun at inception of project.

113 Calhoun today.

Photos courtesy of 113 Calhoun Street Foundation

113 Calhoun Street is a 125-year-old, three-story house that stands in the heart of the downtown historic district of Charleston, South Carolina. Charleston, vulnerable to damage from multiple hazards (including coastal storms, earthquakes, and flooding), has one of the nation's oldest local historic district ordinances. Built between 1875 and 1880, the house is an example of the regional "single house" style. Already abandoned for several years by the time Hurricane Hugo struck in 1989, 113 Calhoun Street was in serious danger of collapse by 1997. Instead of demolishing the building, though, the City of Charleston donated it to the 113 Calhoun Street Foundation, a non-profit partnership formed between the South Carolina Sea Grant Consortium, Clemson University, and the City.

Using creative design solutions the 113 Calhoun Street Foundation transformed the derelict building into an educational center demonstrating low-impact, sustainable-living design concepts. Primary funding for the initial construction was provided by FEMA, while additional support, including the donation of products and services, came from the private sector.

It was determined that an elevation above the BFE would not have been appropriate for 113 Calhoun Street. Such an elevation would have raised the building more than 5 feet, which would not have been in keeping with the surrounding streetscape and character of the historic district. Instead, the organization elevated the house only one foot, undertaking a variety of other types of interior and exterior improvements to protect against hazards.

Even though it was elevated below the BFE, the house is still protected from minor flooding events and suffers less damage in major flooding events. Improvements to the house included the following:

- Placing HVAC ductwork at ceiling level and returns above the BFE.
- Placing electrical, telephone, and computer outlets above the BFE, with no splices or connections below the BFE.
- Installing interior decorative wainscoting to the BFE. This wainscoting consisted of water-resistant material, and could be removed to dry after a flood event.
- Designing interior structural elements so that a "continuous load path" was created that minimized weak links in the building's structural system.
- Tying hurricane clips on the roof to metal connectors that ran down three floors and were bolted to the concrete foundation. The structural improvements did not compromise any exterior or interior historic features.
- Installing traditional wood colonial shutters on the first floor, and heavy duty aluminum shutters, which offered greater protection against coastal storms, on the second and third stories.
- Replacing the existing roof with a standing seam metal roof in keeping with the district's historic character.
- Developing a special fastener system, in which screws supplemented nails, to give the roof a greater ability to withstand hurricane winds.
- Replacing the building's deteriorated original foundation of unreinforced masonry brick with a new foundation consisting of concrete footings with steel ties. This new system allowed new timber members to be bolted to the foundation, protecting against the twisting movements and other movements caused by seismic and wind forces. Brick from the original foundation was re-used as a veneer on the new foundation.

Care was taken to ensure that improvements did not compromise the exterior or interior historic features of the house, and that these features could be retained where possible. For example, almost all the building's original cypress siding was still intact and, despite years of neglect, was retained.

When construction was completed in 2000, the 113 Calhoun Street Foundation received multiple national awards for its work from organizations such as the Association of State Floodplain Managers (ASFPM) and the National Trust for Historic Preservation.

Additional information about the 113 Calhoun improvement project, including detailed plan drawings and a video tour of the house, are available online at http://www.113calhoun.org.

An advantage of elevation is that it can bring a structure into compliance with floodplain regulations and reduce flood insurance premiums for the owner. The building has to either be raised above the BFE, or raised to a lower level but combined with other property protection actions. Flood insurance can be a great benefit to owners of historic structures. If the structure is kept in compliance with NFIP regulations and is damaged in a flood, the structure has a greater likelihood of being properly repaired because the owner can afford the repairs thanks to the insurance.

Elevation is often relatively cost-effective, with a number of qualified contractors available to perform the work. Before elevating a property, however, owners must ensure that a contractor has the experience and qualifications required to elevate historic structures. Your SHPO may be able to offer you additional advice on elevating buildings.

Publications on Elevating Flood-Prone Structures

FEMA has developed two publications that provide information on elevating flood-prone structures: FEMA 312, *Homeowner's Guide to Retrofitting* and FEMA 348, *Protecting Building Utilities from Flood Damage.* These can be ordered free of charge from the FEMA Publications Warehouse.

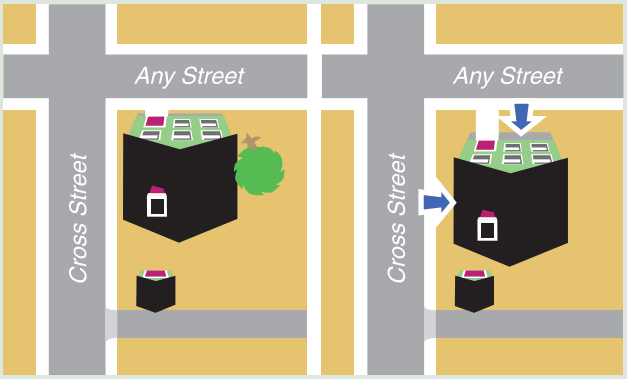
Because elevation may alter the appearance and scale of a historic building and redefine its relationship to its setting, it may have a negative impact on a building's character-defining features. Every effort should be made to replicate or approximate the original scale and setting of the building when elevating it. If the building is raised only several feet, elevation should not severely alter scale (see top figure on the right). Additionally, you can recommend the manipulation of certain landscape features to reduce the visual impact of a slight elevation. By adhering to the *Secretary of the Interior's Standards for the Treatment of Historic Properties* and by minimizing elevation, a building's original historic setting, scale, and distinctive features may be preserved.

Trying to retain original scale and setting is particularly important when employing another method of elevation, i.e., regrading the site and placing fill beneath the building in an attempt to maintain the original distance between building and grade. Special care should be taken when elevating a building set within a consistent street wall. For example, if the front doors of a block of houses in a historic district open directly onto the sidewalk, elevating the building may necessitate a stairway, which in turn would necessitate a setback further from the sidewalk (see bottom figure on the right). This would disrupt the building's relationship to surrounding buildings. A preservation-sensitive alternative would be the elevation of floors within the building, particularly feasible in historic commercial structures with tall ceilings, or elevating a neighborhood of structures rather than a single building.

Effective Elevation

Elevation can be an effective mitigation action if designed and constructed appropriately to withstand flood forces. Elevation is a practical solution for flooding problems, but the flooding conditions and other hazards at the site must be examined so that the most suitable technique can be determined. At a minimum, the foundation of the elevated structure must be able to withstand the expected loads from hydrostatic pressure, hydrodynamic pressure, and debris impact resulting from a flood. The foundation must also be able to resist undermining by any expected erosion and scour.

Regrading of elevated building.



Elevation can affect setback from the street.

Source: *Looking to the Future: Alternatives for Reducing Flood-related Damages in Historic Communities,* Milton, Pennsylvania, June 2002

Offsetting Mitigation Actions

To offset the impacts of mitigation measures involving ground disturbance—such as foundation work during an elevation project—partial excavation might be considered when an archeological site is identified. This type of excavation would allow professional archeologists to conduct a data recovery excavation of artifacts potentially buried in the surrounding ground. The cultural artifacts recovered during these meticulous excavations would then be studied and curated in an archive.

Another offsetting measure would be the development of community-based histories. These documentary projects could include any of the following:

- A recording of oral histories;
- A compilation of written memories;
- The production of a historical documentary on video or for posting on the Internet;
- The conservation of historic artifacts, documents, home movies, and historic photographs as part of a documented archival collection; and
- Museum exhibits that document and explain the importance of local historic events to regional and national history.

A Local Success Story in North Carolina

The town of Belhaven, North Carolina, along the Pungo River, is subject to repeated flooding. In its last flood event, over 60% of the town's buildings were damaged, including most of the buildings in the National Register-listed Belhaven Historic District. In an effort to retain the town's historic and economic link to the waterfront, the decision was made to elevate 379 properties in place rather than relocate them to higher ground or demolish and rebuild them.

With assistance from the North Carolina SHPO office, plans were developed for an elevation project that would best preserve the historic character of the district. In the plans, frame buildings were raised onto concrete block foundations faced with brick veneer. Brick buildings were elevated onto continuous concrete block foundations, which were also faced with brick veneer. A projecting brick course was used to demarcate where the original house ended and the new foundation began. Additional guidance was drafted for preserving porches, railings, balusters, and steps, and for replacing old materials with appropriate new materials where necessary.

To prepare for the elevation project, large-format archival photographs were taken of each building that would be affected by the project. These photos provided a permanent record of the historic appearance of the district. Due to all these extra planning efforts for preserving its historic properties, the Belhaven Historic District was able to maintain its National Register status.

Frame building elevated on concrete block foundation faced with brick veneer. Belhaven, North Carolina.

Photo by Mark Wolfe/FEMA News Photo

By the time the next flood struck Belhaven, 32 of the planned 379 houses had been elevated. It is estimated that elevation of these 32 properties alone saved the town over $1.3 million in direct and indirect damages.

Relocation. Relocation means moving historic properties and cultural resources out of harm's way. Your SHPO/THPO may maintain a list of qualified building movers in your jurisdiction, or may be able to refer you to other projects in which historic properties were moved.

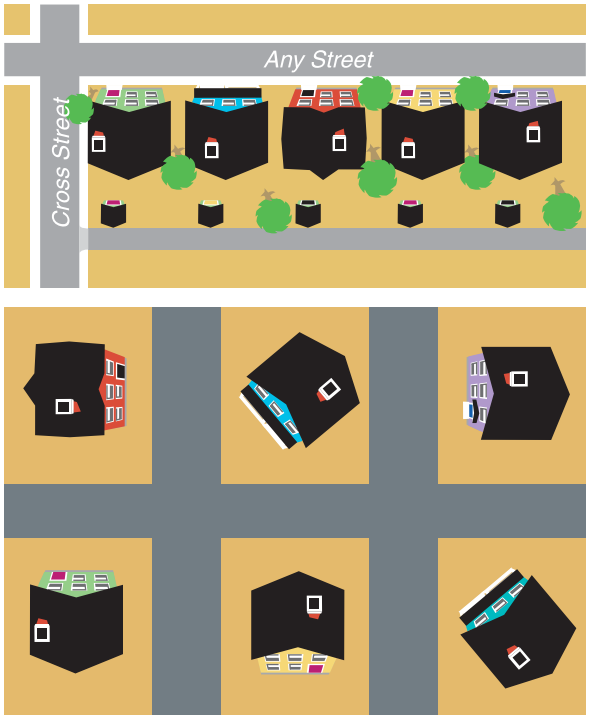
Relocation of buildings generally involves raising the building and placing it on a wheeled vehicle, usually a large flatbed trailer. The building is then transported to the new site and lowered onto a new foundation. The easiest buildings to move are one-story frame structures. Multi-story and solid masonry buildings are more difficult because of their greater weight and size; even so, large buildings such as theaters have been successfully moved. Masonry buildings, buildings with stone or brick veneer, and buildings with chimneys may require extensive bracing to prevent cracking or structural failure.

One drawback to relocation is that it can be costly if the owner of the building needs to purchase a new lot on which to relocate the building. There is also the expense of preparing the new site. Moreover, permits for this site preparation may be required by local government, highway departments, and utility companies.

Demolition

Removal of structures from the areas of risk is the most permanent form of hazard mitigation. While this may be the most practical solution for buildings subject to repetitive hazard events and that have sustained extensive structural damage, demolition of individual historic buildings or multiple buildings within historic districts has serious ramifications. When a historic building is demolished it is gone forever. Above all, indiscriminate demolition of historic buildings should be **avoided** because it can create a patchwork of remaining buildings in historic districts. Finally, if enough historic buildings are demolished in a district that is eligible for listing in the National Register, the remaining buildings may not possess sufficient significance or integrity for the district to retain its eligibility. Therefore, where technically feasible, other options besides acquisition and demolition should be considered for historic structures. Alternative options may make use of acquisition, but instead of demolishing the property, convert it to a different use. A community could acquire a historic mill in a floodplain and convert it into a public picnic area. Although structural improvements and basic exterior maintenance might be undertaken, the mill would not be occupied. Structural improvements could include modifying the foundation to increase flow-through of floodwater during a flood event.

Historic buildings often share important features such as landscaping, outbuildings, alleyways, orientation, and setback—the distance between the buildings and the street. These contributing features often help to define a neighborhood's historic significance (see top figure on right). Relocation should be carried out with extreme care to ensure that the relationship between individual historic buildings within a neighborhood is maintained. If important contributing features are neglected when historic buildings are relocated, historic neighborhoods may lose their sense of cohesiveness (see figure above).



Source: *Looking to the Future, Alternatives for Reducing Flood-Related Damages in Historic Communities,* Milton, Pennsylvania, June 2002

Historic Emergency Response Facilities

The facilities in your community involved in first response to hazard events are sometimes historic properties requiring protection from hazards. These include hospitals, police or fire stations, schools, or emergency shelters. Because these facilities are often on the front lines of post-disaster response, their level of life-safety design is important in ensuring the safety of those who work within them or are brought there for treatment, shelter, and other types of emergency service. You will want to make sure that these first responders are located in buildings with a high degree of structural stability. Therefore, your team may need to evaluate if the level of life-safety design required by these buildings can be achieved without a negative impact on their character-defining historic features. If you do find conflicts between these two design considerations, try working with an experienced design professional to identify ways to retain important historic design features while allowing for first responder functionality.

In the event that the high level of life safety design required by a critical response facility seriously conflicts with its character-defining historic features, you should evaluate other uses for the building. For those buildings whose historic features are significant enough to warrant preservation, the critical response function could be moved to a new or existing facility more appropriate to serving this function. The original building could be evaluated for new uses that would affect its historic elements to a lesser degree, as well as for the possibility of rehabilitation. It is important that the community not simply abandon a historic facility because it cannot support its current use. One creative solution for funding the construction costs of the new facility could be commercial redevelopment of the original historic facility. In this way the building is converted to a new, more preservation-sensitive use, while still maintaining—perhaps increasing—its ability to generate revenue.

In addition to emergency response facilities, other structures, such as flood control systems or shelters, may be significant to your community's past. Some of these structures may represent important advances in the history of civil engineering and community planning. If they have outlived their usefulness you should work with an experienced architect to identify and evaluate solutions that would retain their important character-defining design features.

The relocation of several buildings out of a historic district can have a great impact on it; removing a house from among its neighbors may leave an inappropriate "gap-toothed" opening in the traditional streetscape. If too many structures are removed from their original locations, the character of a historic district may be seriously compromised. You must also consider whether the new neighborhood will be compatible with the period design of the building, and whether the building itself will be compatible with its new neighborhood. One option is to relocate historic buildings in groups to new neighborhoods that are likewise historically and aesthetically compatible (see figures on previous page).

Mitigation Action Category #3: Structural Diversions

Structural diversions are physical barriers that hold back floodwater, mud, and other debris resulting from hazard events such as floods and landslides. With their ability to protect whole neighborhoods, they offer the advantage of minimizing the need for retrofitting individual structures against hazards. Floodwalls and levees are two common types of structural diversions. Other examples include seawalls and landslide protection obstructions.

Levees are embankments of compacted soil built to protect an area against floodwaters from rising waterways. If built alongside a waterway they have the potential to protect an entire community. Due to their massive size, however, levees can disrupt a

Invisible Flood Control Wall

One technological innovation does away with the wall part of the floodwall altogether, until a flood is imminent. Trademarked as the "Invisible Flood Control Wall," the aluminum planks that comprise the wall are stored offsite until they are needed. They are attached to the reinforced concrete foundation and metal sill plate, which are the only elements of the flood wall that are permanently installed along the floodway.

Invisible flood control wall in Louisville, Kentucky.

Photo courtesy of Flood Control America
http://www.floodcontrolam.com

Community Beautification Project—Decorative Floodwalls

A solution for unsightly floodwalls is to decorate them. Paducah, Kentucky, turned its huge concrete flood wall into an artistic amenity by covering it with a series of murals showing the history of the town.

The Strawberry Festival

Railroads and Railways

The Broadway Scene

The Paducah Flood

See more of the murals on the Web at http://www.kentuckylake.com/gallery/ontheroad/The%20Wall/080802wall.htm.

Photos courtesy of Dafford Murals
http://www.daffordmurals.com

community's relationship to the waterway, be extremely costly to construct and maintain, and require a large amount of land for their construction.

More practical than levees for protecting individual structures, floodwalls are typically reinforced concrete and masonry structures that protect small lots and tight spaces from floodwaters of a few feet. They can be used to protect windows, doors, or bulkheads. For this reason, floodwalls are often used in conjunction with other flood protection methods.

By significantly reducing the risk to a structure and its contents, structural diversions may make it possible to continue occupying a building during a hazard event. Another advantage they offer is that they may be built sufficiently distant from historic buildings as to be completely unobtrusive. Some flood-prone communities have considered the use of removable

floodwalls, which are constructed shortly before an anticipated flood event.

While floodwalls can sometimes be small in scale, it can be difficult to design permanent floodwalls that blend into the unique setting of a historic district. Much success in the design depends on the height of the diversion structures and their distance from historic buildings. Levees and floodwalls may not only affect the visual character of a historic community, they can restrict access to the commercial and recreational uses of the waterway.

Another drawback to structural diversions is that they often create a false sense of security when floodwaters are higher than expected. Floodwalls and levees that are overtopped during a flood offer little or no protection at all. A failing levee or floodwall can be dangerous, producing high-velocity water flows that can cause massive structural damage to properties.

Mitigation Action Category #4: Public Education and Awareness

Mitigation actions involving public education and awareness include outreach projects, real estate disclosure, hazard information centers, and both school-based and adult education programs.

A public education campaign can build on the public involvement tools used earlier in the planning process. Public education is often not enough to protect all your community's historic properties, but it can be effectively combined with other hazard mitigation actions. In the case of certain cultural resources, such as personal photographs and family collections, public education and awareness can be one of your most powerful tools.

As you explore public education as a possible mitigation alternative you may find that historic preservation organizations are sponsoring ongoing outreach efforts in the area. If so, consider ways in which public education about hazard-prone historic properties and cultural resources can be linked to existing outreach campaigns.

Mitigation Action Category #5: Natural Resource Protection for Historic Landscape Features and Archeological Sites

In addition to mitigation actions that protect historic buildings and other historic features of the built environment, your team may also want to consider mitigation actions that protect natural features that played an important role in past human activities. These natural features may either be historic properties themselves, or contribute to an understanding of historic properties. They might include the gardens and designed landscapes of historic properties, rivers, or bays that served as transportation routes, wetlands that were used for farming, or traditional cultural properties.

Natural Resource Protection Actions for Historic Landscape Features

Actions that, in addition to minimizing hazards, also preserve or restore the functions of natural systems. Some natural resources either are historic properties in themselves or contribute to an understanding of historic properties. Such types of mitigation actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Some of these natural features may also possess economic value for your community, especially if they are visitor destinations or recreational sites. You will want to carefully consider actions that would protect the most important features of these sites, such as topography and vegetation, from natural hazards.

Be aware, however, that some of these natural features, such as forested and riverine areas, may actually also comprise some of the natural hazards that threaten your community.

Mitigation actions can serve to both mitigate natural hazards and preserve the natural resources that give rise to those hazards. For example, stream corridor restoration and erosion control, watershed management, and wetland restoration can protect against flooding while still preserving the integrity of these natural resources. Likewise, forest and vegetation management can protect against the threat of wildfire while still preserving a wildlife refuge.

You will also want to evaluate mitigation alternatives for protecting locations known to contain or likely to contain buried archeological sites and artifacts. In situ archeological sites and features (which have not yet been excavated) are particularly vulnerable to exposure and disturbance by erosion, flooding, and landslides. One alternative for preserving these sites for study by future generations is to cover them over with earthen fill, which will offer some protection against hazard exposure.

While some resources, such as artwork displayed in a museum, may not have an important relationship to its setting, other resources, such as a mural located within a school, may have a very important historic relationship to its surrounding.

In selecting mitigation actions for cultural resources that have an important relationship to their surroundings, you should consider actions that maintain that relationship as much as possible. For these resources, you will want to explore options for safer storage or display before considering relocation offsite (e.g., use of water-proof containers or removal to an upper floor of the same building). Your team should also consider ways in which ongoing maintenance of the resource might reduce further deterioration, or ways to better secure the resource to its base or storage mechanism. These strategies also apply to resources that must remain onsite, or whose relocation would be infeasible.

For those cultural resources that do not have a significant relationship to their setting—often called moveable resources—relocation can be an easy way to ensure their protection. For example, an archive of historic photographs found in a flood-prone library can be relocated to the local preservation society's office located outside of the floodplain.

To protect cultural resources against tornadoes and wind-related hazard events, you should consider storing them in a safe room. A safe room is a room designed to a higher level of life-safety. These rooms are often constructed with the purpose of providing a secure location for valuables, as well as a safe refuge for people. For more information about safe rooms, please see Protecting Yourself from Tornadoes: Safe Rooms, available from FEMA at http://www.fema.gov/mit/saferoom.

Mitigation actions for cultural resources should also take into account the physical placement of these resources in relation to hazards. For example, to protect against wind events and earthquakes, resources should be kept far away from heavy objects and windows that might be broken or knocked about during a hazard event. Particularly in earthquake-prone areas, resources should be placed on secured, reinforced shelving in such a manner as to prevent their breakage during an earthquake. As discussed above, relocation of resources to a safer elevation or alternate location can offer protection against flood events.

To protect against fire, the placement of fire alarms and sprinklers should be evaluated to ensure they are appropriately placed in relation to storage or exhibit spaces. The materials and design used to construct those spaces should also be examined for their fire resistance. Some highly significant collections will need to be stored in locations with greater fire resistance (e.g., a storage area protected by a rated firewall).

Likewise, the construction and type of material used in display cases and storage areas should be examined for their resistance to water. In addition, the locations of pipes and roof leaks should be assessed, since cultural resources might inadvertently be kept in locations that are vulnerable to leaking water.

