

## Mitigation Techniques for NFIP Repetitive Loss Properties: A Technical Resource Library

The documents described on pages 2, 3, and 4 provide information on mitigation techniques for flood prone properties. These are particularly useful for communities taking steps to reduce the flooding problems associated with their NFIP repetitive loss properties.

The links to these documents are provided in the box below. To determine what link to use for each document, the link number is displayed at the end of each document description. Alternatively, a printed version of any FEMA document can be ordered through FEMA's Publication Warehouse at (800) 480-2520. For those documents where a link is not provided, footnotes 4 and 5 in the box below provide contact information on how to obtain the document. All of these documents are available at no cost.

### Links to the Listed Mitigation Resource Documents

1. <http://www.fema.gov/plan/prevent/floodplain/publications.shtm>
2. <http://www.fema.gov/library/irlSearchFemaNumber.do>
3. [http://www.floods.org/NoAdverseImpact/NAI\\_Toolkit\\_2003.pdf](http://www.floods.org/NoAdverseImpact/NAI_Toolkit_2003.pdf)
4. Link not available, contact:  
U.S. Army Corps of Engineers, Tulsa District  
Flood Plain Management Services  
1645 South 101st East Avenue  
Tulsa, Oklahoma 74128  
(918) 669-7197  
Fax: (918) 669-7546  
[carolyn.schultz@usace.army.mil](mailto:carolyn.schultz@usace.army.mil)
5. Link not available, contact your ISO/CRS Specialist

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## Reference library for mitigation of NFIP Repetitive Loss Properties

*Reducing Damage from Localized Flooding*, FEMA 511, 2007. The purpose of this manual is to assist State and local officials with three tasks: assessing risks; developing priorities and strategies to address these risks through what are commonly referred to as “mitigation plans” or area analyses; and working with other community officials and property owners to implement projects that reduce or eliminate the identified risks, also referred to as “mitigation projects.” 180 pages. <sup>1</sup>

*Selecting Appropriate Mitigation Measures for Floodprone Structures*, FEMA 551, 2007. This manual provides guidance on how to interpret data collected with the National Flood Mitigation Data Collection Tool (NFMDCT) and other sources to develop detailed proposals for flood mitigation projects. This manual assumes that the community has already completed the mitigation planning process, and that specific structures and/or areas considered high priority for mitigation have been identified and local officials are looking to identify specific mitigation measures to meet these priorities. 198 pages. <sup>2</sup>

*Example Plans*, FEMA, 2007. This publication emphasizes how to prepare a plan that will qualify for CRS credit and the planning prerequisite for receiving mitigation funds from FEMA. It does not include any plans. Instead, it shows how five communities that have prepared floodplain management or hazard mitigation plans addressed different aspects of the planning process. 78 pages. <sup>5</sup>

*NAI Toolkit*, Association of State Floodplain Managers (ASFPM), 2003. “No Adverse Impact” (NAI) floodplain management is a managing principle developed by the ASFPM to address the shortcomings of the typical local floodplain management program. Rather than depending on minimum requirements of federal or state programs, NAI provides tools for communities to provide a higher level of protection for their citizens and to prevent increased flooding now and in the future. 108 pages. <sup>3</sup>

*Local Flood Proofing Programs*, US Army Corps of Engineers, 2005. Some local governments have flood proofed public buildings or provided technical or financial support for flood proofing projects on private property. Each community’s program was developed differently and is administered differently. This document reviews how a community can develop and administer its own flood proofing program. The reader should follow the step by step suggestions. 80 pages. <sup>4</sup>

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## Additional Repetitive Loss Mitigation Resources

The documents referenced below provide more detailed or specific information on mitigation techniques. These documents are recommended reading for community officials who have identified specific problems and/or prioritized their mitigation needs. Clicking on the title of the document will provide information on how to obtain the document. All of these documents are available at no cost.

State and Local Mitigation Guide – How-To Guide (FEMA 386 Series)

*Getting Started: Building Support for Mitigation Planning* (FEMA 386-1), 2002. This first guide in the State and Local Mitigation Planning How-to series discusses the activities and issues involved in initiating a hazard mitigation planning process. The topics covered here are presented within the context of the beginning phase of the mitigation planning process, although many of these activities will continue more or less behind the scenes throughout the process. Therefore, the efforts you put into identifying and organizing your resources early on will pay dividends later as you progress through some of the more challenging tasks of mitigation planning. 98 pages. <sup>2</sup>

*Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA 386-2), 2001. Risk assessment is the process of measuring the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards. Risk assessment provides the foundation for the rest of the mitigation planning process. The risk assessment process focuses your attention on areas most in need by evaluating which populations and facilities are most vulnerable to natural hazards and to what extent injuries and damages may occur. 168 pages. <sup>2</sup>

*Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies* (FEMA 386-3), 2003. The third guide in the State and Local Mitigation Planning How-To Series is about developing your community's mitigation strategy and documenting the planning process. This guide provides planners the tools necessary to develop mitigation goals and objectives, identify and prioritize mitigation actions, formulate an implementation strategy, and assemble the planning document. 126 pages. <sup>2</sup>

