6.0 Mitigation Strategy

Introduction

A mitigation strategy provides participating counties and municipalities in the H-GAC planning area with the basis for action. Based on the findings of the *Risk Assessment* and the *Capability Assessment*, the mission statement, goals and actions that follow are intended to guide both the day-to-day operations and the long-term approach taken by counties and municipalities to reduce the impacts of hazards on their communities. In order to achieve these aims, this section was separated into the following components:

- Mission Statement;
- Mitigation Goals;
- Identification and Analysis of Mitigation Measures; and,
- Mitigation Action Plan.

Mission Statement

Develop and maintain a comprehensive pre and post-disaster hazard mitigation plan guided by enhanced education and outreach efforts, new policies and programs, improved planning processes based on study findings, and improved evacuation procedures leading to the creation of policies and projects designed to reduce the vulnerability of individuals, families, households, businesses, infrastructure and critical facilities to the negative effects of natural and human-caused hazards.

Mitigation Goals

The planning team developed mitigation goals based on input from planning sessions, workshops, and public meetings completed during development of the 2011 Regional Hazard Mitigation Plan. Additional information on the process is included in Section 2.

Goal #1 Improve education and outreach efforts regarding preparedness and mitigation actions that can be implemented by citizens, businesses and county and municipal government officials.

Goal #2 Develop hazard mitigation policies and programs designed to reduce the impact of natural and human-caused hazards on people and property.

Goal #3 Conduct studies and implement planning processes to increase the understanding of local hazard vulnerability.

Goal #4 Identify and implement hazard mitigation projects to reduce the impact of hazard events and disasters.

Goal #5 Improve evacuation procedures associated with natural and human-caused hazards.

The goals of this Plan reflect similar goals found in the State of Texas Mitigation Plan and the National Flood Insurance Program. This similarity is not intentional, due to the fact that neither of those sets of goals was presented to members of the Regional Hazard Mitigation Team prior to their independent determinations. This approach was purposeful in fostering an environment that did not manipulate the goal-making process in any particular direction based on preceding determinations. It is, however understandable that the goals established through these three separate efforts are similar because of the similar purposes of the NFIP, the State of Texas Mitigation Plan, and the H-GAC Regional Hazard Mitigation Plan.

State of Texas Mitigation Planning Goals:

- *Reduce or eliminate hazardous conditions that cause loss of life;*
- *Reduce or eliminate hazardous conditions which inflict injuries;*
- *Reduce or eliminate hazardous conditions which cause property damage;*
- *Reduce or eliminate hazardous conditions which degrade important natural resources; and*
- *Reduce flood losses through wise use of floodplains.*

Identification and Analysis of Mitigation Measures

In formulating this *Mitigation Strategy*, a wide range of mitigation actions were identified and considered by participating jurisdictions in order to help achieve the goals of Plan. Mitigation actions that were identified by participants during the development to the 2006 Regional Hazard Mitigation Plan and the 2011 Update are listed in Appendix A.

The 2006 Regional Hazard Mitigation Plan contained 494 individual mitigation action items. Of these 494 individual actions, 130 actions have been completed, 18 are in progress, and 34 are no longer being pursued. The 2011 Update identified an additional 338 mitigation actions and 312 were carried from the 2006 Regional Hazard Mitigation Plan, totaling 650 mitigation actions.

Mitigation Techniques

1. Prevention

Preventative activities are intended to keep hazard problems from getting worse. They are particularly effective in reducing a community's future vulnerability, especially in areas where development has not occurred or capital improvements have not been substantial. Examples of preventative activities include:

- Planning and Zoning
- Hazard Mapping
- Open Space Preservation
- Floodplain Regulations
- Stormwater Management
- Drainage System Maintenance
- Capital Improvements Programming
- Shoreline/Riverine/Fault Zone Setbacks

2. Property Protection

Property protection measures enable structures to better withstand hazard events, remove structures from hazardous locations, or provide insurance to cover potential losses. Examples include:

- Acquisition
- Relocation
- Building Elevation
- Critical Facilities Protection
- Retrofitting (i.e., wind proofing, flood proofing, seismic design standards, etc.)
- Insurance
- Safe Room Construction

3. Natural Resource Protection

Natural resource protection activities reduce the impact of hazards by preserving or restoring the function of natural systems. Examples of natural systems that can be classified as high hazard areas include floodplains, wetlands and barrier islands. Thus, natural resource protection can serve the dual purpose of protecting lives and property while enhancing environmental goals such as improved water quality or recreational opportunities. Parks, recreation, or conservation agencies and organizations often implement these measures. Examples include:

- Floodplain Protection
- Beach and Dune Preservation
- Riparian Buffers
- Fire Resistant Landscaping
- Erosion and Sediment Control
- Wetland Restoration
- Habitat Preservation
- Slope Stabilization

4. Structural Projects

Structural mitigation projects are intended to lessen the impact of hazards by modifying the environment or hardening structures. Structural projects are usually designed by engineers and managed or maintained by public works staff. Examples include:

- Reservoirs
- Levees, Dikes, Floodwalls or Seawalls
- Detention and Retention Basins
- Channel Modification
- Beach Nourishment
- Storm Sewer Construction

5. Emergency Services

Although not typically considered a mitigation technique, emergency services minimize the impact of a hazard on people and property. Actions taken immediately prior to, during, or in response to a hazard event include:

- Warning Systems
- Search and Rescue
- Evacuation Planning and Management
- Flood Fighting Techniques

6. Public Information and Awareness

Public Information and awareness activities are used to advise residents, business owners, potential property buyers and visitors about hazards and mitigation techniques they can use to protect themselves and their property. Examples of measures used to educate and inform the public include:

- Outreach and Education
- Training

- Speaker Series, Demonstration Events
- Real Estate Disclosure
- Hazard Expositions

Mitigation Techniques in the H-GAC Planning Area

During development of the 2011 Regional Hazard Mitigation Plan, county and municipal officials reviewed the findings of the *Capability Assessment* and *Risk Assessment* in order to determine feasible and effective mitigation techniques. The Disaster Mitigation Act of 2000 specifies that state and local governments should prioritize actions based on the level of risk a hazard poses to the lives and property of a given jurisdiction. The Mitigation Matrix (**Table 6.1**) served as a general guide; assisting local governments to make sure that they addressed, at a minimum, those hazards posing the greatest threat. Mitigation techniques, including prevention, property protection, natural resource protection, structural projects, emergency services, and public information and awareness were noted in the matrix if adopted by a participating jurisdiction. Local Mitigation Action Plans in the H-GAC planning area include an array of actions, not just those addressing high and moderate risk hazards.

Table 6.1
Mitigation Matrix

MITIGATION TECHNIQUE	HIGH RISK HAZARDS			MODERATE RISK HAZARD	
	Hurricane Wind	Riverine Flooding	Drought	Coastal Flooding/ Storm Surge	Wildfire
Prevention	X	X	X	X	X
Property Protection	X	X	X		
Natural Resource Protection	X	X		X	X
Structural Projects	X	X	X		
Emergency Services	X	X	X		X
Public Information and Awareness	X	X	X	X	X

Mitigation Action Plan

H-GAC designed the Regional Hazard Mitigation Plan to be both comprehensive and strategic in nature. That is, the Plan provides a comprehensive review of hazards and identifies far-reaching policies and projects intended to reduce the future impacts of hazards. The Plan is also strategic - adoption procedures, maintenance expectations, and mitigation actions are linked to departments or individuals responsible for their implementation. When possible, funding sources were identified that could be used to assist in project implementation.

The mitigation actions developed and adopted by participating jurisdictions are listed in Appendix A, *Locally-Specific Mitigation Actions*. **Table 6.2** represents the general format in which each mitigation action was recorded. Each action has been designed to achieve the goals identified in the H-GAC *Mitigation Strategy*. Each jurisdiction's mitigation actions form the basis of their mitigation action plan. By identifying specific projects and policies, the local mitigation action plans help lay the framework for participating counties and municipalities to engage in distinct actions that will reduce their exposure to future hazard events and disasters.

Table 6.2
Mitigation Action Worksheet

Mitigation Action	
a. Community Name:	
b. Action Item (Describe):	
c. Category	
d. Hazard(s):	
e. Lead Agency/ Department Responsible:	
f. Estimated Cost:	
g. Funding Method: (General Revenue, Contingency/ Bonds, External Sources, etc.)	
h. Implementation Schedule:	
i. Priority:	

a. Community Name: Identify your community's name.
b. Action Item: Identify specific actions that, if accomplished, will reduce vulnerability and risk in the impact area. Actions should match mitigation goals.
c. Category: The mitigation technique(s) described earlier in this section.
d. Hazard(s): The hazard(s) the action attempts to mitigate.
e. Lead Agency/ Department Responsible: Identify the local agency, department or organization that is best suited to accomplish this action.
f. Estimated Cost: If applicable, indicate the cost to accomplish the mitigation action. This amount should be estimated until a final dollar amount can be determined.
g. Funding Method: If applicable, indicate how the cost to complete the action will be funded. For example, funds may be provided from existing operating budgets (General Revenue), a previously established contingency fund (Contingency/ Bonds), or a federal or state grant (External Sources).
h. Implementation Schedule: Indicate when the action will begin, and when the action is expected to be completed. Remember that some actions will require only a minimum amount of time, while others may require a long-term continuing effort.
i. Priority: Indicate whether the action is a 1) High priority – short-term immediate – reducing overall risk to life and property; 2) Moderate priority – an action that should be implemented in the near future due to political or community support or ease of implementation; 3) Low priority – an action that should be implemented over the long term that may depend on the availability of funds. Prioritizing mitigation actions for each jurisdiction was based on the following five factors: (1) effect on overall risk to life and property; (2); ease of implementation; (3) political and community support; (4) special emphasis on a general economic cost/benefit review; and (5) funding availability.

With regard to Factor 4 above, local governments use cost-benefit analysis of capital projects when determining priorities for locally-funded projects – and federally funded projects which require infusion of local match. In addition, project applicants are aware that viable projects need to meet certain cost-benefit criteria to receive FEMA mitigation grant funding. Although projects are not necessarily prioritized by the maximum potential benefit, cost is a consideration when establishing priorities.

Mitigation actions with "high" priority were determined to be the most cost effective and most compatible with each jurisdiction's unique needs.

As mentioned above, each jurisdiction prioritized their respective mitigation actions. An overall ranking of High, Moderate or Low was given to each action based on analysis of the action in terms of the five factors listed above. Jurisdictions also used the criteria above (items a. through h.) to evaluate the feasibility of actions. If a jurisdiction could not identify a department or agency responsible for implementing the action, or if the action was determined not to be cost feasible, it was eliminated from consideration.

With the exception of H-GAC's mitigation actions, these mitigation actions are specific measures to be undertaken by the city or county. It is expected that this component of the Plan will be the most dynamic as it will be used as the primary indicator to measure the Plan's progress over time and will be routinely updated and/or revised as it is implemented and incorporated by the jurisdictions.