Instructions for Worksheet #6

Use Worksheet #6 to record the alternative mitigation actions you identify for protecting the historic properties and cultural resources included in your preservation hierarchy. For each of the objectives you developed in Step 1, Task C, you should make

a copy of Worksheet #6 and record that objective at the top of the worksheet, along with its corresponding goal. You will next begin the process of identifying appropriate alternative mitigation actions for addressing that objective. Once you have identified a set of alternative actions, you should list them in the Alternative Actions column of the worksheet. Additionally, at the bottom of each copy of Worksheet #6, check off the mitigation action categories that apply to the objective you wrote down at the top of the Worksheet.

As you research possible mitigation action alternatives, you will likely consult a variety of sources to learn more about each. Please see pages 2-2 through 2-6 of FEMA 386-3 for more information on reviewing existing literature and success stories, and on soliciting public opinion and input.

Once you have identified useful sources of information for each alternative mitigation action you identify, record that source in the Sources of Information column of Worksheet #6.

Now that you have identified possible mitigation alternatives, your next step is to start evaluating them for eventual selection and prioritization.

Task B. Identify and analyze State and local mitigation capabilities.

One of your first steps in evaluating the mitigation action alternatives your planning team has identified is to determine the levels of resources your community, State, or Tribe can devote to these preservation strategies. To accomplish this you should review your Tribal capability assessment or your State and local capability assessments.

For more information on conducting such a review, please refer to pages 2-7 through 2-11 of FEMA 386-3. Upon completion of your review, your team should have a fairly good idea of the types of technical assistance and funding that Tribal, State, and local governments can provide toward mitigation actions for historic properties and cultural resources.

Task C. Evaluate, select, and prioritize specific mitigation actions.

1. ***Evaluate alternative mitigation actions.***

   Now that the planning team has completed Worksheet #6 and reviewed the applicable capability assessments, it must evaluate whether the alternative mitigation actions fulfill your objectives and if they are appropriate for your historic

and cultural resources. There are several ways to develop and apply evaluation criteria. This guide discusses three methods for evaluating mitigation actions. The first is using your preservation hierarchy; the second is the **S**ocial, **T**echnical, **A**dministrative, **P**olitical, **L**egal, **E**conomic, and **E**nvironmental (STAPLEE) criteria analysis; and the third is the Benefit-Cost Analysis (BCA); they are explained in the following sections.

Your preservation hierarchy and areas of highest risk will help identify historic properties and cultural resources that should be treated with the most preservation-sensitive mitigation measures, those with the least possible negative impacts to character-defining features. The STAPLEE criteria (see page 3-27) will help your team evaluate mitigation alternatives in the context of multiple community-identified goals. The BCA will help you determine which mitigation projects are the most cost-effective for your community. By cross-referencing your results from these three methods you should be able to select the mitigation actions most appropriate to your community.

*a. **Evaluate alternative mitigation actions based on your preservation hierarchy and areas of highest risk.***

The list of preservation priorities you developed earlier will give your planning team an idea of the types of mitigation actions that are appropriate for certain historic properties and cultural resources. Generally, the least intrusive options should be considered and carefully evaluated for use on the most significant historic properties and cultural resources, while more intrusive options are considered for less significant properties and resources. With careful planning, you can help to ensure that your community faces reduced harm from hazards while retaining its unique sense of place.

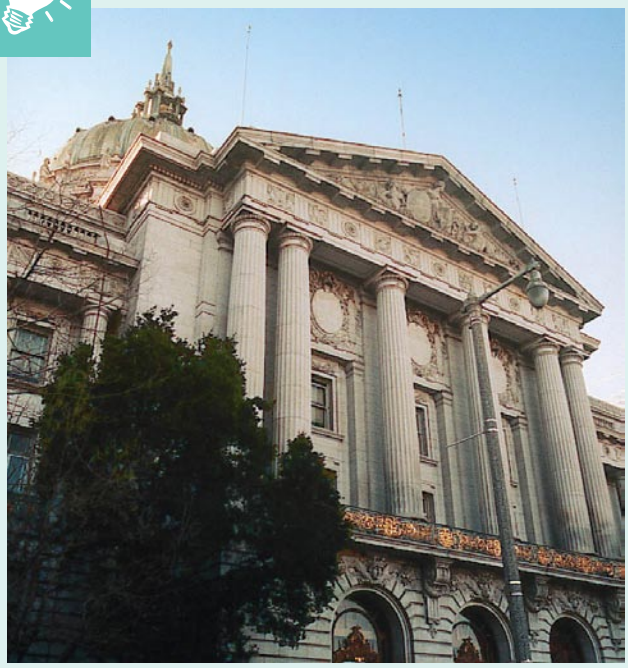
In summary, you will want to strike a balance between implementing cost-effective, possibly intrusive mitigation actions for less historically significant properties and cultural resources, and implementing more expensive, less intrusive measures for the most important historic properties and cultural resources in your community.

*b. **Evaluate alternative mitigation actions using the STAPLEE criteria.***

Pages 2-12 through 2-21 of FEMA 386-3, present the STAPLEE opportunities and constraints of implementing a particular mitigation action in your community. These are

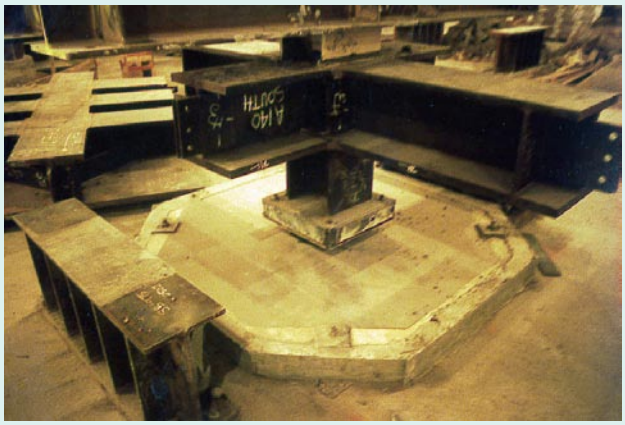
called the STAPLEE evaluation criteria, and your answers to the questions they generate will help your team narrow down its list of potential mitigation actions.

San Francisco City Hall Seismic Retrofit



San Francisco City Hall.

Source: FEMA News Photo



San Francisco City Hall Base Isolation System.

Source: FEMA News Photo

The City Hall of San Francisco, California, completed in 1915, is one of the finest examples of Beaux-Arts Classical architecture in the United States. The building is a four-story-plus-basement office block of about 516,500 square feet; it covers two city blocks, and its dome is about 300 feet tall. The City Hall is a National Historic Landmark (NHL) and is located in a NHL District. The building value is estimated at approximately $430 million with an additional $40 million in contents; and holds an average 1,460 weekday occupants.

After being moderately damaged by the Loma Prieta Earthquake of 1989, FEMA funded temporary and permanent repairs to the building, and the City and County of San Francisco (CCSF) used this opportunity to request additional mitigation funding for the seismic retrofit of the entire City Hall.

The structure was originally designed with a "flexible" first story, intended to dissipate ground movement from an earthquake before it reached the upper floors and dome. Now this type of building is recognized as having a "soft" first story, which is an extreme earthquake hazard.

Because of this, CCSF elected to construct a base isolation system for the seismic retrofit, which was estimated at $180 million.

Initially, several seismic retrofit schemes were proposed for the City Hall but some of them would have resulted in significant impact to the historic fabric and/or were extremely expensive. It was decided that due to the building's type of construction, the costs of the project, and the long-term implications for the City Hall building, a base isolation system would be the best way to protect the building and its inhabitants.

The completed base isolation design features 550 isolator bearings under all steel columns, isolators under new concrete shear walls on all sides of the light wells, and steel bracing at the dome, drum, and rotunda below. In addition to the base isolation system, the completed scope of work included asbestos removal, improved handicapped accessibility, HVAC upgrades, new telephone/telecommunications systems, and fire life safety system upgrades. City Hall staff and functions were relocated for about three years. FEMA funding for repairs and retrofit totaled approximately $121 million.

The City Hall of San Francisco is now protected by the most advanced seismic retrofit solution known today—a solution that protects both the occupants and historic architecture of this unique structure.

The STAPLEE Criteria for Historic Properties and Cultural Resources

Social: The public must support the specific mitigation actions and the overall implementation strategy. Therefore, the actions will have to be evaluated in terms of community acceptance by asking questions such as:

- If you avoid mitigation actions that affect historic properties and cultural resources, will those properties and resources be at risk to hazard-related damage?
- Will the action have a negative impact on certain historic properties and cultural resources? What is the community value and relative preservation priority of those resources?
- Does the action achieve other important community goals, such as economic revitalization?

Your SHPO/THPO, community development staff, and planning team are key team members who can help you answer these questions. Another important resource will be your findings from the risk assessment you conducted in Phase 2.

Technical: It is important to determine if the proposed action is technically feasible, has minimal secondary impacts, and will help to reduce losses in the long term while preserving the important features of historic properties and cultural resources. In evaluating technical feasibility, your team can draw upon information about historic properties and cultural resources you gathered earlier, such as the preservation priority and performance evaluation. In evaluating the technical aspects of a mitigation action for historic properties and cultural resources, you will determine what kind of solution the action would present—a whole solution, a partial one, or none. To accomplish this, you should ask the following questions:

- Is the action technically feasible?
- Are character-defining historic features affected? Are secondary impacts minimal?
- Does the action address multiple hazards?
- Does the action solve a problem, or only a symptom of a problem?
- Will other nearby historic properties and cultural resources be harmed by the mitigation action? What are the preservation priorities and community values of these resources, relative to each other?

Key team members who can help answer these questions include a qualified preservation architect and building department staff.

Administrative: Under this part of the evaluation criteria, you will examine the anticipated staffing, funding, and maintenance requirements for the mitigation action. The results of your examination should determine if your community has capabilities necessary for implementing the action or whether outside help will be necessary.

In evaluating the administrative aspect of a proposed mitigation action you should ask the following questions:

- Does the action require the input of specialized historic preservation professionals? If so, what access do you have to these professionals? Can you hire a consultant or use a volunteer or educator? What are the budgetary implications?

- If you anticipate that some actions may have substantial negative affects on historic properties and cultural resources, does your jurisdiction's staff have the time and training to understand these issues? If your community is short on staff, what delays might be anticipated?

Political: Understanding how your current community and State political leadership feels about historic preservation issues will provide valuable insight into the level of political support you will have for a mitigation action. Proposed mitigation actions sometimes fail because of a lack of political acceptability, particularly when the proposal of these actions exposes divisions among leaders about the resources in question. Identifying preservation hot spots before you have selected an action alternative will help you identify the feasibility of implementation.

To gauge the likely level of political support for your mitigation action, ask yourself the following questions:

- Are there political divisions on the subject of historic properties? Do the disagreements center on the evaluation of historic properties or on perceptions about the meaning or extent of designation?
- Have political leaders participated in the mitigation planning process for historic properties to date? Are they properly informed about the important role that historic properties can play in the community?
- Is there a local champion willing to help see the action through to completion? Does that local champion have a copy of this how-to guide and an adequate understanding of historic property and cultural resource considerations for mitigation planning?
- Are preservation and other community interests represented in the stakeholder group? Have all stakeholders been offered an opportunity to participate in the planning process? Are they aware of the degree to which your committee has evaluated preservation-sensitive mitigation alternatives?

Legal: Without the appropriate legal authority, a proposed mitigation action for a historic property or cultural resource cannot lawfully be undertaken. When considering this criterion, you will determine whether your community has the legal authority at the local, State, or Tribal level to implement the action, or whether the jurisdiction must pass new laws or regulations. Each level of government operates under a specific source of delegated authority. As a general rule, most local governments operate under enabling legislation that gives them the power to engage in different activities.

You should identify the unit of government undertaking the mitigation action, and include an analysis of the interrelationships between local, regional, State, Tribal, and Federal governments. Your SHPO/THPO and local or regional planning authority can help you understand the differences between these laws and regulations regarding historic resources. In addition, the SHPO/THPO must be consulted about certain federally sponsored projects involving historic properties.

Below are some questions you should ask in evaluating the legal aspects of your proposed mitigation actions:

- Which unit of government would undertake the mitigation action? What is

the extent of Federal involvement (e.g., funding and permitting)?

- Does the proposed action follow all applicable preservation laws and ordinances?
- Does the proposed action follow other State or Federal governmental agency requirements for which permits may be required?
- Does the proposed action follow other applicable zoning, floodplain management, land use ordinances, and building code requirements?
- Will the community be liable for the action itself or for failing to undertake action?
- Is the action likely to be legally challenged by stakeholders who take issue with the negative impacts the action might have? If so, has your community developed a dialogue with those stakeholders and evaluated all potential ways to offset the negative impacts? If significant disagreement exists, has formal mediation or alternative dispute resolution been considered?

Your SHPO/THPO, local or regional planning authority, and your community's legal counsel can help you make the above determinations.

Economic: Every local, State, and Tribal government experiences budget constraints. In evaluating the economic aspect of a mitigation action for historic properties and cultural resources you must consider both the present economic base and projected growth. You will want to closely evaluate mitigation actions that encourage economic revitalization by preserving historic properties.

Cost-effective mitigation actions that can be funded in current or upcoming budget cycles are much more likely to be implemented than mitigation actions requiring general obligation bonds or other instruments that would incur long-term debt for a community. States and local communities with limited budgets or budget shortfalls may be willing to undertake a mitigation initiative if it can be funded, at least in part, by external sources. This is why "big ticket" mitigation actions, such as large-scale acquisition and relocation, are often considered for implementation in a post-disaster scenario when additional Federal and State funding for mitigation becomes available.

In evaluating the economic criterion of STAPLEE, you should ask the following questions about your mitigation action:

- Will the action require outside funding? Can this funding be combined with existing funds for historic properties and cultural resources?
- Does the action help achieve other community economic goals, such as capital improvements or economic development? Do those economic goals also encourage preservation of historic properties?
- Has your community considered the potential economic impact if no action is taken? Will hazard-related damage discourage economic rehabilitation projects for historic areas?
- Can existing programs such as "Main Street" downtown revitalization efforts, be re-focused to relieve the budgetary burden of the action?

Environmental: The environmental impact of your proposed mitigation action is an important consideration because of public

desire for sustainable and environmentally healthy communities and the many statutory considerations (e.g., NEPA and NHPA). Some of your alternative actions may harm historic properties or cultural resources. Examples include regulatory measures that limit growth of hazard-prone areas but encourage abandonment of historic properties, and measures such as elevation projects that involve significant ground disturbance, which may damage archeological sites.

The decision to implement a mitigation action that would adversely affect historic properties should be made only after a thorough analysis of other mitigation options and consultation with a variety of parties, including your SHPO/THPO, members of the community, your planning team, and other interested groups. When such actions must be taken, you should consider additional measures to offset, or compensate, the loss or alteration of the resource. If there is Federal or State involvement in the mitigation project, you may be required to evaluate the use of preservation-sensitive options. This is especially true when the affected historic property is listed or eligible for listing in the National Register (see Phase 4, Consideration 2 for more information on this requirement).

In evaluating the environmental aspect of a mitigation action you should ask the following questions:

- Will the action threaten land, water, wetlands, endangered species, historic properties eligible for listing in the National Register, cultural resources, or other environmental assets?
- Are there mitigation action alternatives that preserve environmental resources (including historic properties and cultural resources) while also encouraging economic growth?

Instructions for Worksheet #7

Worksheet #7: Evaluate Alternative Mitigation Actions for Historic Properties and Cultural Resources (see Appendix C for blank worksheet) will guide you through your STAPLEE alternatives analysis. Before you begin the analysis, you should make a copy of this worksheet for each objective you identified in Step 1. Write this objective and its corresponding goal at the top of the worksheet, and then copy all the alternative actions you identified for that objective from the first column of Worksheet #6 into the first column of Worksheet #7. You are now ready to begin your STAPLEE analysis.

This guide covers the STAPLEE criteria as they relate specifically to historic properties and cultural resources. For more information on the general considerations of the STAPLEE criteria see FEMA 386-3.

As you determine the answers to each set of questions/considerations you develop for each STAPLEE criterion, you should score each mitigation alternative based on your answers. You will use Worksheet #7 to accomplish this scoring. On this worksheet, indicate a plus (+) if the consideration is favorable, or a minus (-) if the consideration is not favorable. For considerations that do not apply to the action, fill in N/A for not applicable. Leave a blank only if you do not know an answer.

For those considerations left blank, make a note in the Comments column of the source you should consult to help you evaluate the consideration.

c. ***Evaluate alternative mitigation actions using benefit-cost analysis (BCA)***

BCA is the last type of evaluation addressed in this guide. For a detailed explanation of how to carry out a BCA, you are referred to the Mitigation BCA Toolkit CD. This CD includes all FEMA BCA software, technical manuals, training courses, and other supporting documentation to enable you to perform a BCA. For a qualitative benefit review assessment of mitigation actions, in cases where you do not have sufficient data to perform a BCA, see FEMA 386-5, *Using Benefit-Cost Review in Mitigation Planning*.

By performing a BCA, you will bring into your alternatives analysis the important consideration of cost-effectiveness. You will attempt to answer the following questions: How cost-effective is a particular mitigation action or project? How does the cost of implementation compare to the amount of damage it would prevent?

To answer these questions, you must have an idea of the level of risk facing the historic resources for which an action or project would be implemented, the replacement value of those resources, and the cost of the action or project. You have already collected much of this information during the risk assessment you conducted in Phase 2. Other cost considerations to remember include the potential loss of local tax base resulting from alternatives such as the demolition or relocation of properties.

The end product of your BCA will be a Benefit-Cost Ratio for each mitigation alternative you have identified. A Benefit-Cost Ratio of 1.0 or higher indicates that a

Mitigation BCA Toolkit

This CD is available free directly through the BC Helpline: bchelpline@dhs.gov or 866- 222-3580 (Toll-Free).

DMA

Emphasize Costs and Benefits

DMA 2000 requires that every community submitting a plan prioritize its alternative mitigation actions with an emphasis on costs and benefits. A formal benefit-cost analysis is not mandatory, but an explanation of the analysis undertaken and why some actions were chosen above others is required. If detailed cost information is not available, a qualitative analysis will suffice.

mitigation option is considered cost effective by FEMA (i.e., the benefits of preventing hazard-related damage to the resource are worth the costs of investing in the action).

As you determine the cost-effectiveness of each of your mitigation options, you should remember that cost-effectiveness is only one consideration among many that go into your alternatives analysis. Although BCA is an effective tool for aiding the alternatives selection process, it should not be the sole determinant for selecting an alternative. BCA offers a quantitative way to compare different alternatives. Less quantifiable factors also need to be considered as you select the most appropriate actions from among your many alternatives. These include the more subjective measure of community value and the various considerations generated by the STAPLEE analysis.

By carefully considering the three methods described in this document for evaluating mitigation alternatives you can develop your own decision-making process for selecting mitigation projects. You have several indicators to balance: the relative preservation priority, the most relevant questions from the STAPLEE criteria, and the Benefit-Cost Ratio of the hazard mitigation actions.

Seeking a Proper Balance

In selecting your mitigation alternatives you will want to evaluate a variety of mitigation actions, including a balance of cost-effective mitigation actions for properties with a lower preservation priority, and less intrusive actions for properties with a higher preservation priority, which could be more expensive. The resulting balance will be a cost-effective project that preserves important community resources while providing increased protection from hazard-related damage. To find this balance you will need to take into account the overall cost-effectiveness of all the mitigation actions proposed for your community. You may want to combine multiple Benefit-Cost Ratios to provide an overall average Benefit-Cost Ratio for the community.

Evaluating Flood Mitigation Alternatives: The Milton, Pennsylvania Experience

In Milton, Pennsylvania, the community identified planning goals as part of the process for selecting mitigation actions. Foremost among these goals was to avoid demolition or relocation of historic properties. In addition, the community identified the revitalization and retention of the historic commercial downtown neighborhood as a high-priority objective. Since most of the buildings extended to the lot line and shared party walls, elevation would be difficult. Therefore various flood-proofing measures, even the elevation of interior floors, were considered the most appropriate alternative.

For Milton the BCA for flood mitigation alternatives yielded several interesting results. For individual structures the cost-effectiveness of different hazard mitigation alternatives varied little, indicating that the difference between the cost-effectiveness of acquisition and demolition, and that of relocation or elevation would be fairly small. Therefore, future flood-related damage could be mitigated without widespread demolition of historic structures. The BCA revealed that construction of a structural floodwall/levee would also be cost-effective. Although they tend to increase the effects of a flood downstream and cannot absolutely prevent flood damage, they help protect local industry and infrastructure from flooding. When the community had previously considered a floodwall, they found it was too expensive.

Stream channel modifications, such as dredging or the removal of central islands, were not found to be cost-effective. In addition to environmental impacts and high cost, they would reduce flood levels by no more than 6 inches.

The community decided that more intrusive, highly cost-effective projects (such as an elevation project with a Benefit-Cost Ratio of 1.5) would be evaluated for Milton's less historically significant structures. Less structure-altering alternatives (such as a flood-proofing project with a Benefit-Cost Ratio of 0.5) would be used for its highly significant historic properties. This project balances out some individual structures with very high Benefit-Cost Ratios for more intrusive projects, such as elevation, with individual structures that have a lower Benefit-Cost Ratio for a less intrusive project, such as flood-proofing. The more intrusive (and more cost effective) hazard mitigation alternative was employed for a historic resource that ranked lower on the preservation hierarchy; the less intrusive project (and less cost-effective) was employed for a historic resource that ranked higher on the preservation hierarchy.

Although BCA revealed which hazard mitigation options were the most cost-effective for each property, it was not the sole factor in creating multiple-property hazard mitigation actions in historic Milton.

More information about Milton's planning process for historic flood-prone properties is online at http://www.fema.gov/ehp/milton.shtm.