*Bringing the Plan to Life: Implementing the Hazard Mitigation Plan* (FEMA 386-4), 2003. The fourth guide in the State and Local Mitigation Planning How-To Series discusses how to implement the hazard mitigation plan. The implementation process puts your planning team's hard work into motion and focuses on the actions necessary to establish and maintain the effectiveness of the plan as a fundamental tool for risk reduction. This guide will lead communities and states through the formal adoption of the plan and discusses how to implement, monitor, and evaluate the results of mitigation actions to keep the mitigation plan relevant over time. 109 pages. <sup>2</sup>

*Integrating Historic Property and Cultural Resource Considerations Into Hazard Mitigation Planning* (FEMA 386-6), 2005. 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. Whether a disaster impacts a major community museum, a historic "main street," or collections of family photographs, the sudden loss of historic properties and cultural resources can negatively impact a community's character and economy, and can affect the overall ability of the community to recover from a disaster event. This publication shows communities how to develop and then implement a pre-disaster planning strategy for their historic properties and cultural resources. 202 pages. <sup>2</sup>

*Integrating Manmade Hazards into Mitigation Planning* (FEMA 386-7), 2003. How-To Guide # 7 assumes that your community is engaged in the mitigation planning process and serves as a resource to help you expand the scope of your plan to address terrorism and technological hazards. It provides information to supplement your community's hazard mitigation planning efforts. It is also intended as a source of general guidance for the broad audiences that are likely to comprise state and local mitigation planning teams, including participants from government agencies, community interest groups, industrial partners, and others. 78 pages. <sup>2</sup>

## Mitigation Techniques for NFIP Repetitive Loss Properties: A Technical Resource Library

Multi-Jurisdictional Mitigation Planning (FEMA 386-8), 2006. This guide provides suggestions to local governments in preparing multi-jurisdictional mitigation plans, plans jointly prepared by more than one jurisdiction which may include any county, municipality, city, town, township, school district or other special district, council of governments or other regional organization, Indian tribes or Alaska Native village, or unincorporated areas. Multi-jurisdictional plans pose special considerations that single jurisdictional plans may not face; but there are benefits as well, such as cost savings to prepare plans, shared staff and resources, and comprehensive approaches to mitigation hazards that cross jurisdictional boundaries. 52 pages. <sup>2</sup>

Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding. FEMA-312, 1998. This guide is specifically for homeowners who want information on protecting their houses from flooding. Homeowners need clear information about the options available and straightforward guidance that will help make decisions. This guide gives both, in a form designed for readers who have little or no knowledge about flood protection methods or building construction techniques. 173 pages. <sup>2</sup>

Above the Flood: Elevating Your Floodprone House, FEMA-347, 2000. This publication shows how floodprone houses in south Florida were elevated above the 100-year flood level following Hurricane Andrew. Alternative elevation techniques are also demonstrated. 69 pages. <sup>2</sup>

Floodproofing Nonresidential Structures, FEMA-102, 1986. This manual has been developed to illustrate a broad range of floodproofing techniques that can be used to reduce flood damages to existing or proposed non-residential structures. The manual is primarily directed at local officials, building owners, designers, contractors and other individuals or organizations that are interested in the design and implementation of floodproofing plans. 202 pages. <sup>2</sup>

Engineering Principles and Practices for Retrofitting Flood Prone Residential Buildings, FEMA-259, 1995. This manual has been prepared to assist local governments, engineers, architects, and property owners involved in retrofitting flood-prone residential structures. Its objective is to provide engineering design and economic guidance about what constitutes technically feasible and cost-effective retrofitting measures for flood-prone residential structures. The focus of this manual is the retrofitting of one- to four-family residences subject to flooding situations without wave action. 996 pages. <sup>2</sup>

Protecting Building Utilities from Flood Damage, FEMA-348, 1999. Despite concentrated efforts of government and the private sector to mitigate flood hazards, many problems still remain with current practices, including methods of design and construction of building utilities. For that reason, this guide was prepared to illustrate the design and construction of building utility systems for residential and non-residential structures located in flood-prone areas in order to comply with the NFIP floodplain management requirements. 192 pages. <sup>2</sup>

Raising and Moving The Slab-On-Grade House, US Army Corps of Engineers, 1990. The purpose of this report is to discuss the procedures for raising or relocating "slab-on-grade" structures with the slab attached, to point out some of the advantages and disadvantages, to suggest some factors to consider, and to indicate the possible costs involved. The procedures and techniques described here are based primarily on those employed by a professional structural mover currently operating in the Tampa Florida area. Other professionals in the field may employ different but equally effective methods. <sup>4</sup>

Flood Proofing: How to Evaluate Your Options, US Army Corps of Engineers, 1993. This document has been prepared to help answer the question, "Should flood proofing be used?" It is intended only as a tool to assist in making a preliminary evaluation of whether or not flood proofing is appropriate and what may be the best flood proofing measure to consider. Prior to implementing any flood proofing measure, the property owner should consult an experienced engineer or contractor in order to conduct final evaluation and design. <sup>4</sup>