A Local Success Story in Wisconsin

Flooding is an ongoing part of life in the rural riverside town of Darlington, Wisconsin, having caused millions of dollars in property damage over the past decade. Following the devastating damage from the 1993 floods, the town could follow one of three routes: do nothing and continue to suffer the periodic rise of the river; move the central business district out of the floodplain and upset the local economy and sense of community; or… do something innovative.

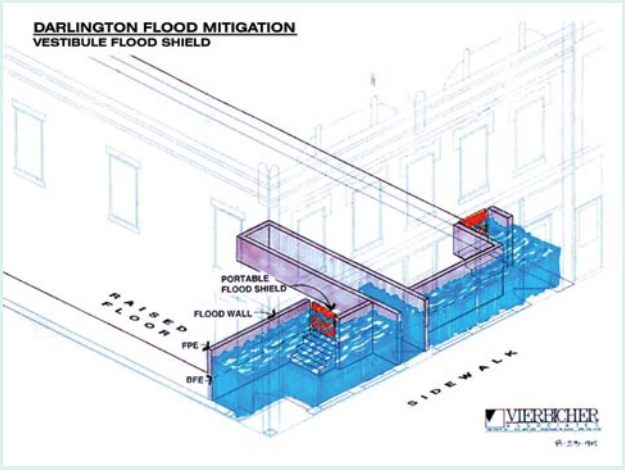
Darlington chose innovation. It found creative solutions to retain the historic charm of its nineteenth century business district while eliminating the threat of future flood devastation.

The town took advantage of the very high ceilings common to many of the older buildings in Darlington; their height allowed first floors to be elevated out of flood danger with minimal impact to other historic features. Basements were filled with sand and gravel, floodproofing that portion of the building most vulnerable to flooding, and all utilities were upgraded and raised.

All these measures were implemented without altering the exteriors or disrupting the basic historic integrity of these older buildings. Additionally, the residential area surrounding the downtown was relocated and the resulting space redeveloped as a recreational area, including a campground, a paved walking trail, and a portion of a regional multi-use trail.

These innovative techniques resulted in the successful floodproofing of the historic central business district against the 100-year flood event, as well as the revitalization of Darlington's local economy.

The successful integration of historic preservation and hazard mitigation earned Darlington a Preservation Achievement Award from the State Historical Society of Wisconsin. More information is available at http://www.fema.gov/regions/v/ss/ r5_n16.shtm.



Top: Restored and retrofitted building.
Middle: To provide additional protection against floodwater, removable watertight floodgates were incorporated into the buildings.
Bottom: Floodproofing in action in Darlington, Wisconsin.

Photos courtesy of Vierbiecher Associates

Remember that you and your team are continuously balancing multiple community planning goals in your work.

2. Select mitigation actions.

After evaluating the alternative mitigation actions, select those that are most appropriate for your community. One way to do this is by reviewing your notes on each action from Worksheets #6 and #7. Review the comment notes or expand upon them to explain any special circumstances that must be kept in mind in the next step. For example, if you found that one action is more effective when undertaken in conjunction with another, note this fact. See FEMA 386-3, page 2-25, for more information on selecting mitigation actions.

3. Prioritize selected mitigation actions.

Worksheet #8: Prioritize Alternative Mitigation Actions for Historic Properties and Cultural Resources in Appendix C provides a way to organize your mitigation actions. In this worksheet you will list the alternative mitigation actions in order of priority, as well as the goals and objectives they address, and any other relevant information you might add to your hazard mitigation plan.

You can find detailed information about prioritizing mitigation actions in FEMA 386-3, pages 2-25 through 2-28. In brief, the following should be considered before you prioritize the selected actions:

- Ease of implementation.
- Ability to achieve multiple objectives.
- The time needed for implementation.
- The possibility of being funded and implemented in a post-disaster scenario.

See FEMA 386-3, pages 2-23 through 2-25, for more information.

You can use one of two common methods to prioritize actions. In multi-voting, every team member is given a total number of votes equal to half the number of total potential actions. If a team member feels strongly about a particular action, he or she could vote for it more than once. The action that garners the most votes becomes the top priority. Another useful prioritizing technique is numerical ranking. Team members assign a ranking to each action, with the lowest number being the highest rank. You then add the ranks given to each action, and the one with the lowest number is the highest priority. Public input into the planning process can

be increased by opening up the prioritization process to a greater number of participants.

This is the end of Step 2 of Phase 3. Following are questions you should ask yourself to determine if you have adequately identified and prioritized mitigation actions that address historic and cultural resources for incorporation into your community's hazard mitigation plan. These are followed by a Review Test that you should use as a learning aid to help you become more comfortable in discussing the relative merits of various hazard mitigation actions.

Evaluate Your Community

- Does your community's draft mitigation plan contain any actions that would have a negative impact on historic properties or cultural resources?
- Have you identified and analyzed State and local mitigation capabilities?

Review Test (Select one answer for each question.)

1. STAPLEE criteria are:
   a. Standards for disaster-resistant additions to historic buildings.
   b. A checklist to use when disaster-proofing historic buildings.
   c. A method of evaluating mitigation actions to ensure that they fulfill your objectives and are appropriate for your community.
   d. None of the above.
2. A Benefit-Cost Ratio greater than one indicates that:
   a. The cost of a mitigation action is less than the cost of damage that would occur without the action (i.e., the action is cost effective).
   b. The action should automatically be undertaken.
   c. The action should automatically be discarded.
   d. None of the above.
3. Section 106 is:
   a. A portion of the tax code governing the repair of historic properties and cultural resources.

b. The section of the National Historic Preservation Act requiring the evaluation of ways to avoid, minimize, or offset negative impacts to historic properties from projects in which the Federal government is involved (through funding, permitting, etc.).

c. A standard way of designating the original rooms of historic properties from modern additions.

d. None of the above.

(Answers in Appendix D – Answers to Review Tests.)

Step 3. Prepare an Implementation Strategy

In Step 3, you will develop the strategies for implementing the mitigation actions you selected in Step 2. The implementation strategy identifies who is responsible for which actions, what funding mechanisms (e.g., grants, capital budget, and in-kind donations) and other resources are available, and the time frame for project completion. It is particularly important to focus on the coordination between the various stakeholders involved in the efforts, including your SHPO/THPO and other historic preservationists.

The process is thoroughly addressed in FEMA 386-3, pages 3-1 through 3-10, and summarized below as it applies to historic properties and cultural resources.

Procedures and Techniques

Task A. Identify how mitigation actions will be implemented.

1. Identify parties, define responsibilities, and confirm partners.

As you move toward implementing mitigation strategies for historic properties and cultural resources you will want to stay in close contact with stakeholders who have helped you throughout the planning process. They will likely have had an important voice earlier (in the identification of important historic properties and cultural resources, and the evaluation of various mitigation options) and you should give these groups and individuals an opportunity to help decide how these actions will take place.

Additionally you will want to identify resources that will help you implement your actions. You can call upon resources within local, regional, State, or Tribal government agencies, the Federal government, private sector organizations and businesses, and academic institutions. Remember to include people who have expertise in historic properties and cultural resources, including your SHPO/THPO. Together, your planning group can develop a realistic schedule for implementing prioritized actions.

2. Identify resources to implement the actions.

Funding Sources. A well-structured hazard mitigation project for historic properties and cultural resources will take advantage of funding sources that target not only hazard mitigation projects, but also a wide variety of other preservation and land-use initiatives. Please see Appendix B – Library of this guide for a listing of potential funding sources for your mitigation projects.

Carefully evaluate your prioritized list of actions and identify projects whose goals address multiple community needs at once (e.g., affordable housing, recreation, and economic revitalization). If your hazard mitigation projects address multiple community planning goals, you may be able to pursue—and combine—several funding sources. For example, the rehabilitation of a hazard-prone historic apartment building that includes low-income rental units may be eligible for funding from a variety of sources, including:

- Hazard mitigation funding;
- Tax credits for affordable housing;
- Tax credits for rehabilitation of income-producing historic buildings;
- Tax credits for elderly housing;
- Grants or other incentive programs for commercial downtown revitalization;
- Low-interest revolving loans or grants for the rehabilitation of historic buildings;
- Facade easements;
- Americans with Disabilities Act (ADA) credits and deductions available to businesses; and
- Local planning and zoning incentives.

Other types of historic properties might be eligible for assistance from other financial programs:

- Grants for historic property surveys and historic preservation planning;
- Grants for conservation and curation of cultural resources (such as artifacts and archival collections); and
- Transportation-related funding for historic buildings (e.g., Transportation Equity Act [TEA-21] enhancement program).

In evaluating funding vehicles for your mitigation projects, you should seek out incentives and partnerships that minimize financial or administrative burdens. For example, States and communities can provide tax rebates for code upgrades, offer reduced property taxes and insurance premiums to citizens and businesses taking steps to lower their exposure to hazards, offer tax incentives for rehabilitation projects, or provide lower rates for retrofit projects.

State Cooperation. Local governments often underestimate the wealth of resources that their States can provide. States are excellent sources of funding, support, and technical assistance. State geological surveys, water resources agencies, and departments of planning or natural resources often have useful data related to hazard identification and risk assessments. States may also have a GIS department that can provide data and support. Your SHPO may provide excellent information and technical expertise. If agency staff has the time, consider holding an interagency meeting or conference call early in your project.

Additionally, regional or statewide historic preservation and urban planning conferences (as well as broad public events, such as regional fairs) can be excellent opportunities to provide publicity for your planning efforts.

In-Kind Resources. Federal or State grants for historic properties and cultural resources often require in-kind matching funds from local or regional partners. Some grant programs may allow local communities to provide a match using "in-kind" resources in lieu of a local financial commitment; this in-kind match may include volunteer time and/or the donation of materials and services from local professionals. When analyzing the feasibility of in-kind matches, carefully evaluate how reliable and effective your volunteers will be in implementing your project.

3. Define the time frame for implementing the actions.

Task B. Document the implementation strategy.

There are many ways to present the implementation strategy; one example is contained in the adjacent sidebar.

A Sample Format for an Implementation Strategy Form

Action: (From your list of selected actions).

Goal(s) and Objective(s) Addressed: (Sometimes the action will address more than one goal and objective).

Lead Agency: (Provide the name and a brief description of the agency).

Support Agency or Agencies: (Provide the name and a brief description of each support agency).

Budget: (Provide the dollar amount or an estimate, if known; put TBD—to be determined—if not known; and/or indicate staff time if applicable).

Funding Source(s): (List the funding sources—e.g., operating budget, capital improvement budget, XYZ grant, XYZ foundation, etc.).

Start and End Date: (Indicate start and end dates; short-term, long-term, or ongoing; and milestones for longer term projects).

Task C. Obtain the consensus of the planning team.

The planning team should look at the Tribal, State, or local capability assessment (whichever is applicable) to identify resources to implement the mitigation actions. The team should also examine resources from all levels of government, private sector organizations, and universities to explore many sources of assistance.

Once the implementation strategy in this step is completed, it will serve as a roadmap for making the historic properties and cultural resources of your Tribe, State, or community more disaster resistant. With the strategy clearly laid out, your planning team has all the essential elements completed and is ready for the next step.

If your planning team has difficulty agreeing on specific mitigation actions for historic properties and cultural resources, work together to retrace your planning process. Examine earlier documents and notes and try to understand when disagreements started to arise. Next try to define specific points of disagreement. Start by identifying controversial issues or actions (such as disagreement about the demolition of a historic building, or the failure to recognize a specific historic property or cultural resource as highly significant), then move toward the larger project goals, objectives, and problem statements connected to those specific issues.

Your goal should be to find common ground. When you are able to return to the specific controversial issues or actions, revisit your preservation hierarchy and examine the feasibility of other mitigation actions that could also accomplish your shared goals and objectives. All parties should be willing to compromise in order to reach consensus. If needed, remind them that the failure to achieve a consensus will jeopardize the implementation of your plan and will likely expose your community's historic properties and cultural resources to substantial hazard-related damage.

This is the end of Step 3 of Phase 3. Following are questions you should ask yourself to determine if you have developed an adequate implementation strategy for incorporation into your hazard mitigation plan.

Evaluate Your Community

- Have you identified which person, office, agency, etc., will implement each mitigation action?
- Have you created timelines and budgets for each action?

- Have you located funding sources for the mitigation actions?

Review Test (Select one answer for each question.)

1. Examples of sources of funding to implement your mitigation actions are:
   a. Hazard mitigation grants from the government and preservation grants from foundations.
   b. Tax credits and low interest revolving loans.
   c. Economic development loans/grants and housing loans/grants.
   d. All of the above.
2. In-kind resources are:
   a. Non-monetary donations such as volunteer time, materials, and professional services.
   b. Encouraging words offered by passersby when you are working on a project.
   c. Stone, concrete, steel, and other heavy construction materials that have to be handled by machine.
   d. None of the above.
3. If the planning team is having trouble reaching consensus on specific mitigation actions, you as a team member can:
   a. Define specific points of disagreement.
   b. Hold fast to your own views even in the face of opposition from other team members.
   c. Find common ground.
   d. a and c.

(Answers in Appendix D – Answers to Review Tests.)

Step 4. Incorporate Historic Property and Cultural Resource Protection Efforts into the Hazard Mitigation Plan

You and the team have worked very hard up to this point; now is the time to pull all the pieces together that pertain to historic properties and cultural resources and integrate them into the appropriate sections of the hazard mitigation plan. The importance of protecting

historic properties and cultural resources should be clearly written following the format, terminology, and organization of the hazard mitigation plan. You should prepare the following sections:

- A summary of the planning process itself, including the sequence of actions taken and a list of team members and stakeholders who participated;
- The results of the risk assessment and loss estimation;
- Mitigation goals and objectives aimed at reducing or avoiding the effects of natural and manmade hazards;
- Mitigation actions that will help the Tribe, State, region, or community accomplish the established goals and objectives; and
- Implementation strategies that detail how the mitigation actions will be implemented and administered.

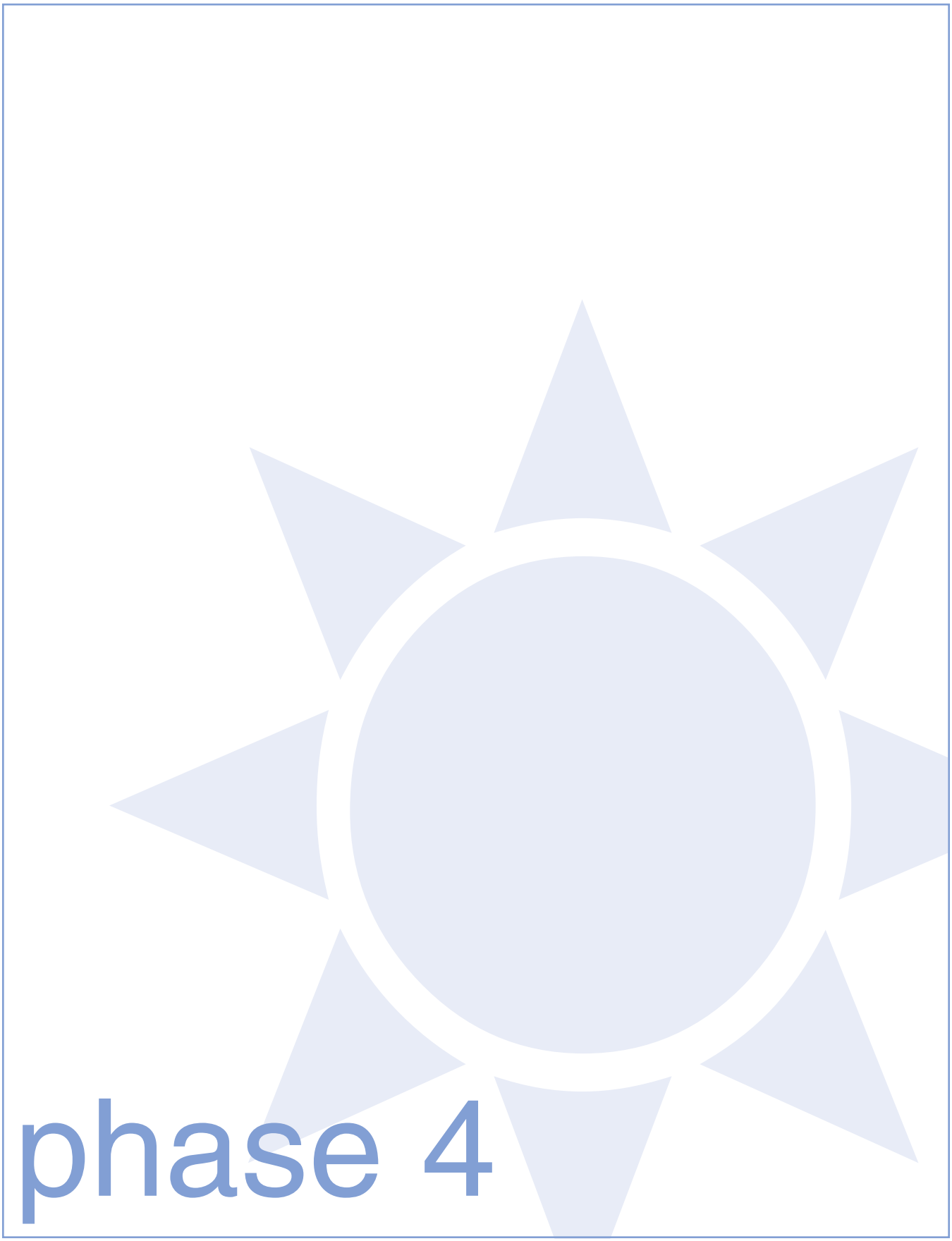
Your hazard mitigation plan should be written so that anyone who reads it can easily gain an understanding of the risks facing historic properties and cultural resources in the community, as well as the community's intended strategies for mitigating those risks.

Detailed guidance for assembling your document is contained in pages 4-1 through 4-6 of FEMA 386-3.

This is the end of the last step of Phase 3.

Summary

Planning is a continuous process. As you implement the plan you will be evaluating your progress, learning which actions succeeded and which did not—and why—and keeping track of changes in your community that may affect the relevance of your plan. Should a hazard event strike your community, some parts of your plan implementation may be suspended while post-disaster actions take priority. Also note that DMA 2000 regulations require the update and reapproval of local hazard mitigation plans every 5 years to be eligible for most FEMA funding. (States and Tribes applying as grantees must submit their plans for reapproval every 3 years.) These considerations, and others, are discussed in Phase 4.


phase 4

4

implement the plan and monitor progress

Overview

Implementation is the fourth and final phase of incorporating historic property and cultural resource considerations into the hazard mitigation planning process. The steps associated with this phase are described in detail in FEMA 386-4, *Bringing the Plan to Life: Implementing the Hazard Mitigation Plan*. Please consult this guide for basic information on implementing, monitoring, evaluating, and updating your mitigation plan. A number of considerations, however, pertain specifically to historic properties and cultural resources and form the basis for the remainder of the discussion:

Consideration 1. Sensitivity of information.

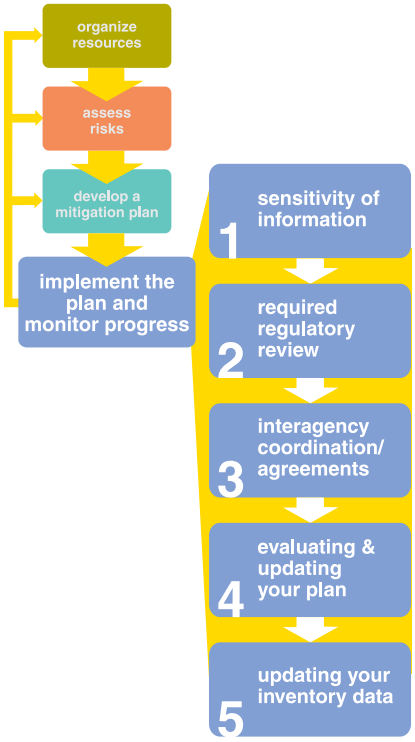
Consideration 2. Required regulatory review.

Consideration 3. Interagency coordination/agreements.

Consideration 4. Evaluating and updating your plan.

Consideration 5. Updating your inventory data.

These considerations are discussed in detail below.



Consideration 1. Sensitivity of Information

In implementing the mitigation actions identified by your planning team in Phase 3, you should remember to include in the mitigation plan any cautions regarding information deemed sensitive for public disclosure. For example, disclosing the specific location of archeological sites, or details about certain cultural practices and traditions, or information on security systems used in the protection of historic properties and cultural resources could be detrimental and result in the destruction of the very resources your team is trying to protect.

Damage to archeological sites at the Slack Farm.

Photos courtesy of Kentucky Archaeological Survey

Protecting Sensitive Locational Data

To avoid illegal removal of historic and cultural resource assets, it is important to protect specific locational data pertaining to archeological sites and/or suppress the description of a historic property's contents in public documents. However, sometimes protecting this information may not be sufficient, as the destruction of the Slack Farm site in Uniontown, Kentucky, illustrates.

Archeologists had long known about the Slack Farm site, which represented an important Native America Late Mississippian village, a community of wattle and daub houses where acres of maize, beans, and squash grew at the confluence of the Wabash and Ohio Rivers from AD 1450 to 1650. Although relic hunters had periodically visited the site to illegally dig for artifacts, the Slack family had always turned these individuals away. This changed when Mrs. Slack died. In the late 1980s, the new owner granted access to looters who paid an excavation fee of $10,000. With their rented tractors, the looters dug out graves, scattering bones and Late Mississippian pottery fragments. Today, the disturbed site sits as the looters left it.

NOTE: The desecration and destruction of over 400 graves at this site helped galvanize a coalition of Native Americans and archeologists across the United States, who called upon Congress to enact new legislation to better protect Native American human remains, funerary objects, and objects of cultural patrimony. This effort culminated in 1990 with the passage of the Native American Graves Protection and Repatriation Act (NAGPRA).

While your planning team must make decisions on a case-by-case basis regarding the release of sensitive information, your team should always consider the merit of providing such information in a general manner, i.e., without reference to sensitive details such as locations, security measures, dollar values, etc.

In the course of your team's inventory of historic properties and cultural resources, you may have documented and evaluated traditional cultural practices of a particular social group; in some cases, this information relates to spiritual beliefs that are very personal and sensitive. Your planning team should consult with social groups that have historic ties to your project area to ensure that the cultural practices you have learned about during your

inventory are not inappropriately treated in your hazard mitigation plan.

Your SHPO/THPO will be able to provide additional guidance on proper handling of sensitive information. These measures will help you to avoid unnecessary anxieties about placing your valued historic properties and cultural resources at further risk.

Consideration 2. Required Regulatory Review

As noted in Phases 1 and 3 of this guide, a second consideration that will influence your planning team's activities during the implementation phase is the requirement for compliance with Section 106 of the NHPA. Any federally sponsored undertaking is subject to review under Section 106's implementing regulations, 36 CFR Part 800, "Protection of Historic Properties." (Federal sponsorship can take the form of review, permitting, funding, or other type of involvement.) These regulations require Federal agencies, along with their State, Tribal, regional, and local partners, to evaluate ways to avoid, minimize, or compensate for adverse impacts to historic properties listed, or eligible for listing, in the National Register. Adverse impacts can, in some cases, be offset by recordation, archeological data recovery, enhancement of GIS data, public interpretation and education programs, or remembrance and symbolic transfer ceremonies.

- **Public Interpretation and Education Programs.** Design installations that interpret and explain historic resources offer one effective method to offset negative impacts to historic properties and cultural resources. These designs can include the following:
  - Simple plaques and text panels;
  - Installations and monuments that provide a creative visual interpretation of historic properties (Benjamin Franklin's house, shown here, is a good example); and
  - Heritage trails and corridors that link a neighborhood, city, or region with multiple historic properties. These may also be used to enhance existing tourism and park-related initiatives.

Franklin Court Ghost Frame, Independence NHP, Philadelphia, Pennsylvania.

Photo courtesy of Independence National Historic Park

Archeological Site Documentation in Pennsylvania

In 1999, flooding in Delaware County, Pennsylvania, severely damaged many buildings and structures, including a significant eighteenth-century stone house. Located next to a stream, this house had already experienced repeated flood-related damage. After determining that relocating the dwelling would not be feasible due to its large size and the complex engineering involved, the owners decided to have the house demolished.

So that future generations could learn about the house and its history, a detailed archival record was created. The archive included extensive large-format black and white photography, measured floor plans, a detailed written description, and a narrative history of the site. These materials were placed in a local repository.

Thus, despite the fact that a significant historic property was demolished, a complete historic record remains for the benefit of the community.

Left: 18th century stone house before demolition, Delaware County, Philadelphia, Pennsylvania. Above: Archeologists excavating and documenting the Schoonmaker site. Delaware County, Philadelphia.

Photos courtesy of URS Group, Inc., 2001

- **Remembrance and Symbolic Transfer Ceremonies.** Remembrance ceremonies sometimes can be used by community members to honor the loss of a historic property, a neighborhood, or an entire community when these have been demolished or relocated as a result of a hazard mitigation project. This type of ceremony allows those affected by the loss to come together to share their grief in a dignified and appropriate way. Ceremonies such as these also are a way to mark the anniversary of an event that has touched many people.

Symbolic transfer ceremonies can also help communities effectively commemorate the loss of one place, while moving to a new location. In the case of one community that was relocated due to river valley flooding associated with the creation of a new reservoir, an extensive number of historic properties, including sacred sites, were lost. A service was held on the old site, and then on the new site, symbolically transferring and maintaining values from one site to the other.

Before implementing mitigation actions you identified in Phase 3, it is important that your planning team officially communicate with your SHPO/THPO regarding formal Section 106 compliance. Section 106 compliance involves conducting an alternatives analysis in consultation with your SHPO/THPO and other interested parties, in which different mitigation actions are evaluated for their ability to minimize impacts to historic properties or cultural resources. Section 106 regulations also require consultation with your SHPO/THPO, including providing them the opportunity to comment on your recommended actions. Failure to secure formal Section 106 compliance can jeopardize Federal funding, permits, or approvals, and even prevent project implementation.

If your planning team has carefully followed the recommendations contained in this planning guide, you will have worked with your SHPO/THPO when you applied the STAPLEE criteria to evaluate a variety of alternative actions. If so, your team may have accomplished much of the work required for complying with Section 106.

Your team should send a formal letter to your SHPO/THPO that carefully documents how your team has followed the recommendations contained in this guide. In writing the letter, your team should seek input from State and Federal environmental review staff involved in your planning effort. If the SHPO/THPO recommends additional work before formal Section 106 compliance can be completed, various sources of information can help you to reach compliance. These include recommendations from the SHPO/THPO themselves.

If regulatory review by a SHPO/THPO is required, and your project involves Federal assistance that will adversely affect National Register eligible or listed properties, a Memorandum of Agreement (MOA) between the Federal agency involved and the SHPO/THPO is required. If your SHPO informs you that an MOA

Section 106 Project Review

Even if your community's historic properties are not listed in the National Register, the mitigation actions you recommended in Phase 3 for protecting these properties will nevertheless be subject to Section 106 review if they will be funded by Federal (e.g., FEMA) dollars or require Federal permitting. Federally assisted projects that involve certain types of historic properties that are hidden from view, such as buried archeological sites, are subject to Section 106 review due to their potential significance. Before implementation of mitigation activities that involve ground disturbance, your community may be required to make an attempt to locate these properties.

In addition to Section 106 review, your projects may also be subject to other State and local review under State historic preservation and/or archeological laws and regulations.

is required, it is not your responsibility to negotiate the MOA. You should speak with the appropriate Federal agency staff, who will coordinate and conclude the consultation process.

Consideration 3. Interagency Coordination/Agreements

During implementation, your planning team will want to continue to coordinate closely with all of the partners with whom it has been working throughout the planning process. These include your SHPO/THPO, local or regional planning entities, local building officials, and others who have helped your team to develop its goals and decide upon mitigation actions up to this point. As you implement the plan, your team may discover other interested parties and groups with historic ties to your planning area who may not have been involved in the earlier planning activities. Although it is preferable to have included these parties on your team before the implementation phase, it is important that your team open up its planning process to include these new sources of input, even if it means your planning team must revisit earlier decisions.

It is a good idea to prepare an interagency agreement between or among the involved agencies. Interagency agreements allow for the streamlining of regulatory review by providing a formal framework for integrating planning activities that are required by both the hazard mitigation planning process and Section 106 review. Redundancies are thus eliminated. For example, public input that is required during both of these processes is useful for gathering information on what mitigation alternatives are supported by the community and stand a better chance of being implemented. Moreover, an interagency agreement can expedite much of the Section 106 review work required if local, State, or Tribal agencies involved in the general mitigation planning process have or hire qualified individuals to perform the review of the various mitigation projects your team has proposed. These staff or consultants could include archeologists, historians, or preservation planners.

Interagency agreements also provide an opportunity for formalizing the implementation of actions that minimize or compensate for impacts to historic properties and cultural resources, including spelling out the procedures to follow to balance historic preservation and mitigation needs.

The Need for Interagency Agreements

Your SHPO/THPO, as well as your funding agency, can help you evaluate when the use of an interagency agreement is most appropriate.

If your team chooses not to undertake a formal interagency agreement, there are many other ways in which you can encourage interagency cooperation. Just as your team has pulled together a multitude of interests to advise on mitigation planning for historic properties and cultural resources, you can continue to engage these interests throughout the implementation process. Activities in which you can interact with those who can inform and guide the implementation process include attendance or speaking engagements at seminars, brown bag lunches, or conferences about historic properties and cultural resource preservation or hazard mitigation planning. Regularly scheduled progress meetings are also beneficial.

By participating in such interagency activities, you will also be able to share your experiences with others facing similar collaborative challenges.

Consideration 4. Evaluating and Updating your Plan

In implementing your hazard mitigation plan, your team will likely learn something new about your community's historic properties and cultural resources. This may include clarification on preservation priorities, new intelligence about governmental provisions for protecting these resources, differing perspectives on mitigation as embodied in other parts of the hazard mitigation plan, and, as mentioned above, what is truly effective or ineffective for mitigating damage to certain properties and resources.

For those projects whose implementation was not guided by the *Secretary of the Interior's Standards for the Treatment of Historic Properties,* your planning team should carefully document the reasons why those standards were not used, and evaluate alternative actions that would employ these standards. You should also extend such planning to properties and resources that are similar to the ones targeted by these projects.

In the case of certain cultural resources, such as archives and collections, your team may wish to obtain feedback from a variety of professionals, including curators, as to their perceived effectiveness of mitigation efforts. Gathering specific information about the costs and successes of these efforts may be useful in your plan update. This information may also be useful to others who are contemplating development of mitigation plans with significant cultural resource collections and assets.

Your team will likely gain new knowledge about how your historic properties and cultural resources are viewed or administered. This new knowledge may include the introduction or revision of a State tax incentive for the rehabilitation of historic properties, which may provide additional opportunities for private developers not factored into your original plan. Socioeconomic changes may also transform the hierarchy of preservation priorities, so that certain priorities either become more pressing or lose some of their value. This, in turn, will influence the order in which implementation of mitigation actions should proceed. Shifts in development patterns that occur subsequent to the initial development of your plan may also have a dramatic impact on preservation priorities. For example, a recently suburbanized region may find that historic farmsteads, once plentiful, have become increasingly scarce and may seek to adjust its preservation priorities accordingly.

New technologies and new study data on historic properties and cultural resources may emerge during the course of implementing your plan. For example, newly developed regional archeological predictive models—not available when your plan was created—could assist in the identification and evaluation of this specific type of historic property. Your planning team may also identify new types of mitigation methods that result in better benefits for your community.

Armed with this new knowledge, your planning team will want to reassess its goals, objectives, and actions to determine the extent to which they are still applicable.

Updating the Plan

After your planning team has evaluated implementation actions and identified new information that can affect future implementation strategies, you are ready to update the plan. Depending on the extent of the required changes, you may need to reformulate specific actions, objectives, or even goals.

In deciding on revisions, your planning team should draw upon the same consensus-driven prioritization methods it used earlier in the planning process, first and foremost being solicitation of public input. These methods are explained in greater detail earlier in this guide as well as in the other FEMA how-to guides mentioned throughout this document.

Post-Disaster Recovery

An important part of your community's post-disaster response and recovery effort will be ensuring that historic property and cultural resource considerations are taken into account after a disaster, just as they were accounted for in the mitigation planning before the disaster. Your hazard mitigation planning team should work with the larger disaster response and recovery team, which, depending upon the extent of the disaster, may include FEMA, State, county, and local agencies to ensure that they are made aware of the major components of your mitigation plan for historic properties and cultural resources. Moreover, the locational data—particularly the GIS data—that you have amassed during your inventory of historic properties and cultural resources may prove to be extremely helpful to emergency response planners as they attempt to make important decisions about which historic properties it would be worthwhile to repair.

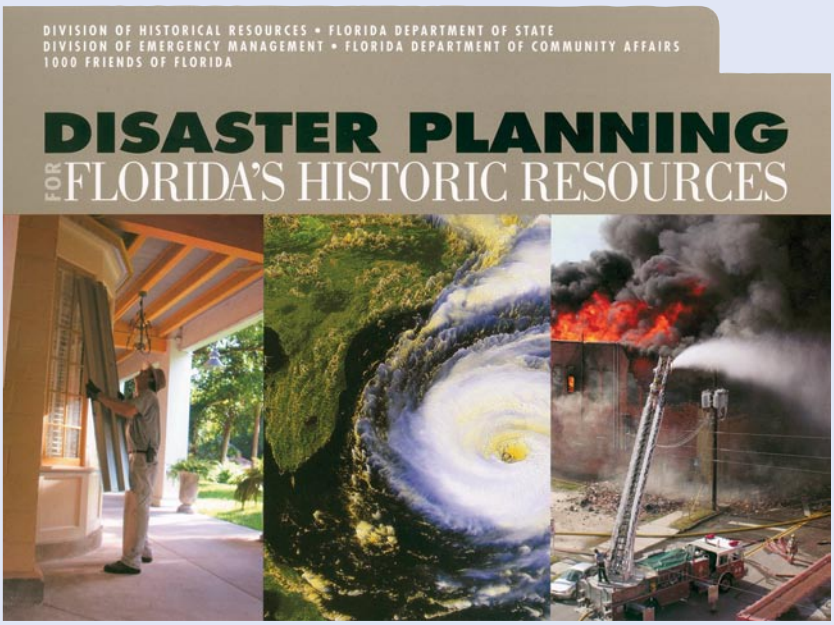
The post-disaster rehabilitation period offers an opportunity to acquire funding, through such programs as FEMA's Public Assistance Program, in the case of Presidentially declared disasters, that would not be available otherwise. With this infusion of funds, historic properties can be adaptively reused to meet larger community goals, including tourism development or heritage education.

After a disaster event, some segments of the community may want to act quickly and demolish damaged buildings in order to show that progress is being made. This position can create conflict with others and the situation grows more complicated if the buildings are located in a minority neighborhood where residents have little voice in the decisions. Therefore, it is imperative that different community interests work together following a disaster event to make important decisions regarding historic properties.

Following a disaster, some community members may wish to erase any visible evidence associated with hazard-related damage. For example, damaged historic properties that are good candidates for repair may be needlessly targeted for demolition. On the other hand, some community members may be unwilling to part with historic properties that are so extensively damaged that their repair and rehabilitation would not justify the costs involved. Thus, your team may find itself encountering many of the same prioritization issues it experienced during the earlier phases of the mitigation planning process.

A State Success Story

Disaster Planning for Florida's Historic Resources, prepared by the Florida Department of Community Affairs with assistance from the Florida Division of Historic Resources and 1000 Friends of Florida, describes steps for preparing emergency response plans for individual historic resources, expediting review of repair and reconstruction permits in the event of damage, and improving coordination between emergency management and historic preservation efforts within a community in order to reduce disaster-related damage and rebuild local economies. This guide is available at http://www.dca.state.fl.us/fdcp/dcp/publications/historic.pdf.



Send Your Updated Survey to Your SHPO

Make sure you send a copy of your updated historic property surveys to your SHPO office for review/approval and/or inclusion in the State database. Determinations included in SHPO databases can be shared with FEMA and used more readily (in the event of multi-agency consultations) than local surveys not approved by your SHPO. Local surveys may also disappear or not be available in the event of a disaster.

The Effect of Changing Perceptions on Your Inventory

Perceptions of which historic properties and cultural resources are significant can also change over time, and will affect your inventory. For example, a suburban neighborhood constructed after World War II, such as Levittown, may once have been regarded as ordinary, but now it has taken on a new level of significance. The accompanying photographs and information are illustrative of these "near history" resources.

Arapahoe Acres, Englewood, Colorado. Built between 1949 and 1957, this 33-acre postwar subdivision reflects the vision of developer-architect Edward Hawkins and site planner-architect Eugene Sternberg for a community of moderately priced small houses using modern principles of design. Breaking the ubiquitous grid of metropolitan Denver, the plan is distinctive for its curvilinear arrangement of streets, placement of houses on small uniformly sized lots to provide both views and privacy, and integration of landscape features, such as lawns, fences, hedges, shrubbery, and specimen trees, to organize space and give the landscape a flowing, sculptural quality.

Photographs of Arapahoe Acres are in a National Register publication entitled *Historic Residential Suburbs: Guidelines for Evaluation and Documentation for the Nation Register of Historic Places* (David Ames and Linda McClelland, 2002). You can download this publication from http://www.cr.nps.gov/nr/publications/bulletins/suburbs/intro.htm or http://www.cr.nps.gov/nr/publications/bulletins/suburbs/part2.htm for more information on how suburbs—even some built after World War II—can be nominated for listing in the National Register.

1949 aerial view of Arapahoe Acres.

Collection of Clyde Mannon

Arapahoe Acres streetscape ca. 1950s.

Barbara Frison

Consideration 5. Updating Your Inventory Data

As your team evaluates the implementation of your mitigation plan for historic properties and cultural resources you will also want to develop a strategy for revising and updating your inventory data based on your evaluation results.

Although some level of update should occur at least every 10 years, certain circumstances, such as a surge in population growth or a serious disaster event, may warrant more frequent updates of inventory information. It may be worthwhile to update the inventory when the hazard mitigation plan itself must be updated: every 3 years for State plans and 5 years for local plans, if not before.

Make Sure Your Data is Up-To-Date

Update your inventory data to reflect loss of historic buildings and structures.

Photo courtesy of 1000 Friends of Florida

Some historic properties may have been demolished since the inventory was last updated or other properties may have experienced a loss or gain of integrity as a result of alterations. Your cultural resources may have changed over time as well. Archives of important information may have been acquired by an institution or museum. This type of new information is essential to include in updates of the inventory and plan.

Lastly, other planning data may have been revised, which may have an impact on your historic properties and cultural resources inventory. For example, expansion of floodplain boundaries, whether due to more detailed study or actual infrastructure projects, should be integrated into your inventory. Such changes would affect not only your inventory, but your risk assessment of historic properties and cultural resources.

As part of your implementation process, your team will want to develop a strategy for updating your information about historic properties and cultural resources. Other planning initiatives may also be in need of updated information. Your local or regional planning office and SHPO/THPO may help your team identify potential resources and/or other planning groups in need of updated information. Consider the advantages of sharing information, resources, and costs with other project partners.

Windshield Surveys

If your community has a large number of historic properties and cultural resources, or your team lacks the resources to undertake a detailed update of your entire inventory, your team should consider alternate methodologies for updating the inventory. These include a baseline windshield survey (see page 2-15), which uses representative concentrations of historic properties and cultural resources, or a phased approach, in which highest-priority resources are updated first.


organize resources
assess risks
develop a mitigation plan
implement the plan and monitor progress

afterword

afterword

Your planning team has accomplished a challenging and worthwhile task—integrating historic property and cultural resource considerations into the hazard mitigation plan. Following the four-phase planning process for hazard mitigation planning, as discussed in the core four guides of this how-to series, you gathered the necessary resources and enhanced the planning team to include experts and interested citizens to help you identify the historic properties and cultural resources in your Tribe, State, or community that are vulnerable to hazards. With the help of this guide, you were able to develop a preservation hierarchy that you then used to estimate losses as part of the last step in preparing your risk assessment. Based on this loss estimate, you identified hazard mitigation actions and an implementation strategy that will allow your Tribe, State, or community to build upon its unique sense of place while reducing risks from hazard events and positioning historic properties and cultural resources as economic building blocks for future development. As you obtain additional resources, you will be able to refine your historic property and cultural resource inventory and risk assessment data, updating this information as required by DMA 2000 for review and approval to continue your eligibility for FEMA-funded pre- and post-disaster programs.

Now with your hazard mitigation plan in hand, your Tribe, State, or local community can access non-traditional technical and financial resources, opening up new possibilities for effective preservation of neighborhoods, properties, and artifacts. Because of your planning team's efforts, future generations will experience a safer future while your Tribe, State, or community retains its valuable heritage and cultural assets, all of which help create its unique sense of place.

appendices

appendix a
glossary

36 CFR Part 800

The Federal Regulations of the Advisory Council for Historic Preservation (ACHP), *Protection of Historic Properties,* that govern the Section 106 process of the National Historic Preservation Act (NHPA). These regulations were amended on August 5, 2004.

ABK Methodology for Seismic-Prone Buildings

An engineering design methodology for unreinforced masonry buildings developed by a team of engineers in Los Angeles. This methodology finds that masonry buildings respond differently from the way traditional codes and engineering approaches have assumed. Rather than amplifying the forces of an earthquake, heavy masonry-walled buildings have the effect of dampening the shaking by acting as a "rigid rocking block on a soft soil base." Using the ABK Methodology, the computed force levels in an unreinforced masonry building are lower than found under conventional code analysis, and as such the amount of strengthening work required for such buildings is less than that needed when conventional code analysis is employed. Thus, this approach reduces retrofit intervention and costs.

Adverse Effect

Harm to historic properties directly or indirectly caused by a Federal agency's action. The adverse effect may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. The regulations that set forth the adverse effect criteria are located in 36 CFR §800.5.

Advisory Council for Historic Preservation (ACHP)

An independent Federal agency composed of a 19-member council that advises the President and Congress on historic preservation issues and administers the provisions of Section 106 of the National Historic Preservation Act (NHPA).

Area of Potential Effects (APE)

The geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if any such properties exist. This area always includes the actual site of the undertaking, and may also include other areas where the undertaking will cause changes in land use, traffic patterns, or other aspects that could affect historic properties.

Certified Local Government

Local governments strengthen their local historic preservation efforts by achieving Certified Local Government (CLG) status from the National Park Service (NPS). NPS and State governments, through their State Historic Preservation Officers (SHPOs), provide technical assistance and small matching grants to these communities. In turn, NPS and States gain the benefit of local government partnership in the national historic preservation program.

Another incentive for participating in the CLG program is the pool of matching grant funds SHPOs set aside to fund CLG historic preservation subgrant projects—at least 10% of the State's annual Historic Preservation Fund (HPF) grant allocation. Grant funds are distributed through the HPF grant program, administered by NPS and SHPOs.

Projects eligible for funding and the criteria used to select them are developed annually by the SHPO. Funding decisions are made by the State, not NPS. Among the kinds of activities funded are the following: architectural, historical, and archeological surveys; oral histories; nominations to the National Register; staff work for historic preservation commissions; design guidelines and preservation plans; public outreach materials such as publications, videos, exhibits, and brochures; training for commission members and staff; and rehabilitation or restoration of National Register listed properties.

Comprehensive Planning

A process of developing broad plans that express community goals and objectives. Comprehensive plans are decision-making tools that establish broad, long-range policy guidelines for decisions relating to the development of a community. Comprehensive plans generally include three topics: 1) an inventory of existing conditions; 2) a statement of needs and goals; and 3) implementation strategies and timeframes. Communities often incorporate a series of elements, such as population, land use, economic development, transportation, natural and historic resources conservation, community facilities/services, and housing into such plans. This process addresses multiple facets of a community and integrates these into a coherent vision that guides orderly growth and development for the future.

Concurring Party

Organizations, groups, or individuals who are consulted as part of the Section 106 process and who agree with the consensus of the consulting parties on the method to be used to resolve the adverse effects of a Federal undertaking. Although concurring parties may sign an agreement, they cannot amend or terminate it.

Consulting Party

Organizations, groups, or individuals who have consultative roles in the Section 106 process. According to 36 CFR Part 800, any of the following may be a consulting party: State Historic Preservation Officers/Tribal Historic Preservation Officers (SHPO/THPOs); Indian Tribes and Native Hawaiian organizations; representatives from local governments; applicants for Federal assistance; the public or other individuals or organizations with a legal or economic relation to the undertaking or a demonstrated interest in the undertaking's effects on historic properties.

Contributing Property

A building, site, structure, or object that adds to the historic associations, historic architectural qualities, or archeological values for which a historic district is significant because it: was present during the period of significance; relates to the documented significance of the property and possesses historic integrity or is capable of yielding important information about the period; or independently meets National Register criteria.

Criteria Considerations

Under the four Criteria for Evaluation of National Register eligibility, cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; properties primarily commemorative in nature; and properties that have achieved significance in the past 50 years shall not be considered eligible for the National Register. However, these properties will qualify if they are integral parts of historic districts that do qualify or fall into certain special categories. For a description of these categories, see National Register Bulletin #15, *How to Apply the National Register Criteria for Evaluation.*

Criteria for Evaluation

The nomination process for the National Register identifies four criteria that describe how properties are significant for their associations with important events or persons, for their importance in design or construction, or for their information potential. In order to be listed in the National Register, a property must be shown to be significant for one or more of the four Criteria for Evaluation.

Criterion A ***Events:*** Properties can be eligible for the National Register if they are associated with events that have made a significant contribution to the broad patterns of our history.

Criterion B ***Person:*** Properties can be eligible for the National Register if they are associated with the lives of persons significant in our past.

Criterion C ***Design/Construction:*** Properties can be eligible for the National Register if they embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction.

Criterion D ***Information Potential:*** Properties can be eligible for the National Register if they have yielded, or may be likely to yield, information important in prehistory or history.

Cultural Resource

Non-living examples of objects acquired and preserved because of their potential value as examples, reference material, or objects of artistic, historic, scientific, educational, or social importance, either individually or as a collection. Often housed in libraries, museums, archives, historical repositories, or historic properties, these resources range from three-dimensional examples such as sculptures, historic furnishings or textiles, to two-dimensional examples such as family records, old photographs and maps, and other archival materials.

Curation

A treatment used by Federal agencies to avoid, minimize, or offset the adverse effects of a Federal action on historic properties. This measure removes certain features or architectural elements from a property for re-use or permanent curation at a museum or other facility. This also involves treatment of artifacts that result from archeological surveys.

Data Recovery

A treatment used by Federal agencies to avoid, minimize, or offset the adverse effects of a Federal action on historic properties. This measure, which obtains and recovers information about the historic property, specifically pertains to archeological sites adversely impacted by a FEMA undertaking. As a result of 2001 revisions to the Section 106 regulations, new guidance has been issued by the Advisory Council on Historic Preservation (ACHP) on the treatment of historic and prehistoric archeological resources. When a federally assisted project may affect one or more archeological sites listed, or eligible for listing, in the National Register, Federal agencies must consider the impacts to such sites. Appropriate treatments may include preservation in place for future study or use, recovery or partial recovery of archeological data, or any combination of these other measures.

Determination of Eligibility

Under the National Historic Preservation Act (NHPA), properties that are either listed in, or eligible for listing in the National Register, trigger Federal review under Section 106. Eligible historic properties meet one or more of the National Register Criteria for Evaluation and may be nominated to the National Register at a future date. If a property is not listed or previously determined eligible for listing in the National Register prior to the FEMA undertaking, FEMA must make a determination of eligibility for the property.

Displacement Cost

The expense for a business or service to be relocated to another structure because of a hazard event. This cost can include the rent for temporary building space per month and a one-time cost to set up operations in the new place.

Displacement Time

The number of days a business or service would operate away from its original location due to a hazard event.

Evaluation

The process by which the significance and integrity of a historic property are judged and eligibility for National Register listing is determined.

Federal Preservation Officer (FPO)

Official designated by the head of each Federal agency to be responsible for coordinating the agency's activities under the National Historic Preservation Act (NHPA).

Federal Undertaking

Serving as the trigger for the Section 106 review under the National Historic Preservation Act (NHPA), an undertaking is any Federal project, activity, or program that involves the expenditure of Federal money and can result in changes in the character or use of historic properties. The project, activity, or program must be under the direct or indirect jurisdiction of a Federal agency or licensed or assisted by a Federal agency. These activities may include construction, rehabilitation and repair projects, demolition, licenses, permits, loans, loan guarantees, grants, Federal property transfers, and many other types of Federal involvement.

NOTE: One technical amendment to 36 CFR Part 800, which became effective on August 5, 2004, clarified that the Section 106 process does not apply to undertakings that are merely

subject to State or local regulation administered pursuant to a delegation or approval by a Federal agency. This clarification was made in a revision to the definition of "undertaking" under §800.16(y).

Floodplain

As defined under the National Flood Insurance Program (NFIP), any land area susceptible to being inundated by water from any source.

Floodway

As defined under the National Flood Insurance Program (NFIP), the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a certain height.

Flood Insurance Rate Map (FIRM)

Map of a community, prepared by FEMA, that shows both the special flood hazard areas and the risk premium zones applicable to the community.

Functional Downtime

The number of days that a business would be closed due to damage from a hazard event before it could resume in another location.

Geographic Information System (GIS)

A computer system for capturing, storing, checking, integrating, manipulating, analyzing, and displaying data related to positions on the Earth's surface. Typically, a GIS is used for handling maps of one kind or another. These might be represented as several different layers where each layer holds data about a particular kind of feature. Each feature is linked to a position on the graphical image of a map. GIS is becoming an important tool in promoting coordinated efforts between emergency management and historic preservation.

Goals

General guidelines that explain what you want to achieve. They are usually broad policy statements and represent long-term, global visions.

HABS/HAER

The Historic American Buildings Survey (HABS) is the oldest Federal preservation program. Established in 1933 by the National Park Service (NPS) as a make work program for jobless architects and photographers in the Depression, the program's mission is to create a lasting archive of American historic architecture. In 1969, the Historic American Engineering Record (HAER) began as a companion program to document structures of technological and engineering significance. The program established qualitative standards for both architectural and photographic documentation and it directs the placement of the archives in the Library of Congress. FEMA often applies these standards when using recordation as a treatment measure.

Hazard Mitigation

Sustained action taken to reduce or eliminate the long-term risk to human life and property from natural hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery.

Hazard Mitigation Actions

Specific actions that help you achieve your hazard mitigation goals and objectives.

Hazard Mitigation Plan

A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the planning area and includes a description of actions to minimize future vulnerability to hazards.

HAZUS

FEMA's nationally applicable standardized methodology and risk assessment software program for analyzing potential losses from floods, hurricane winds, and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest GIS technology to produce estimates of hazard-related damage before or after a disaster occurs.

Historic Context

Information about historic trends and properties grouped by an important theme in the prehistory or history of a community, State, or the nation during a particular period of time. Organized by theme, place, and time, they provide a framework for determining the significance of a property and its eligibility for National Register listing.

Historic District

A historic district is a National Register (or often State and local) designation referring to either historic properties having a number of resources that are relatively equal in importance, such as a neighborhood, or large acreage properties with a variety of historic properties.

Historic Preservation

An approach to conserving structures, sites, and objects that represent a physical connection with people and events from our past. Historic preservation utilizes various land use planning strategies, governmental programs, and financial incentives to protect historic resources. The preservation of historic structures and sites helps to create a unique environment and sense of place.

Historic Preservation Specialist

Historic Preservation Specialists are technical experts who identify and evaluate historic properties, apply the Secretary of the Interior's Standards and Guidelines to proposed projects, and negotiate and draft agreement documents. They may work with FEMA program staff, other specialists, the applicant, and staff of the State Historic Preservation Office/Tribal Historic Preservation Office to bring a scope of work into conformance with the Standards or Guidelines.

Historic Property

As defined by 36 CFR Part 800, means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religions and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register criteria (Source: 36 CFR §800.16 [I][1]).

Historic Property Survey

A survey of historic properties in a State, which usually involves the collection of background research on each property, fieldwork that includes photographic and architectural documentation of the property and a written description of the property, and the reporting of this information. The survey is normally conducted as part of the State Inventory of Historic Properties.

Historic Review

The Federal process of taking into account whether a Federal action will have an effect on any property included in or eligible for the National Register. Historic Review is synonymous with Section 106 review.

Identification

Process through which information is gathered about historic properties in an undertaking's Area of Potential Effects (APE) in order to identify the National Register Evaluation Criteria and determine eligibility for their listing on the National Register. This is one of the first, and most important, initial steps in the Section 106 review process (§800.4[b]).

Indian Tribe

An Indian Tribe, band, nation, or other organized group or community, including a native village, regional corporation, or village corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U.S.C. 1602), which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians (Source: 36 CFR Part 800).

In-Kind Repair

Work that returns a facility to its pre-disaster condition and substantially matches the original form, workmanship, and materials.

Integrity

The authenticity of a property's historic identity, evidenced by the survival of physical characteristics that existed during the property's prehistoric or historic period. Historic integrity is the composite of seven qualities, including location, design, setting, materials, workmanship, feeling, and association. It is an important qualification for National Register listing.

Keeper of the National Register

The person at the National Park Service (NPS) responsible for administering the National Register program and maintaining a database of the completed nominations.

Locally Designated Historic Properties

Historic properties nominated for official designation at the local level through a historic preservation ordinance or a local preservation/historical organization.

Loss Estimation Table

Projects the losses likely to be sustained due to a specific type of hazard event (e.g., floods) based on observed past damages. Estimated losses are provided for different magnitudes of the hazard and are expressed as a percentage of replacement cost.

Memorandum of Agreement (MOA)

An agreement, resulting from consultation, that outlines measures Federal agencies will take to avoid, reduce, or offset the effects on historic properties as the agency carries out its undertaking. The MOA is signed by the agency, the State Historic Preservation Officer/ Tribal Historic Preservation Officer, and the Advisory Council for Historic Preservation, if participating. Other consulting parties assigned responsibilities in the Agreement must also be signatories.

National Environmental Policy Act (NEPA)

Signed into law by President Nixon in 1969, the National Environmental Policy Act establishes the broad national framework for protecting the environment, including historic properties. NEPA's basic policy is to ensure that all branches of government give proper consideration to the environment prior to undertaking any major Federal action that significantly affects the environment. In general, this law established a national policy which would 1) "encourage productive and enjoyable harmony between man and his environment"; 2) promote efforts which would "prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man"; and 3) "enrich the understanding of the ecological systems and natural resources important to the Nation."

The NEPA process subsumes the review of proposed actions under an array of other Federal laws. In regard to historic properties, the most significant Federal law is the National Historic Preservation Act of 1966 (NHPA – see below). To achieve improved project streamlining, NEPA and NHPA requirements are sometimes combined. The Advisory Council for Historic Preservation's (ACHP) regulations that implement Section 106 of NHPA, 36 CFR Part 800, allow Federal agencies to coordinate the two processes. Guidance may be found under §800.8(a).

National Flood Insurance Program (NFIP)

Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations as indicated in 44 CFR §60.3.

National Historic Landmark (NHL)

Districts, sites, buildings, structures, and objects found to possess national significance in illustrating or representing the prehistory and history of the United States. Designated by the Secretary of the Interior, NHLs comprise less than four percent of the properties listed in the National Register. Section 110(f) of the National Historic Preservation Act (NHPA) and 36 CFR §800.10 outline special requirements for undertakings affecting NHLs.

National Historic Preservation Act (NHPA)

In response to the rapid loss of historic resources from urban renewal in the 1950s and 60s, Congress passed this Act in 1966 to ensure that Federal agencies integrate historic properties in their project planning and execution, and encourage States to begin their own historic preservation programs. The primary components of the NHPA are: adoption of the National Register as the country's official list of historic properties; creation of the Advisory Council for Historic Preservation (ACHP) and State Historic Preservation Offices; requirement of Federal

agencies to establish historic preservation programs, designation of a Federal Preservation Officer, and consideration of the effects of Federal undertakings on historic properties.

National Park Service (NPS)

Responsible for performing many of the responsibilities specifically vested in the Secretary of the Interior under the National Historic Preservation Act (NHPA). NPS maintains a large cultural resources professional staff with expertise in the broad range of historic preservation activities authorized under the NHPA.

National Register of Historic Places (National Register)

The national list of districts, sites, buildings, structures and objects significant in American history, architecture, archeology, engineering, and culture, maintained by the Secretary of the Interior under authority of Section 101(a)(1)(A) of the National Historic Preservation Act (NHPA).

Natural Resource Protection Actions

Actions that, in addition to minimizing hazards, also preserve or restore the functions of natural systems. Some natural resources either are historic properties in themselves or contribute to an understanding of historic properties. Such types of mitigation actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

Non-Contributing Property

A building, site, structure, or object that does not add to the historic associations, historic architectural qualities, or archeological values for which a historic district is significant because it: was not present during the period of significance; does not relate to the documented significance of the property and does not possess historic integrity or is not capable of yielding important information about the period; or, it does not independently meet National Register criteria.

Objectives

Define strategies or implementation steps for attaining the identified goals. Unlike goals, objectives are specific and measurable.

Planning

The act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

Planning for Post-Disaster Reconstruction

The process of planning (preferably prior to an actual disaster) those 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 steps can include a wide variety of land-use 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.

Pre-Disaster Mitigation (PDM) Program

A FEMA program to provide technical and financial assistance to States and local governments to assist in the implementation of pre-disaster hazard mitigation actions. These measures must be cost-effective and designed to reduce injuries, loss of life, and damage and destruction of property, including damage to critical services and facilities under the jurisdiction of the States or local governments.

Prehistoric

A term that refers to the period prior to recorded history. In American society, prehistoric refers to the period prior to the arrival of Europeans in the New World because few documents or records exist to supplement any physical evidence that may exist.

Preservation

A treatment to a historic property which is specifically the act or process of applying measures to sustain the existing form, integrity and material of a building or structure, and the existing form or vegetative cover of a site. It may include initial stabilization work, where necessary, as well as ongoing maintenance of the historic building materials.

Professional Qualification Standards

Criteria set forth in the Secretary's Standards (48 FR 44739) and 36 CFR Part 61 Appendix A that define minimum education and experience required to perform identification, evaluation, registration, and treatment activities associated with historic properties.

Programmatic Agreement

An agreement that defines the roles and responsibilities of Federal and State/Tribal partners and streamlines the Section 106 historic review process. The Programmatic Agreement is typically developed for a large or complex project or a class of undertakings that would otherwise require numerous individual requests for Advisory Council for Historic Preservation (ACHP) comments under Section 106. Under the National Historic Preservation Act (NHPA), the Programmatic Agreement replaces the Section 106 process outlined in 36 CFR Part 800.

Protection

A treatment to a historic property, which is specifically the act or process of applying measures designed to affect the physical condition of a property by defending or guarding it from deterioration, loss, or attack, or to cover or shield the property from danger or injury. In the case of buildings or structures, such treatment is generally of a temporary nature and anticipates future historic preservation treatment; in the case of archeological sites, the protective measure may be temporary or permanent.

Public Assistance (PA) Program

A FEMA program that provides grants to State and local governments, Tribal organizations, eligible private non-profit organizations, and other public entities for losses sustained in disasters and other related needs. Eligible projects include debris removal, emergency protective measures, and permanent restoration.

Public Participation

The involvement of parties in the Section 106 consultation process who may be concerned with the possible effects of an agency action on historic properties. This involvement is outlined in the Section 106 regulations that govern the historic review process.

Recordation and Documentation

One measure used by Federal agencies for treating the adverse effects of an undertaking, recordation and documentation is the process of conducting fieldwork and background research for a property, including measured drawings, photographs, an architectural description, and a historic narrative. This information is then filed with the State Historic Preservation Office/Tribal Historic Preservation Office or other archive, as identified in the Memorandum of Agreement (MOA).

Redevelopment

The process of rebuilding a community's economic activity similar to the process of reconstruction. Redevelopment differs 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.

Rehabilitation

One measure used by Federal agencies for treating the adverse effects of an undertaking, rehabilitation is the process of returning a historic property to a state of utility, through repair or alteration, which makes possible an efficient contemporary use while preserving those portions and features of a property which are significant to its historical, architectural, and cultural values.

Relocation

One measure used by Federal agencies for treating the adverse effects of an undertaking, relocation is an option for individual property owners when technically and financially feasible. While it is preferred to keep a property in its historic context, when possible, relocation often provides the opportunity to satisfy the needs and concerns of all parties involved.

Replacement Value

Represents the approximate cost of the contemporary reconstruction of an existing building, structure, or cultural resource. The replacement value is used in determining the cost-effectiveness of various hazard mitigation alternatives.

Restoration

A treatment measure for a historic property, restoration is the act or process of accurately recovering the form and details of a property and its setting as it appeared at a particular period of time.

Risk

The potential loss associated with a hazard, defined in terms of expected probability and frequency, exposure, and consequences. Also, the estimated impact that a hazard would have on people, services, facilities, and structures in a community; or the likelihood of a hazard

event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment

Measuring the potential for property damage, economic loss, injury, and death that may result from both natural and manmade hazards. Specifically, it involves identifying potential hazards and assessing a community's ability to survive them, diminish their impact, or avoid them completely. Risk assessment is central to the hazard mitigation planning process, and is described fully in FEMA 386-2, *Understanding Your Risks: Identifying Hazards and Estimating Losses*.

Secretary of the Interior's Standards for Archeology and Historic Preservation

Professional standards that address results to be achieved by Federal agencies when planning for the identification, evaluation, registration, and treatment of historic properties.

Secretary of the Interior's Standards for Rehabilitation

The section of the overall preservation project standards that addresses the most prevalent treatment (in 36 CFR 67) of a property's characteristics that are significant to its historic, architectural, and cultural values.

Secretary of the Interior's Standards for the Treatment of Historic Properties

A series of concepts about maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations; as such, they cannot, in and of themselves, be used to make essential decisions about which features of a historic property should be saved and which might be changed. Once an appropriate treatment is selected, the Standards provide philosophical consistency to the work.

Section 106

The review process established under Section 106 of the National Historic Preservation Act (NHPA) that addresses results to be achieved by Federal agencies when planning for the identification, evaluation, registration, and treatment of historic properties. The NHPA under Section 106 requires that every Federal agency "take into account" how each of its undertakings could affect historic properties. An agency must also afford the Advisory Council for Historic Preservation (ACHP) a reasonable opportunity to comment on the agency's undertakings.

Seismic Rehabilitation/Seismic Retrofit

Technical measures used to reduce a building's earthquake vulnerability. Includes the development of an objective, the determination of a design event, a preliminary building evaluation, including the concept of building redundancy, a classification of building elements into primary and secondary, and the development of a preliminary rehabilitation or retrofit design specific to the building and the area in which it is located. For more information please see FEMA 274, *NEHRP Commentary on the Guidelines for the Seismic Rehabilitation of Buildings,* October, 1997.

Significance

Historic significance is the importance of a property to the history, architecture, archeology, engineering, or culture of a community, State, or the nation. Historic significance is based on four criteria (see Criteria for Evaluation above) and is an important qualification for National Register listing.

Sound Land Management and Use

The process wherein the governmental body responsible for land use regulation in a political jurisdiction plans and regulates the use of land within its jurisdiction in order to promote the reduction of property exposure to flood hazard and the protection of environmental values of floodplains. Sound use of land acquired with FEMA funds and transferred to local governments is used primarily for open space and recreational purposes to minimize potential for any future flood damage.

Special Flood Hazard Area (SFHA)

Land area subject to inundation by a flood having a 1-percent or greater probability of being equaled or exceeded during any given year (base, or 100-year flood).

State Historic Preservation Officer (SHPO)

In cooperation with Federal agencies, SHPOs are responsible for directing and conducting a comprehensive statewide survey of historic properties and maintaining inventories of such properties under Section 101(b)(3) of the National Historic Preservation Act (NHPA). These State officials maintain important information on historic properties in inventories and in comprehensive statewide historic preservation plans, and are required to have qualified preservation professionals on staff. Federal agencies are directed in Section 110 of the NHPA to cooperate with SHPOs in establishing programs to locate, inventory, and nominate historic properties to the National Register.

State Inventory of Historic Properties

Based on State Historic Property Surveys (HPSs), the State Inventory is a listing of all historic resources in the State, including those of local or regional significance. This inventory is the responsibility of the State Historic Preservation Office.

State Register of Historic Places

Based on State Cultural Resource Surveys (CRSs) and the State Inventory of Cultural Resources, States maintain a list of historic properties of State significance. Although the State Registers contain National Register properties, they usually contain more properties and are based on different criteria than the National Register. Designated by a State Review Board and administered by the State Historic Preservation Officer (SHPO), State Registers are often the first hurdle for obtaining National Register status for historic properties.

Structure

As defined under the National Flood Insurance Program (NFIP), a walled and roofed building, including a storage tank for gas or liquid, that is principally above ground, as well as a manufactured home.

Within the historic preservation community, the term "structure" refers to a specific type of historic property. This term is used to distinguish from buildings those historic properties made for purposes other than human shelter. Representative examples include a bandstand, canal, earthwork, gazebo, grain elevator, lighthouse, silo, tunnel, and windmill.

Traditional Cultural Property (TCP)

A property eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that are rooted in that community and are important in maintaining the continuing cultural identity of the community. An example of a TCP is a location associated with the traditional beliefs of a Native American group about its origins, its cultural history, or the nature of the world. Federal agencies must treat TCPs as historic properties under Section 106. For further guidance, see National Register Bulletin #38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties.*

Treatment

A measure used by a Federal agency to avoid, reduce, minimize, or offset the adverse effects that a Federal undertaking may have on a historic property. Although there are some treatment measures that are typically used by the agency (see Recordation and Documentation; Data Recovery; Curation; Relocation), Federal agencies are not limited to these measures and can use any measure upon which the involved parties agree. Treatment does not have to have a direct impact on the adverse effect for a specific historic property, but may include educational and planning tools or other measures to promote historic preservation awareness and practice in a community.

Tribal Government

The recognized governing body of an Indian Tribe, band, nation, pueblo, village, or community, including any Alaska Native Village defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688) (Source: FEMA Tribal Policy).

Tribal Historic Preservation Officer (THPO)

The Tribal equivalent to a State Historic Preservation Officer (SHPO). The THPO may assume a role parallel to that of State government in administering the national historic preservation program on reservations. Tribes will tailor the program to accommodate Tribal values and address Tribal priorities. The 1992 Amendments to the National Historic Preservation Act (NHPA) recognized the Tribes' growing capabilities in historic preservation and the Tribes' rightful place in the national program. Specifically, the 1992 Amendments provide for Tribes, at their request, to assume responsibilities for such functions as identifying and maintaining inventories of culturally significant properties, nominating properties to the National Register, conducting Section 106 review of Federal agency projects on Tribal lands, and administering educational programs on the importance of preserving historic properties.

Tribal Lands

All lands within the exterior boundaries of any Indian reservation and all dependent Indian communities (Source: 36 CFR Part 800).

appendix b
library

The library contains many sources for helping you with historic properties, cultural resources, and hazard mitigation. Below is an outline to help find information for your specific needs.

I. Site-Specific Emergency Response Plans

II. Funding Tools

- A. Primary Federal Programs
- B. Other Federal Programs
- C. Primary State Programs
- D. Other State Programs
- E. Non-Profit Organizations

III. Contact Information

- A. Federal Government
- B. State Governments
- C. Tribal Governments
- D. Non-Profit Organizations

IV. Publications

V. Other Useful Web Sites

I. Site-Specific Emergency Response Plans

Development of site-specific emergency response plans should be strongly considered for historic properties with extensive collections of cultural resources. Ideally, each plan should cover continuation and staffing, pre-disaster planning, actions to be taken immediately prior to the disaster, if possible, and actions to take in response to the disasters.

A number of publications and Web sites can provide guidance on developing a site-specific emergency response plan:

Preparedness

California Preservation Clearinghouse (http://cpc.stanford.edu/disasters/index.html) includes a generic disaster plan, information on other sites to visit for sample disaster plans and case histories, and a disaster plan exercise to test an existing disaster plan and train staff.

Federal Alliance for Safe Homes (FLASH) (http://www.flash.org) can assist with mitigation planning and insurance issues.

Mitigation

Archaeological Stabilization Guide: Case Studies in Protecting Archaeological Sites (Florida Department of State, 2000, http://www.flheritage.com) contains useful techniques for stabilizing and protecting archeological resources, including vegetation, hay bales, renourishment, and sandbags.

Best Management Practices: An Owner's Guide to Protecting Archaeological Sites (Florida Department of State, 2000, http://www.flheritage.com) overviews stabilization and protection techniques.

Federal Emergency Management Agency's Historic Preservation and Cultural Resources Program (http://www.fema.gov/ehp) includes ideas on how to mitigate disaster damage to historic and cultural resources.

Hurricane Readiness Guide for Owners and Managers of Historic Resources (National Trust for Historic Preservation's Information Series, http://www.cr.nps.gov/hps/tps/briefs/presbhom.htm) focuses on various techniques to protect historic structures from hurricane damage and to employ in the recovery process.

Preserving History from Fire: Bridging the Gap Between Safety Codes and Historic Buildings (Old House Journal, November/December 2000) addresses fire code issues for historic buildings.

Response and Recovery

FEMA Job Aid for Photographing Historic Properties After a Disaster (FEMA, 2001, call 1.800.480.2520 and ask for Job Aid #9580.6) provides clear direction on how to take photographs necessary to document a site for the purposes of determining National Register eligibility after a disaster.

Georgia Historic Preservation Division (http://www.gashpo.org/assets/documents/1996_after_the_flood.pdf) contains a publication about recovering from a flood.

Heritage Emergency National Task Force (http://www.heritagepreservation.org) has a series of useful publications, including the *Emergency Response and Salvage Wheel, Resources for Recovery: Post-Disaster Aid for Cultural Institutions,* and *Cataclysm and Challenge: Impact of September 11, 2001, on Our Nation's Cultural Heritage* (2002). This Web site also includes useful links to numerous disaster preparedness and response sites for cultural institutions.

North Carolina State Historic Preservation Office (http://www.hpo.dcr.state.nc.us/disaster.htm) includes extensive information for owners of damaged buildings following a natural disaster.

Treatment of Flood-Damaged Older and Historic Buildings (National Trust for Historic Preservation's Information Series, http://www.cr.nps.gov/hps/tps/briefs/presbhom.htm) identifies ways to deal with foundation erosion, wood rot, saturated insulation, damage to interior finishes, and other recovery concerns.

Disaster Planning for Cultural Institutions

Central New York Library Resources Council (http://www.clrc.org) provides information on completing a disaster plan for libraries, museums, and cultural institutions.

The Getty Conservation Institute (http://www.getty.edu/conservation) provides information on disaster preparedness and response for cultural institutions.

II. Funding Tools

Several sources of funds are available for the protection of historic resources in hazard-prone communities. Various State, Federal, and private programs provide assistance to local communities and homeowners, although grant funds may be limited in amount. Some of the major programs available to local communities, individual businesses, and homeowners are listed below. Many of these funding tools may be combined in hazard mitigation projects which protect historic resources.

Note that the Advisory Council for Historic Preservation (ACHP) has provided an exhaustive list of funding sources for historic and cultural resource projects, only some of which are described here.

To learn more about this list, visit http://www.achp.gov/funding.html.

A. Primary Federal Programs

The **Federal Emergency Management Agency (FEMA)** provides help to States and communities for disaster assistance and hazard mitigation activities under the following programs:

Emergency Management Performance Grant (EMPG) Program. Formerly known as the State and Local Assistance Program, the EMPG is another potential source of funds. A Federal program that is administered by your State emergency management agency (SEMA), EMGP's purpose is to encourage communities to develop comprehensive disaster preparedness and assistance plans, programs, and capabilities. Congress appropriates funds for the EMGP program, and grants are available on a 50 percent matching basis. Additional information about this program may be requested from a grant administrator.

Flood Mitigation Assistance (FMA) Program. Funding under this program provides grants to States and communities to plan and carry out activities designed to reduce the risk of flood damage to structures covered under the National Flood Insurance Program (NFIP). The program provides planning and project grants for activities that are technically feasible, cost-effective, and proposed projects that meet minimum NFIP Standards and are cost-beneficial to the NFIP. This is an annual FEMA program with funding levels for each State based upon the number of insured properties in that State. For more information, see http://www.fema.gov/fima/mitgrant.shtm.

Hazard Mitigation Grant Program (HMGP). This program provides grants to States for their use in conducting mitigation activities, implementing State or local hazard mitigation plans, and funding mitigation actions in disaster-prone areas. Funding for the HMGP is set at 7.5% of the total Federal disaster assistance grants made under a Presidentially declared disaster. States with Standard Plans may be granted this percentage. For States with Enhanced Plans, HMGP grants of up to 20% may be provided. Individual property owners should contact their local jurisdiction for application procedures. Further information is available on http://www.fema.gov/fima/mitgrant.shtm.

Increased Cost of Compliance (ICC). Coverage that may be available to historic structures covered by a Standard Flood Insurance Policy (SFIP) under the National Flood Insurance Program (NFIP). ICC is an endorsement of the flood insurance policy that provides a claim payment directly to a property owner for the cost to comply with State or community floodplain management laws or ordinances after a direct physical loss caused by a flood. When a building covered by an SFIP under the NFIP sustains a loss and the State or community declares the building to be substantially or repetitively damaged, ICC will help pay up to $30,000 for the cost to elevate, floodproof, demolish, or relocate the building. ICC is not available on a historic structure if it is exempt under the community's ordinance from the floodplain management requirements or is granted a variance. ICC is also not available for mitigation actions that do not bring the building into compliance with the community's floodplain management ordinance. Additional information is available at http://www.fema.gov/nfip/icc.shtm.

Pre-Disaster Mitigation (PDM) Program. This program was authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 U.S.C., as amended by §102 of the Disaster Mitigation Act of 2000. Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist States, Tribes, and local governments in implementing cost-effective hazard mitigation activities that complement a comprehensive mitigation program. Additional information is available at http://www.fema.gov/fima/pdm.shtm.

Most FEMA funding programs are administered through the State emergency management agencies (SEMAs). Further information on these and other FEMA funding programs may be obtained at http://www.fema.gov.

B. Other Federal Programs

Community Development Block Grants (CDBG). Administered by State community development agencies and local governments on the behalf of the U.S. Department of Housing and Urban Development (HUD) to provide decent housing and a suitable living environment, principally for low-to-moderate-income individuals. CDBG activities may include the acquisition,

rehabilitation, and reconstruction of disaster-damaged properties and the redevelopment of disaster-affected neighborhoods. Additional information is available at http://www.huduser.org/periodicals/rrr/cdbg.html.

Disaster Assistance Loans. The Small Business Administration (SBA) provides low-interest disaster assistance loans of up to $200,000 for the repair or replacement of a primary residence; low-interest loans of up to $40,000 for the repair and replacement of household and personal property; and low-interest loans of up to $500,000 for business owners and non-profit organizations for the repair, rehabilitation, or replacement of property. SBA assistance is generally available following a major disaster declaration. This may be useful for hazard-prone historic commercial districts. Further information is available on the SBA's homepage at http://www.sba.gov/disaster_recov/index.html.

Federal Rehabilitation Tax Credit. Federal law provides a Federal income tax credit equal to 20% of the cost of rehabilitating a historic building for commercial use. To qualify for the credit, the property must be a certified historic structure–that is, on the National Register or contributing to a registered historic district. (Non-historic buildings built before 1936 qualify for a 10% tax credit.) A substantial rehabilitation is necessary, and the work must meet the *Secretary of Interior's Standards for Rehabilitation*. The historic preservation tax credit has been a powerful tool for neighborhood revitalization. Applications for the credit are available through State Historic Preservation Offices and the final decisions are made by the National Park Service (NPS). More information is available at http://www.cr.nps.gov/hps/tps/tax/index.htm.

Historic Preservation Fund Grants-in-Aid. Grants provided by the U.S. Department of the Interior, National Park Service (NPS) for the identification, evaluation, and protection of historic properties. These grants are awarded through State Historic Preservation Offices for survey and planning activities, and in some instances, for improvements to historic properties through matching acquisition and development grants. Further information is available through your State Historic Preservation Office. More information is available at http://www.cr.nps.gov/hps/clg/index.htm.

Planning Assistance. The National Resources Conservation Service (NRCS) provides planning assistance for watershed protection projects, water quality improvement projects, wetland preservation, and management for agricultural and rural communities. Many

rural communities may feature hazard-prone historic resources. Further information is available on the NRCS's homepage at http://www.nrcs.usda.gov.

Technical Assistance Program. The U.S. Department of Energy (DOE) Technical Assistance Program provides services to communities for the revitalization of single-family, multi-family, and commercial buildings. DOE staff are experienced in performing housing assessment needs, and in identifying financing mechanisms, especially those that include funds for energy efficiency. Further information is available on the DOE's homepage at http://www.energy.gov_engine/content.do.

Another DOE program, the Department's Center for Excellence for Sustainable Development, works with communities to help them define and implement sustainable development strategies as part of their comprehensive community planning efforts. The Center provides technical assistance to disaster-affected communities as they plan community-scale long-term recovery efforts, including relocation, repairs, and reconstruction by introducing a wide array of environmental technologies and sustainable redevelopment planning practices. Further information is available by visiting the DOE's Web site http://www.sustainable.doe.gov.

Transportation Enhancements Funding. In 1991, Congress created a special fund to encourage States to dedicate transportation money to projects that enhance local communities. In the legislation—normally referred to as ISTEA—that established that fund, Congress listed specific activities, including acquisition of historic or scenic sites, historic highway programs with heritage tourism components, "rails to trails" programs, and rehabilitation of historic transportation buildings, and archeological planning as "transportation enhancements." Since 1991, States have dedicated nearly $1 billion in Federal-aid highway funds to thousands of transportation-related historic preservation projects; historic resources have also benefited from enhancement money for landscaping, land acquisition, historic bridge and road activities, and streetscapes in historic commercial districts.

For more information on transportation enhancements funding, download *Building on the Past, Traveling to the Future,* a free guide prepared by the National Trust and the Federal Highway Administration, or visit http://www.enhancements.org, http://www.tea21.org, http://www.transact.org.

C. Primary State Programs

State Emergency Management Agencies (SEMAs) provide disaster assistance to local communities and hazard mitigation grants to residents and business owners. Through the Stafford Act, a SEMA administers many of FEMA's funding programs. For more information on three Federal programs administered by your SEMA, see:

Emergency Management Performance Grant Program;

Hazard Mitigation Grant Program; and

Pre-Disaster Mitigation Program.

State Historic Preservation Officer (SHPO) offices provide the following funding programs:

Historic Preservation Fund (HPF). Provides grants to Tribes, States, and local governments to use for activities such as education, preparation of National Register nominations, and development of comprehensive preservation plans. Established in 1976 as an amendment to the National Historic Preservation Act (NHPA) of 1966, the HPF receives annual appropriations from Congress, and this Federal money is matched by State dollars. The fund is administered in a partnership between the National Park Service (NPS) and the States through SHPO offices, Tribes, and local governments. To learn more, visit http://www.cr.nps.gov/hps/hpf/index.htm.

State Grant Programs. Many States provide matching funds to carry out historic preservation activities. Project work includes such activities as rehabilitation and restoration of historic properties, survey and evaluation of historic properties, educational materials, and development of local historic preservation programs. For more information, contact your local SHPO office.

State Tax Credits. Many States offer historic preservation tax incentive programs including credits, reductions, freezes, and abatements for owners of commercial and residential historic properties. The National Trust for Historic Preservation (NTHP), a non-profit organization, maintains a State-by-State list of available tax incentive programs at http://www.nationaltrust.org/help/taxincentives.pdf.

D. Other State Programs

Statewide, Regional, and Local Main Street Programs. Numerous communities across the nation have participated in the National Main Street Program, which has been a valuable mechanism for the revitalization of historic downtown areas. An important part of the Main Street approach to downtown revitalization involves the rehabilitation of downtown facades. In addition to assisting communities in improving the appearance of their downtown areas and promoting historic preservation, the program has also been an economic stimulus in that it has led to the creation of new businesses and jobs in these communities. The organizational structure of Main Street programs is often a public-private partnership, but varies from State to State. Further information is available at http://www.mainstreet.org/.

E. Non-Profit Organizations

The National Trust for Historic Preservation (NTHP). Assists individual historic property owners with financial help and advice. The NTHP provides low-interest, short-term loans for property stabilization. Grants are also awarded to governments, non-profit organizations, and private property owners for professional assistance in rehabilitating historic structures. These grants may be used to plan for the rehabilitation of hazard-prone historic resources. Further information is available on the National Trust's homepage at http://www.nthp.org/help/grants.html.

The Preservation Services Fund. Provides non-profit organizations and public agencies matching grants from $500 to $5,000 (typically from $1,000 to $1,500) for preservation planning and education efforts. Funds may be used to obtain professional expertise in areas such as architecture, archeology, engineering, preservation planning, land-use planning, fund raising, organizational development, and law, as well as preservation education activities to educate the public.

The Johanna Favrot Fund for Historic Preservation. Provides non-profit organizations and public agencies grants ranging from $2,500 to $10,000 for projects that contribute to the preservation or the recapture of an authentic sense of place. Individuals and for-profit businesses may apply only if the project for which funding is requested involves a National Historic Landmark. Funds may be used for professional advice, conferences, workshops, and education programs.

The Cynthia Woods Mitchell Fund for Historic Interiors. Provides non-profit organizations and public agencies grants ranging from $2,500 to $10,000 to assist in the preservation, restoration, and interpretation of historic interiors. Individuals and for-profit businesses may apply only if the project for which funding is requested involves a National Historic Landmark. Funds may be used for professional expertise, print and video communications materials, and education programs.

The Save America's Treasures Funding (SAT). A program founded by the White House Millennium Council and the National Trust for Historic Preservation to celebrate America's great historic and cultural legacy. SAT fosters pride in our heritage by identifying and raising resources to preserve historically significant sites and collections–the enduring symbols that define us as a nation. Each year, a competitive process awards Federal grants to eligible historic resources for approved preservation activities. These grants require non-Federal dollar-for-dollar matches and are administered by the National Park Service (NPS), in partnership with the National Endowment for the Arts. For more information, visit http://www.saveamericastreasures.org/funding.htm.

III. Contact Information

A. Federal Government

Advisory Council on Historic Preservation (ACHP)

The ACHP is an independent Federal agency that promotes the preservation, enhancement, and productive use of our Nation's historic resources, and advises the President and Congress on national historic preservation policy. The ACHP also serves as the primary Federal policy advisor to the President and Congress; recommends administrative and legislative improvements for protecting our Nation's heritage; advocates full consideration of historic values in Federal decision-making; and reviews Federal programs and policies to promote effectiveness, coordination, and consistency with national preservation policies.

Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, NW, Suite 809
Old Post Office Building
Washington, DC 20004
Telephone: 202-606-8503
http://www.achp.gov

Federal Emergency Management Agency (FEMA)

Federal agency created in 1979 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response, and recovery. In 2003, it was absorbed into the newly created Department of Homeland Security.

FEMA Headquarters
500 C Street SW
Washington, DC 20472
Telephone: 202-566-1600
http://www.fema.gov

FEMA Publications Warehouse
1-800-480-2520

Environmental, Historic Preservation, and Cultural Resources Programs
http://www.fema.gov/ehp

Hazard Mitigation Planning Resources
http://www.fema.gov/fima/planning.shtm

State and Local Mitigation Planning How-To Guides
http://www.fema.gov/fima/resources.shtm

National Park Service (NPS)

Created in 1916 within the U.S. Department of the Interior, NPS supports the preservation of natural and historic places. NPS administers the National Register of Historic Places and offers services to citizens and communities to identify, evaluate, protect, and preserve historic properties for future generations of Americans.

National Register of Historic Places
National Park Service
1201 Eye St., NW, 8th Floor
Washington, DC 20005
Telephone: 202-354-2213
http://www.cr.nps.gov/nr

Heritage Preservation Services
National Park Service
1201 Eye Street, NW, 6th Floor (2255)
Washington, DC 20005
Telephone: 202-513-7270
http://www.cr.nps.gov/hps

B. State Governments

National Conference of State Historic Preservation Officers (NCSHPO)

Every State and territory has a State Historic Preservation Office. For an up-to-date listing and current contact information, please visit the Web site of the following organization:

National Conference of State Historic Preservation Officers
Suite 342 Hall of the States
444 North Capitol Street, NW
Washington, DC 20001-1512
Telephone: 202-624-5465
Facsimile: 202-624-5419
http://www.ncshpo.org/

The NCSHPO is the professional association of the State government officials who carry out the national historic preservation program as delegates of the Secretary of the Interior pursuant to the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470). The NCSHPO acts as a communications vehicle among the State Historic Preservation Offices and their staffs and represents the State Historic Preservation Officers (SHPOs) with Federal agencies and national preservation organizations. Questions about historic preservation (i.e., a Federal project, listing in the National Register, tax incentives, etc.) in individual States should be directed to the respective State.

The NCSHPO, a 501(c)(3) corporation registered in the District of Columbia, is governed by a Board of Directors elected by the member States. The NHPA names the NCSHPO as the point of contact for the SHPOs. The president of the NCSHPO is an ex-officio member of the Advisory Council on Historic Preservation.

C. Tribal Governments

National Association of Tribal Historic Preservation Officers (NATHPO)

NATHPO, founded in 1998, is a national, non-profit corporation composed of Tribal Historic Preservation Officers and associate member Tribes. NATHPO's overarching purpose is to support the preservation, maintenance, and revitalization of the culture and traditions of Native peoples of the United States. This is accomplished most importantly through the support of Tribal

Historic Preservation Programs approved by the National Park Service (NPS).

National Association of Tribal Historic Preservation Officers
P.O. Box 19189
Washington, DC 20036-9189
Telephone: 202-628-8476
Facsimile: 202-628-2241
http://www.nathpo.org

Additional information on Tribal Historic Preservation Offices may be found on the following Web sites:

http://www.achp.gov/thpo.html
http://www2.cr.nps.gov/tribal/tribaloffices.htm

D. Non-Profit Organizations

American Association for State and Local History (AASLH)

The AASLH is a non-profit organization which serves to meet the diverse needs of regional historians and historical organizations.

American Association for State and Local History
1717 Church Street
Nashville, TN 37203-2991
Telephone: 615-320-3203
http://www.aaslh.org/

American Institute of Architects (AIA)

The AIA is a professional association which provides ongoing professional training and accreditation for architects, in addition to promoting the creation of a better built environment. The AIA also maintains multiple local and regional chapters, and many special interest committees, including the Historic Resources Committee.

The American Institute of Architects
1735 New York Ave., NW
Washington, DC 20006-5292
Telephone: 800-AIA-3837
http://www.aia.org/hrc/

American Institute for Conservation of Historic and Artistic Works (AIC)

The AIC is a professional non-profit organization which sponsors training sessions, a juried research publication, and annual meetings for conservators – individuals who manage, care for, preserve, or treat cultural objects, including artistic, historical, archeological, scientific, or religious objects.

American Institute for Conservation of Historic and Artistic Works
1717 K Street NW, Suite 200
Washington, DC 20006
Telephone: 202-452-9545
http://aic.stanford.edu

American Planning Association (APA)

The APA is a non-profit public interest and research organization committed to urban, suburban, regional, and rural planning. APA and its professional institute, the American Institute of Certified Planners, advance the art and science of planning to meet the needs of people and society. The APA maintains a number of regional and local chapters, as well as a number of special interest divisions.

American Planning Association
122 S. Michigan Ave., Suite 1600
Chicago, IL 60603
Telephone: 312-431-9100
http://www.planning.org/

Association for Preservation Technology International (APT)

The APT is a non-profit professional organization dedicated to advancing the application of technology to the conservation of the built environment. The APT sponsors a juried publication, and organizes training programs on a wide variety of historic preservation topics.

Association for Preservation Technology International
4513 Lincoln Ave., Suite 213
Lisle, IL 60532-1290 USA
Telephone: 630-968-6400
Facsimile (Toll Free): 888-723-4242
http://www.apti.org

American Society of Landscape Architects (ASLA)

The ASLA is the national professional association representing landscape architects. The ASLA promotes the landscape architecture profession and advances the practice through advocacy, education, communication, and fellowship.

American Society of Landscape Architects
636 Eye Street, NW
Washington, DC 20001-3736
Telephone: 202-898-2444
http://www.asla.org/

Disaster Research Center (DRC)

The DRC at the University of Delaware conducts field and survey research on group, organizational and community preparation for, response to, and recovery from natural and technological disasters and other community-wide crises. DRC researchers have carried out systematic studies on a broad range of disaster types, including hurricanes, floods, earthquakes, tornadoes, hazardous chemical incidents, and plane crashes.

Disaster Research Center
87 East Main Street
Newark, DE 19716-2581
Telephone: 302-831-6618
http://www.udel.edu/drc

Heritage Preservation

Heritage Preservation is a non-profit information clearinghouse which works to ensure the preservation of America's collective heritage. The Heritage Emergency National Task Force is co-sponsored by Heritage Preservation and FEMA, and features a broad membership of over 30 Federal agencies and national service organizations. The Heritage Emergency National Task Force allows for libraries and archives, museums, historical societies, and historic sites to better protect their collections from natural disasters and other emergencies. It promotes preparedness and mitigation measures and provides expert information on response and salvage to institutions and the public.

Heritage Preservation
1012 14th St., NW, Suite 1200
Washington, DC 20006
Telephone: 202-233-0800
http://www.heritagepreservation.org/

National Trust for Historic Preservation (NTHP)

A private non-profit organization with more than a quarter million members, the NTHP is the leader of the vigorous preservation movement that is saving the best of our past for the future. The NTHP features a variety of services, including an information clearinghouse, advocacy and support services, legal services, training, and outreach.

The NTHP's regional and field offices bring the programs and tools of the NTHP to local communities across the country. They offer technical assistance through consultations and field visits and financial assistance, primarily through small grants to help jump

start local efforts. The NTHP convenes educational programs for professional preservationists, and it works to foster preservation-friendly public policies which affect historic places. The NTHP also provides leadership on issues that concern entire regions, such as saving historic schools, fighting urban sprawl, and revitalizing cities through historic preservation.

National Trust for Historic Preservation
1785 Massachusetts Ave., NW
Washington, DC 20036-2117
Telephone: 202-588-6000
http://www.nthp.org

Regional Alliance for Preservation (RAP)

The RAP is a cooperative program of 14 organizations created to foster cooperation among various Preservation Field Service Programs and to assist a wide variety of cultural institutions with collections care activities. The mission of the RAP is to provide comprehensive preservation information to cultural institutions and the public throughout the United States. As a collaborative umbrella organization, RAP does not maintain its own headquarters or staff. For a list of participating organizations and additional information on RAP, please see their Web site at http://www.rap-arcc.org.

IV. Publications

Baker, John Milnes A.I.A.
1994 *American House Styles: A Concise Guide.* New York: W.W. Norton and Company.

Berke, Philip R., Jack Kartez, and David Wenger
1994 *Recovery After Disasters: Achieving Sustainable Development, Mitigation and Equity.* College Station: Hazard Reduction and Recovery Center, Texas A & M University.

Burton, Ian, Robert W. Kates, and Gilbert F. White
1993 *The Environment as Hazard,* 2nd edition. New York: Guilford Press.

Calloway, Stephen and Elizabeth Cromley
1991 *The Elements of Style.* New York: Simon and Schuster.

Carley, Rachel
1997 *The Visual Dictionary of American Domestic Architecture.* New York: Henry Holt and Company.

Cole, Robert Vail, George Alexander, Robert Ballard, et al.
2000 *Historic Preservation Project Planning and Estimating*. Kingston, Massachusetts: R. S. Means Company, Inc.

De Sario, Jack, and Stuart Langton, eds.
1987 *Citizen Participation in Public Decision Making*. Westport, Connecticut: Greenwood Press.

Design Center for American Urban Landscape
1994 *Recover and Resettlement: A First Look at Post-Flood Recovery Planning Issues in the Upper Mississippi River Valley*. Minneapolis: University of Minnesota.

Drabek, Thomas E., and Gerard J. Hoetmer, eds.
1991 *Emergency Management: Principles and Practice of Local Government*. Washington, DC: International City Management Association.

Fram, Mark
1992 *Well-Preserved,* rev. ed. Erin, Ontario, Canada: Boston Mills Press.

Friedman, Donald
1995 *Historical Building Construction: Design, Materials, and Technology*. New York: W. W. Norton & Company.

Frieseman, H. Paul, et al.
1979 *Aftermath: Communities After Natural Disasters*. Beverly Hills, California: Sage Publications.

Geipel, Robert
1982 *Disaster and Reconstruction*. London: George Allen & Unwin Ltd.

Georgia State Historic Preservation Office
1998 *Historic Preservation Natural Disaster Assistance Plan*. Historic Preservation Division, Georgia Department of Natural Resources, Atlanta, Georgia.

Haas, J. Eugene, Robert W. Kates, and Martyn J. Bowden, eds.
1977 *Reconstruction Following Disaster*. Cambridge, Massachusetts: MIT Press.

Heritage Preservation Services and National Park Service
1998 *Caring for Your Historic House*. New York: Harry N. Abrams, Inc.

Hiss, Tony
1990 *The Experience of Place*. New York, Alfred A. Knopf.

Historic Preservation Division, Georgia Department of Natural Resources

1997 *After the Flood: Rebuilding Communities through Historic Preservation*. Historic Preservation Division, Georgia Department of Natural Resources, Atlanta, Georgia.

May, Peter J.

1985 *Recovering from Catastrophes: Federal Disaster Relief Policy and Politics*. Westport, Connecticut: Greenwood Press.

McAlester, Virginia and Lee McAlester

1991 *A Field Guide to American Houses*. New York: Alfred A. Knopf.

Missouri State Emergency Management Agency

1993 *Out of Harm's Way: The Missouri Buyout Program*. Missouri State Emergency Management Agency, Jefferson City, Missouri.

National Park Service, United States Department of the Interior

1989 *Emergency Stabilization and Conservation Measures*. The Frances R. Edmunds Center for Historic Preservation, Historic Charleston Foundation, Charleston, South Carolina.

National Science Foundation

1980 *A Report on Flood Hazard Mitigation*. Washington, DC: National Science Foundation.

National Wildlife Federation

1997 *Higher Ground: A Report on Voluntary Property Buyouts in the Nation's Floodplains, A Common Ground Solution Serving People at Risk, Taxpayers and the Environment*. National Wildlife Federation, Washington, DC. http://nwf.org/floodplain/higherground/index.html (October 26, 2001).

Nelson, Carl L.

1991 *Protecting the Past from Natural Disasters*. Washington, DC: Preservation Press, National Trust for Historic Preservation.

Nigg, J. M., Jasmin K. Riad, Tricia Wachtendorf, Angela Tweedy, and L. Reshaur

1998 Executive Summary, *Disaster Resistant Communities Initiative: Evaluation of the Pilot Phase, Year One*. Disaster Research Center, University of Delaware.

Nobel, Allen G. and Richard K. Cleek

1997 *The Old Barn Book: A Field Guide to North American Barns and Other Farm Structures.* New Brunswick, New Jersey: Rutgers University Press.

Palm, Risa I.

1990 *Natural Hazards: An Integrative Framework for Research and Planning.* Baltimore: Johns Hopkins University Press.

Petak, William J. and Arthur A. Atkisson

1982 *Natural Hazard Risk Assessment and Public Policy: Anticipating the Unexpected.* New York: Springer-Verlag.

Rubin, Claire B., with Martin D. Saperstein and Daniel G. Barbee

1985 *Community Recovery from a Major Natural Disaster.* Monograph #41. Boulder: University of Colorado Institute of Behavioral Science.

Schwab, Jim, Kenneth Topping, Charles Eadie, Robert Deyle, and Richard Smith

1998 *Planning for Post-Disaster Recovery and Reconstruction.* American Planning Association, Chicago.

Sheaffer, John R.

1967 *Introduction to Flood Proofing.* Chicago: Center for Urban Studies, University of Chicago.

Skinner, Nancy and Bill Becker

1995 *Pattonsburg, Missouri: On Higher Ground.* President's Council on Sustainable Development, Washington, DC.

South Florida Regional Planning Council

1990 *Post-Disaster Redevelopment Planning: Model Plans for Three Florida Scenarios.* South Florida Regional Council, Tampa, Florida.

Spennemann, Dirk H. R. and David W. Look.

1998 *Disaster Management Programs for Historic Sites.* Association for Preservation Technology, Western Chapter, San Francisco; U.S. National Park Service, Washington, DC; and The Johnstone Centre, Charles Sturt University, Albury, New South Wales, Australia.

Strangstad, Lynette

1995 *A Graveyard Preservation Primer.* Walnut Creek, California: Alta Mira Press.

Thurow, Charles, William Toner, and Duncan Erley
1975 *Performance Controls for Sensitive Lands: A Practical Guide for Local Administrators.* Planning Advisory Service Report #307/308. American Planning Association, Chicago.

Topping, Kenneth C.
1991 *Key Laws, Codes, and Authorities Affecting Recovery and Reconstruction.* Consultant Report #1, Los Angeles.

Trust for Public Land
1995 *Doing Deals: A Guide to Buying Land for Conservation.* Land Trust Alliance, Washington, DC.

Tyler, Norman
2000 *Historic Preservation: An Introduction to Its History, Principles, and Practice.* New York: W.W. Norton and Company.

Uguccioni, Ellen and Joseph Herndon
1997 *Hurricane Readiness Guide for Owners and Managers of Historic Resources.* National Trust for Historic Preservation, Washington, DC.

Upton, Dell
1986 *America's Architectural Roots: Ethnic Groups That Built America.* New York: Preservation Press.

U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response
1995 *Planning for Disaster Debris.* U.S. Environmental Protection Agency, Washington, DC.

Weaver, Martin E.
1997 *Conserving Buildings: A Guide to Techniques and Materials,* rev. ed. New York: Preservation Press.

Whiffen, Marcus
1993 *American Architecture Since 1780: A Guide to the Styles,* rev. ed. Cambridge, Massachusetts: MIT Press.

Wright, James D., Peter H. Rossi, Sonia R. Wright, and Eleanor Weber-Burdin
1979 *After the Cleanup: Long-Range Effects of Natural Disasters.* Beverly Hills, California: Sage Publications.

Articles

Alderson, Caroline and Paul Westlake, Jr. and Bayard Whitmore
2004 "Perimeter Security Retrofitting for Historic Buildings," *Association for Preservation Technology,* Vol. XXXV, No. 3:37-47.

Burby, Raymond J., Peter J. May, and Robert C. Patterson
1998 "Improving Compliance with Regulations: Choices and Outcomes for Local Government," *Journal of the American Planning Association,* 64(3).

Dessauer, Peter F., and David G. Wright
2001 "Disaster Preparedness During Construction in Danger Areas," *Cultural Resources Management,* Vol. 24, Number 8:19-21. National Park Service, Washington, DC.

Eck, Christopher R.
2000 "Earth, Wind, Fire, and Water—Historic Preservation Disaster Planning in Miami-Dade County, Florida," *Cultural Resources Management,* Vol. 23, Number 6:11-13. National Park Service, Washington, DC.

Estes, Judith
2000 "Disaster Preparedness—How Ready Are You?," *Cultural Resources Management,* Vol. 23, Number 6:14-16. National Park Service, Washington, DC.

Gardner, David
2004 "The Federal Emergency Management Agency and Its Role in Historic Preservation," *Association for Preservation Technology,* Vol. XXXV, No. 1:49-53.

Goldenberg, Nancy
2004 "Repairing Blast Damage at the South Portico of the California State Capitol," *Association for Preservation Technology,* Vol. XXXV, No. 3:31-36.

Innes, Judith E.
1996 "Planning through Consensus Building: A New View of the Comprehensive Planning Ideal," *Journal of the American Planning Association,* 62(4):460-72.

Look, David W. and Dirk H. R. Spennemann
2000 "Disaster Management for Cultural Properties," *Cultural Resources Management,* Vol. 23, Number 6:3-5. National Park Service, Washington, DC.

2001 "Disaster Preparedness, Planning, and Mitigation," *Cultural Resources Management,* Vol. 24, Number 8:3-4. National Park Service, Washington, DC.

Martin, Mary Catherine and Lila King
2000 "A Lesson Well Learned—New Methods of Disaster Preparation for Atlanta's Fox Theatre," *Cultural Resources Management,* Vol. 23, Number 6:17-19. National Park Service, Washington, DC.

Ohlsen, Christine and Claire B. Rubin
1993 "Planning for Disaster Recovery," *MIS Report,* Vol. 25, Number 7. International City Management Association, Washington, DC.

Park, Sharon and Claire Schofield Mastroberardino
2004 "Guidance for Security Enhancements to Historic Buildings," *Association for Preservation Technology Bulletin,* Vol. XXXV, No. 1:3-12.

Roy, Charity
2001 "Disaster Recovery, Developing a Plan," *Cultural Resources Management,* Vol. 24, Number 8:13-15. National Park Service, Washington, DC.

Schwab, Jim
1993 "'Nature Bats Last': The Politics of Floodplain Management," *Environment and Developmen*t (January/February):1-4.
1997 "Zoning for Flood Hazards," *Zoning News* (August):1-4.
1998 "Post-Disaster Zoning Opportunities," *Zoning News* (August):1-4.

Stone, Hollice F.
2004 "Protective Design of Exterior Building Components in Twentieth-Century Historic Structures," *Association for Preservation Technology,* Vol. XXXV, No. 1:23-29.

Topping, Kenneth C. and Mark Sorensen
1996 "Building Disaster-Resistant Communities," *Environment and Development* (May/June):11.

Tweedy, Angela
2000 "Beyond Disaster Response—Public Policy Challenge of the New Millennium," *Cultural Resources Management,* Vol. 23, Number 6:6-10. National Park Service, Washington, DC.

Usman, Lisa

2000 "Mitigation—Fact or Fiction?" *Cultural Resources Management,* Vol. 23, Number 6:32-34. National Park Service, Washington, DC.

Waite, John and Nancy A. Rankin

2004 "Tweed Courthouse: New Approach to Life-Safety Management in a Landmark Public Building," *Association for Preservation Technology Bulletin,* Vol. XXXV, No. 1:15-21.

Miscellaneous

1000 Friends of Florida

2001 "Pre- and Post-Disaster Planning for Historic Resources." 1000 Friends of Florida Web site. http://www.1000friendsofflorida.org (November 16, 2001).

Federal Emergency Management Agency Publications

1984 *Elevated Residential Structures.* Federal Emergency Management Agency, Washington, DC.

1990 *Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments.* Federal Emergency Management Agency, Washington, DC.

1994a *Typical Costs for Seismic Rehabilitation of Existing Buildings,* Volume 1- Summary, 2nd Edition (FEMA 156), Federal Emergency Management Agency, Washington, DC.

1994b *Typical Costs for Seismic Rehabilitation of Buildings,* Volume 2- Supporting Documentation, 2nd Edition, (FEMA 157), Federal Emergency Management Agency, Washington, DC.

1995a *Mitigation: Cornerstone for Building Safer Communities.* Federal Emergency Management Agency, Washington, DC.

1995b *National Mitigation Strategy: Partnerships for Building Safer Communities.* Federal Emergency Management Agency, Washington, DC.

1996 *Guide for All-Hazard Emergency Operations Planning.* Federal Emergency Management Agency, Washington, DC.

1997a *A Guide to Federal Aid in Disasters.* Federal Emergency Management Agency, Washington, DC.

1997b *Multi-Hazard Identification and Risk Assessment: A Cornerstone of the National Mitigation Strategy.* Federal Emergency Management Agency, Washington, DC.

1997c *Report on Costs and Benefits of Natural Hazard Mitigation.* Federal Emergency Management Agency, Washington, DC.

1998 *Homeowner's Guide to Retrofitting* (FEMA 348) and *Protecting Building Utilities From Flood Damage* (FEMA 312), Federal Emergency Management Agency, Washington, DC.

2000a *Planning for a Sustainable Future.* Federal Emergency Management Agency, Washington, DC.

2000b *Prestandard and Commentary for the Seismic Rehabilitation of Buildings* (FEMA 356-357), Federal Emergency Management Agency, Washington, DC.

2002 *Rapid Visual Screening of Buildings for Potential Seismic Hazards: A Handbook,* 2nd Edition (FEMA 154), Federal Emergency Management Agency, Washington, DC.

2003 *A Guide to the Disaster Declaration Process and Federal Disaster Assistance.* Federal Emergency Management Agency, Emergency Preparedness and Response Directorate, Washington. DC. Available online at http://www.fema.gov/rrr/dec_guid.shtm.

nd *Safeguarding Your Historic Site: Basic Preparedness and Recovery Measures for Natural Disasters.* Federal Emergency Management Agency, Boston, MA.

Hom, Darrick B. and Chris D. Poland

2003 ASCE 31 *Seismic Evaluation of Existing Buildings,* American Society of Civil Engineers / Structural Engineering Institute, Reston, Virginia.

Kartez, Jack D., and Charles E. Faupel

1994 "Comprehensive Hazard Management and the Role of Cooperation Between Local Planning Departments and Emergency Management Offices." Unpublished Paper.

Morton, W. Brown III, Gary L. Hume, Kay D. Weeks, and H. Ward Jandl

1992 *The Secretary of the Interior's Standards for Rehabilitation with Illustrated Guidelines for Rehabilitating Historic Buildings.* Government Printing Office.

National Park Service, U.S. Department of the Interior Publications

1995 *The Secretary of the Interior's Standards for the Treatment of Historic Properties.* National Park Service. Washington, DC.

2000 "Disaster Management" Thematic Issue of *Cultural Resources Management,* Vol. 23, Number 6. National Park Service, Washington, DC.

2001 "Cultural Resource Protection and Emergency Preparedness" Thematic Issue of *Cultural Resources Management,* Vol. 24, Number 8. National Park Service, Washington, DC.

Spennemann, Dirk H. R. and David G. Green

1998 "A Special Interest Network on Natural Hazard Mitigation for Cultural Heritage Sites," in *Disaster Management Programs for Historic Sites,* Dirk H. R. Spennemann and David W. Look, eds. Presentations from the June 1997 Symposium sponsored by the National Park Service and the Association for Preservation Technology, San Francisco, California.

Spennemann, Dirk H. R. and David W. Look, eds.

1998a *Disaster Management Programs for Historic Sites.* Presentations from the June 1997 Symposium sponsored by the National Park Service and the Association for Preservation Technology, San Francisco, California.

1998b "From Conflict to Dialogue, From Dialogue to Cooperation, From Cooperation to Preservation," in *Disaster Management Programs for Historic Sites,* Dirk H. R. Spennemann, and David W. Look, eds. Presentations from the June 1997 Symposium sponsored by the National Park Service and the Association for Preservation Technology, San Francisco, California.

U.S. Department of Energy

nd "Operation Freshstart: Using Sustainable Technologies to Recover from Disasters." http://www.sustainable.doe.gov/freshstart.

Weeks, Kay D. and Anne E. Grimmer

1995 *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Illustrated Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.* Government Printing Office.

National Register Bulletins (available from the National Park Service)

See http://www.cr.nps.gov/nr/publications/bulletins.htm.

The Basics

How to Apply the National Register Criteria for Evaluation
How to Complete the National Register Multiple Property Documentation Form
How to Complete the National Register Registration Form
How to Prepare National Historic Landmark Nominations
Researching a Historic Property

For information about property types as well as general guidance and technical assistance for preparing nominations, see http://www.cr.nps.gov/nr/publications/bulletins.htm.

Preservation Briefs

See http://www.cr.nps.gov/hps/tps/briefs/presbhom.htm.

Preservation Technical Notes

See http://www.cr.nps.gov/hps/tps/technotes/tnhome.htm.

Technical Reports

Keeping it Clean: Removing Dirt, Paint, Stains, and Graffiti from Historic Exterior Masonry. Anne E. Grimmer.

Metals in America's Historic Buildings: Uses and Preservation Treatments. Margot Gayle, David W. Look, AIA, and John G. Waite, AIA.

Moving Historic Buildings. John Obed Curtis.

National Trust for Historic Preservation Publications

1993 *Information Booklet No. 82: Treatment of Flood-Damaged Older and Historic Buildings.* National Trust for Historic Preservation, Washington, DC.

1997 *Hurricane Readiness Guide for Owners and Managers of Historic Resources.* National Trust for Historic Preservation, Washington, DC.

2001 *Controlling Disaster: Earthquake-Hazard Reduction for Historic Buildings.* National Trust for Historic Preservation, Washington, DC.

V. Other Useful Web Sites

FEMA

For information about FEMA funding for stabilization and treatment of collections and individual objects of exceptionally significant cultural value located within or on the property of public or non-profit facilities after a disaster, see FEMA's *Collections and Individual Objects Policy* at http://www.fema.gov/rrr/pa/9524_6.shtm.

For information on Darlington, Wisconsin's historic property flood mitigation efforts, see http://www.fema.gov/regions/v/ss/ r5_n16.shtm.

For information on HAZUS, see http://www.fema.gov/hazus/.

For information on Milton, Pennsylvania's planning process for historic flood-prone properties, see http://www.fema.gov/ehp/milton.shtm.

For information on safe rooms and community shelters, see http://www.fema.gov/mit/saferoom.

National Park Service

For information about the appropriate design of additions to historic buildings, see http://www2.cr.nps.gov/tps/standguide/rehab/rehab_newadd.htm.

For information on historic contexts, see http://www.cr.nps.gov/nr/research/contexts.htm and http://www.cr.nps.gov/local-law/arch-stnds_1.htm.

For State historic preservation plans, see http://www.cr.nps.gov/hps/pad/stateplans/planlist.htm.

Other

For a copy of *Disaster Planning for Florida's Historic Resources,* see http://www.dca.state.fl.us/fdcp/dcp/publications/historic.pdf.

For a copy of the *National Capital Urban Design and Security Plan* (October 2002) see http://www.ncpc.gov/publications_press/publications.html.

For economic benefits of historic preservation in the Loudoun County, Virginia's heritage area, see http://www.mosbyheritagearea.org/Report/renovate.html.

To learn more about economic benefits of historic preservation in the State of Florida, see http://www.flheritage.com/files/economic_impact.pdf.

For information on the 113 Calhoun Street Foundation and the rehabilitation of this historic Charleston, South Carolina, building as a center for sustainable living, see http://www.113calhoun.org.

To view the artistic Paducah, Kentucky, floodwall murals, see http://www.kentuckylake.com/gallery/ontheroad/The%20Wall/080802wall.htm

To learn more about the American Institute for the Conservation of Artistic and Historic Works (AIC) guidelines for selecting a qualified conservator, see http://aic.stanford.edu/public/select.html. For a complete list of AIC online publications, including those pertaining to disaster response and recovery, see http://aic.stanford.edu/library/online/index.html.

For information on the care and treatment of cultural resources damaged through disasters, see the CoOL Web site at http://palimpsest.stanford.edu.

For the H. George Friedman, Jr. postcard collection and Decatur, Illinois, Transfer House, see http://www-faculty.cs.uiuc.edu/~friedman/decatur/Decatur.htm.

For additional information about Maryland's building rehabilitation code, see http://www.dnr.state.md.us/education/growfromhere/LESSON15/MDP/SMARTCODE/SMARTCODE00.HTM.

For additional guidance regarding New Jersey's building rehabilitation code, see http://www.state.nj.us/dca/codes/rehab/index.shtml.

appendix c
worksheets

Worksheet #1	Expand the Planning Team
Worksheet #2	Determine Extent and Value of Historic Properties
Worksheet #3	Inventory Historic Property and Cultural Resource Assets
Worksheet #4	Determine Community Value for Historic Property and Cultural Resource Assets
Worksheet #5	Estimate Total Losses for Historic Properties and Cultural Resources
Worksheet #6	Identify Alternative Mitigation Actions for Historic Properties and Cultural Resources
Worksheet #7	Evaluate Alternative Mitigation Actions for Historic Properties and Cultural Resources
Worksheet #8	Prioritize Alternative Mitigation Actions for Historic Properties and Cultural Resources

Worksheet #1 Expand the Planning Team phase 1

Date: _____ step 2

Step 2 of Getting Started *(FEMA 386-1) discusses establishing a planning team with a broad range of backgrounds and experiences represented. This worksheet suggests additional individuals, agencies, and organizations that should be included on the team to address historic properties and cultural resource considerations in the hazard mitigation planning process. State organizations can be included on local teams when appropriate to serve as a source of information and to provide guidance and coordination.*

Use the checklist as a starting point for expanding your team.

Specialists for Historic Properties and Cultural Resource Preservation	On Team	Add to Team
Archeologist	☐	☐
Architectural Historian	☐	☐
Archivist (State/Local)	☐	☐
Business/Development Organizations for Historic Commercial Districts	☐	☐
Collections Manager	☐	☐
Historian	☐	☐
Historical Society (State, Regional, Local)	☐	☐
Historic Preservation Architect	☐	☐
Historic Preservation Planner	☐	☐
Historic Restoration/Rehabilitation Professional	☐	☐
Librarian	☐	☐
Museum Director or Specialist	☐	☐
Non-profit Historic Preservation Organization (name)_____	☐	☐
State Historic Preservation Officer	☐	☐
Tribal Historic Preservation Officer	☐	☐

Worksheet #2 Determine Extent and Value of Historic Properties phase 2

Date: _____ step 3

Fill in Columns 1, 2, 5, 7, 8, and 11. Fill in Columns 4 and 10 after completing Worksheet #3. Divide Column 1 by Column 2 and multiply by 100 to calculate the percentage of properties in the hazard area (Column 3). This process can be used to determine the percent value of properties within the hazard area (Column 6), the percentage of historic properties in the community (Column 9) and their percent value (Column 12).

Type of Structure	Number of Properties			Value of Properties			Number of Properties			Value of Properties		
	Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12
	# of Historic Properties in Hazard Area	# of All Properties in Hazard Area	% of Properties that Are Historic	$ Value of Historic Properties in Hazard Area	$ Value of All Properties in Hazard Area	Property Value of Historic Properties as % of Total Property Value	# of Historic Properties in Community or State	# of All Properties in Community or State	% of Properties that Are Historic	$ Value of Historic Properties in Community or State	$ Value of All Properties in Community or State	Property Value of Historic Properties as % of Total Property Value
Residential												
Commercial												
Industrial												
Religious/ Non-profit												
Gov't												
Education												
Total												

Worksheet #3 — Inventory Historic Property and Cultural Resource Assets (page 1 of 3) — phase 2

Hazard: _____ Date: _____ **step 3**

Make a copy of a blank worksheet for each hazard of concern. Fill in the name of the hazard and the date. List the name and address of vulnerable historic properties and cultural resources in Column 1. For each property/cultural resource (row) fill out Columns 2 to 10 to complete the information about the asset. For Columns 11 to 15, use results from Worksheet #5 to fill in the applicable columns. For Column 16, use the ranking from Column 7 of Worksheet #4. See the Building Data Requirement table below to determine what additional columns to add to this worksheet, depending on the hazard.

Examples of the types of information to fill in for Columns 3, 5, and 6:

Column 3: Type of Property/Resource (include, but not limited to, buildings, structures, objects, sites, and districts)

Column 5: Structural System (e.g., concrete, wood frame, and steel)

Column 6: Primary Material(s) of Property/Resource (e.g., brick veneer, concrete, and plaster)

Building Data Requirements by Hazard

Building Characteristics	Flood	Earthquake	Tsunami	Tornado	Coastal Storm	Landslide	Wildfire
Building Type/Type of Foundation	■	■	■		■		
Building Code Design Level/Date of Construction	■	■	■	■	■		■
Roof Material				■	■		■
Roof Construction				■	■		■
Vegetation							■
Topography	■				■	■	■
Distance from the Hazard Zone	■		■		■	■	■

Worksheet #3

Inventory Historic Property and Cultural Resource Assets (page 2 of 3)

phase 2

step 3

Hazard: _____ Date: _____

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9
Name and Address of Asset Subject to Hazard	Date of Construction/ Creation	Type of Property/ Type of Resource	Square Footage	Structural System	Primary Material(s) of Property/ Resource	Current Function/Use	Current Condition	Is Owner Interested in Mitigation? (Yes/No)

Worksheet #3 — Inventory Historic Property and Cultural Resource Assets (page 3 of 3) — phase 2

Hazard: _____ Date: _____ step 3

Column 1	Column 10	Column 11	Column 12	Column 13	Column 14	Column 15	Column 16
Name and Address of Asset Subject to Hazard (same as previous page)	Level of Property Vulnerability (High, Medium, Low)	Loss to Structure ($)	Loss to Contents ($)	Loss of Function or Use ($)	Displacement Cost	Total Loss for Hazard Event	Level of Community Value for Ranking Purposes (High, Medium, Low)

Determine Community Value for Historic Property and Cultural Resource Assets

Worksheet #4 **phase 2**

Date: _____ **step 3**

List the name and address of vulnerable historic properties and cultural assets. For each asset (row), fill in Columns 1 to 6. Define High, Medium, and Low for Columns 3, 4, 5, 6, and 7 at the bottom of this worksheet (optional). Fill in Column 7 by qualitatively adding Columns 3 to 6. Enter the results of Column 7 in Column 16 of Worksheet #3.

Name and Address of Asset	Column 1 Historic Designation (National Register, Local Landmark, etc.)*	Column 2 Geographic Context of Significance (National, Tribal/ State, Local)	Column 3 Level of Significance (High, Medium, Low)	Column 4 Public Sentiment (High, Medium, Low)	Column 5 Economic Importance (High, Medium, Low)	Column 6 Degree of Integrity (High, Medium, Low)	Column 7 Total Level of Community Value (High, Medium, Low)

*The designation level does not automatically correlate to the level of community value for ranking purposes.

Worksheet #5 — Estimate Total Losses for Historic Properties and Cultural Resources — phase 2

Hazard: _____ Date: _____ **step 4**

Make a copy of this worksheet for each hazard of concern. Note the date and the hazard at the top of the worksheet. List each historic property or cultural resource asset. For each asset (row) calculate the structure, contents, function, and displacement losses. Enter each loss and total loss on Worksheet #3, as indicated.

Name/ Description of Structure	Structure Loss					Contents Loss				
	Structure Replacement Value ($)	X	Percent Damage (%)	=	Loss to Structure (Worksheet 3, Column 11)	Replacement Value of Contents (Professionally Appraised for Historic Contents)	X	Percent Damage (%)	=	Loss of Contents ($) (Worksheet 3, Column 12)
		X		=			X		=	
		X		=			X		=	
		X		=			X		=	
		X		=			X		=	
		X		=			X		=	
		X		=			X		=	
Total Loss to Structures						**Total Loss of Contents**				

Name/ Description of Structure	Loss of Function Cost					Displacement Cost					Structure Loss + Content Loss + Function Loss + Displacement Cost (Worksheet 3, Column 15)
	Average Daily Operating Budget ($)	X	Functional Downtime (# of days)	=	Total Function Loss ($) (Worksheet 3, Column 13)	Displace-ment Cost per Day ($)	X	Displace-ment Time	=	Total Displacement Cost ($) (Worksheet 3, Column 14)	
		X		=			X		=		
		X		=			X		=		
		X		=			X		=		
		X		=			X		=		
		X		=			X		=		
		X		=			X		=		
Total Loss of Function						**Total Displacement Cost**					
											Total Loss for Hazard Event

Worksheet #6 Identify Alternative Mitigation Actions for Historic Properties and Cultural Resources

phase 3

step 2

Hazard: _____ Date: _____

Fill in the goal and its corresponding objective developed in Step 1. Use a separate copy of this worksheet for each objective. Make sure you note the sources of information you consulted in identifying alternative actions. Use Worksheet Job Aid #1 as a starting point for identifying potential mitigation actions.

Goal:_____

Objective:_____

Alternative Actions	**Sources of Information** (Include sources you consulted for future reference and documentation.)	**Comments** (Note any initial issues you may want to discuss or research further.)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Have you considered alternative mitigation actions from other mitigation action categories? Do those options have negative impacts to historic properties or cultural resources? Among the categories below, check off the ones that apply to this objective.

- ☐ Prevention
- ☐ Property protection
- ☐ Structural diversions
- ☐ Public education and awareness
- ☐ Natural resource protection for historic landscape features
- ☐ Offsetting the impacts of mitigation actions on historic resources

Worksheet Job Aid #1: Alternative Mitigation Actions by Hazard (page 1 of 2) **step 2**

Job Aid #1 from FEMA 386-3, Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies *has been included in this guide for your convenience. You can use this job aid when filling out Worksheet #6. This job aid shows you at a quick glance the types of actions that can address the selected seven hazards. A description of each action is included in the glossary in Appendix A of FEMA 386-3.*

	Prevention																
Alternative Mitigation Actions	Building codes	Coastal zone management regulations	Density controls	Design review standards	Easements	Environmental review standards	Floodplain development regulations	Floodplain zoning	Forest fire fuel reduction	Hillside development regulations	Open space preservation	Performance standards	Shoreline setback regulations	Special use permits	Stormwater management regulations	Subdivision and development regulations	Transfer of development rights
Floods	■	■	■	■	■	■	■	■			■	■	■	■	■	■	■
Earthquakes	■		■	■	■	■				■	■	■		■		■	■
Tsunamis	■	■	■	■		■					■	■	■	■		■	■
Tornadoes	■			■		■						■				■	
Coastal Storms	■	■	■	■	■	■	■	■			■	■	■	■		■	■
Landslides	■		■	■	■	■			■	■	■	■	■	■		■	■
Wildfires	■		■	■	■	■			■	■	■	■		■		■	■

	Property Protection					Public Education and Awareness			Natural Resource Protection							
Alternative Mitigation Actions	Acquisition of hazard-prone structures	Construction of barriers around structures	Elevation of structures	Relocation out of hazard areas	Structural retrofits (e.g., reinforcement, floodproofing, storm shutters, bracing, etc.)	Hazard Information Centers	Public Education and Outreach Programs	Real Estate Disclosure	Best Management Practices (BMPs)	Dune and beach restoration	Forest and vegetation management	Sediment and erosion control regulations	Stream corridor restoration	Stream dumping regulations	Urban forestry and landscape management	Wetlands development regulations
Floods	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■
Earthquakes	■			■	■	■	■	■	■							
Tsunamis	■	■	■	■	■	■	■	■		■		■				
Tornadoes					■	■	■	■								
Coastal Storms	■	■	■	■	■	■	■	■	■	■		■				■
Landslides	■			■		■	■	■	■		■	■	■		■	■
Wildfires	■			■		■	■	■	■		■				■	■

Worksheet Job Aid #1: Alternative Mitigation Actions by Hazard (page 2 of 2)

	Emergency Services						Structural Projects				
Alternative Mitigation Actions	Critical facilities protection	Emergency response services	Hazard threat recognition	Hazard warning systems (community sirens, NOAA weather radio)	Health and safety maintenance	Post-disaster mitigation	Channel maintenance	Dams and reservoirs	Levees and floodwalls	Safe room/shelter	Seawalls/bulkheads
Floods	■	■	■	■	■	■	■	■	■		
Earthquakes	■	■	■	■	■	■					
Tsunamis	■	■	■	■	■	■			■		■
Tornadoes	■	■	■	■	■	■				■	
Coastal Storms	■	■	■	■	■	■	■		■	■	■
Landslides	■	■	■	■	■	■					
Wildfires	■	■	■	■	■	■					

Worksheet #7 Evaluate Alternative Mitigation Actions for Historic Properties and Cultural Resources

phase 3

step 2

Date: _____

1. *Fill in the goal and its corresponding objective. Use a separate worksheet for each objective. The considerations under each criterion are only suggestions—you may revise these to reflect your own considerations.*
2. *For each objective, fill in the alternative actions you listed under that objective in Worksheet #6.*
3. *For each consideration for each action, indicate a plus (+) for favorable and a minus (-) for less favorable.*

When you complete the scoring, minus signs will indicate gaps or shortcomings in the particular action, which can be noted in the Comments section. For considerations that do not apply, fill in N/A for not applicable. Leave a blank only if you do not know an answer. In this case, make a note in the Comments section (page 3 of this worksheet) of the "expert" or source to consult to help you evaluate the criterion.

Goal:_____

Objective:_____

STAPLEE Criteria (Considerations)												
	E (Environmental)	Adverse Effects to Historic Properties and Cultural Resources										
		Consistent With Federal Laws										
		Consistent with Community Environmental Goals										
		Effect on HAZMAT/ Waste Sites										
		Effect on Endangered Species										
		Effect on Land/ Water										
	E (Economic)	Outside Funding Required										
		Contributes to Economic Goals										
		Favorable Benefit-Cost Ratio										
	L (Legal)	Potential Legal Challenge										
		Existing Local Authority										
		State Authority										
	P (Political)	Public Support										
		Local Champion										
		Political Support										
	A (Administrative)	Maintenance/ Operations										
		Funding Allocated										
		Staffing										
	T (Technical)	Secondary Impacts										
		Long-Term Solution										
		Technical Feasibility										
	S (Social)	Effect on Segment of Population										
		Community Acceptance										
		Alternative Actions	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

Alternative Actions	Comments
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

Worksheet #8 Prioritize Alternative Mitigation Actions for Historic Properties and Cultural Resources

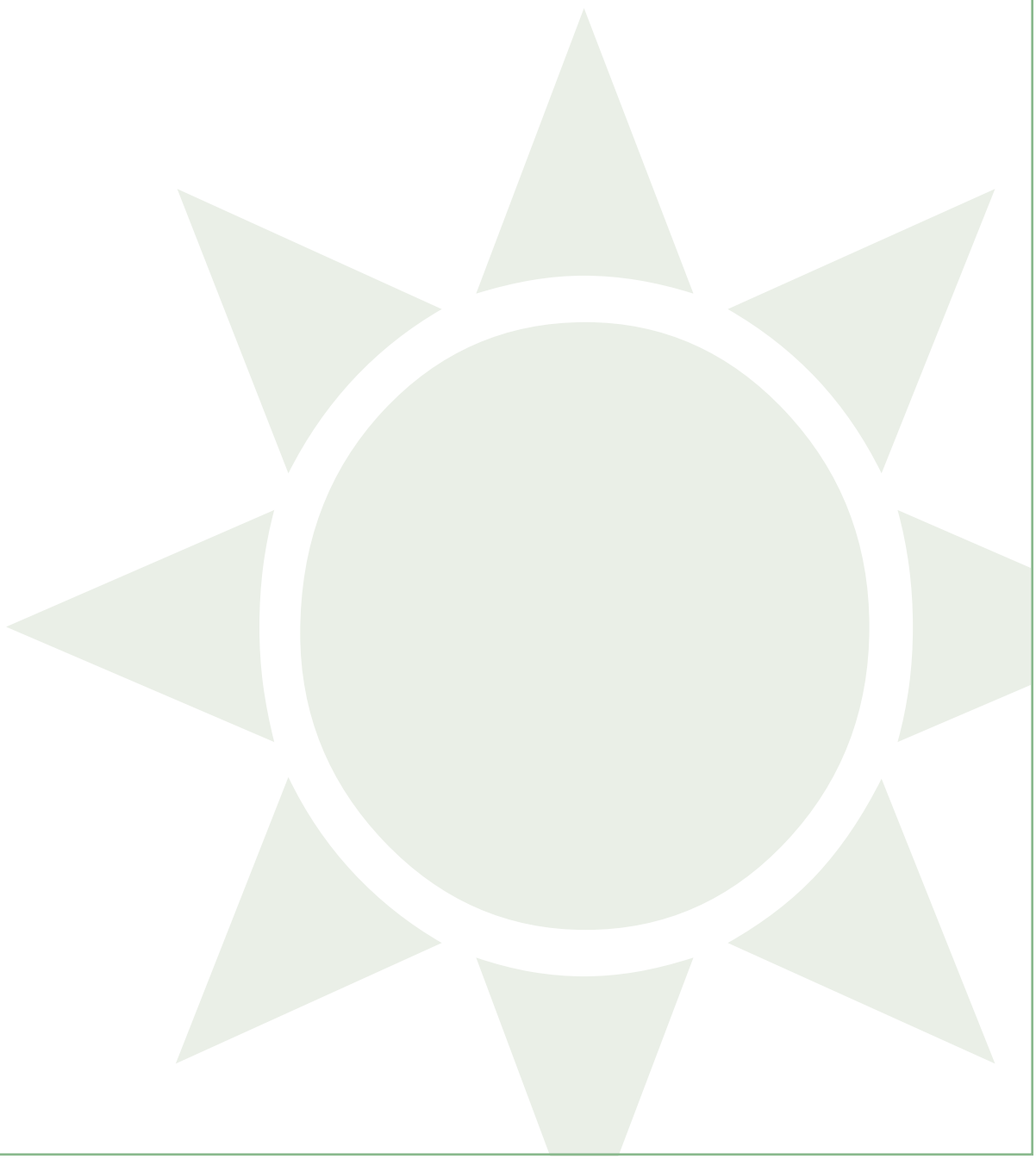
phase 3

step 2

Date: _____

List the Alternative Mitigation Actions, in order of priority. Identify the goal(s) and corresponding objective(s) each action addresses, and note the sources of information for easy reference and any comments or issues to keep in mind when implementing the action.

Alternative Actions (In Order of Priority)	Goal(s) and Objective(s) (From Worksheet #6)	Source(s) of Information (From Worksheet #6)	Comments (From Worksheets #6 and #7)
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			



appendix d
answers to review tests

Phase One Answers

Steps 1-3, Page 1-12

1. d
2. b
3. d
4. a

Phase Two Answers

Step 3, Page 2-28

1. d
2. b
3. d
4. c
5. b
6. *Best answer:* c., the library. This building provides a valuable community service, is listed in the National Register, and contains a valuable collection of historic records.

   Next best answer: a., the block of bungalows. Although some of the houses have been altered, the block as a whole is important as an example of buildings that reflect a prominent architectural style of the early 20th century. In addition, they are important because of their association with a prominent local architect.

   Last in the hierarchy: b., the privately owned house. Although this building is more significant than any single bungalow, it is just one historic property and therefore would rank lower in the hierarchy than an entire block of architecturally significant buildings.

Step 4, Page 2-38

1. b
2. c
3. a
4. c
5. a
6. c

Phase Three Answers

Step 1, Page 3-5

1. a
2. b
3. c

Step 2, Page 3-35

1. c
2. a
3. b

Step 3, Pages 3-40

1. d
2. a
3. d