BACKGROUND

This chapter details the formal processes that will ensure the Five County Association of Government Natural Hazard Mitigation Plan remains an active and relevant document. This chapter provides a description of how the mitigation strategies identified in this Plan will be prioritized, implemented, and administered by participating jurisdictions. Ultimately, the Plan will be implemented through existing planning mechanisms (existing plans, programs and policies); such as, County comprehensive land use plans, capital improvement plans, and building codes. The success of this Plan will be measured on how well the outlined mitigation strategies are implemented. This will be accomplished by participating jurisdictions: 1) formally adopting the Plan, then conducting 2) further natural hazards evaluation within the respective community, and finally, 3) the evaluation will translate into more stringent legislative actions being adopted which will provide the legal authority for hazard risk analysis and mitigation efforts.

> ***Requirement §201.6(c)(3)(iii):*** [The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

MITIGATION STRATEGY: ECONOMIC ANALYSIS

Determining the economic feasibility of mitigating natural hazards provides decision makers with an understanding of the potential benefits and costs of a mitigation strategy, as well as a basis upon which to compare mitigation strategies. By design, the majority of mitigation strategies provided in this Plan are general in nature. The reasoning behind this lies in the fact that this Plan is non-regulatory in nature. Further, financial resources are scarce for each of the jurisdictions in the Five County region; nonetheless, the burden of planning and implementing site-specific projects rests upon the respective jurisdiction.

FEMA's methods of identifying the costs and benefits associated with natural hazard mitigation strategies fall into two general categories; benefit-cost analysis and cost-effectiveness analysis. Conducting benefit-cost analysis for a mitigation strategy can assist in determining whether a strategy is worth undertaking now, in order to avoid disaster related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal.

This section is not intended to provide a comprehensive benefit-cost analysis, nor is it intended to provide an economic analysis to evaluate local projects. It is intended to 1) raise benefit-cost analysis as an important issue, and 2) provide some background on how economic analysis can be used to evaluate mitigation projects. While not easily accomplished, there is value in assessing the positive and negative impacts from mitigation activities and obtaining an instructive benefit-cost comparison. Otherwise, the decision to pursue or not pursue various mitigation strategies would not be based on an objective understanding of the net benefit of loss associated with these actions.

BENEFIT-COST ANALYSIS

Benefit-cost analysis is a key method used by FEMA and other state and federal agencies in evaluating hazard mitigation projects. FEMA Publication 386-5, *Using Benefit-Cost Review in Mitigation Planning (May 2007),* outlines approaches for conducting economic analysis of natural hazard mitigation projects. It describes the importance of implementing mitigation activities, different approaches to economic analysis of mitigation strategies, and methods to calculate costs and benefits associated with mitigation strategies. Benefit-cost analysis is used in natural hazards mitigation to illustrate if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity.

The mitigation strategies provided in this Plan were proliferated through a process that emphasized a review of costs and benefits of each respective strategy. This process resulted in a streamlined prioritization process using the principle that those mitigation strategies which carry a smaller price tag have a higher degree of achievability, and thus easier to implement. To assess the measurable and non-measurable benefits and costs associated with each mitigation strategy provided in this Plan, the Review Tools illustrated in FEMA Publication 386-5 were utilized. Each mitigation strategy was based upon a measurement of: 1) Vulnerability, 2) Benefits, and 3) Costs. This measurement was based upon the quantitative data generated through the GIS analysis. Effectively, data collection resulted in mapping generation sufficient to quantitatively assess regional natural hazards. From here, GIS software then quantified the number of units and total market value for all structures located within each defined hazard area.

The theoretical assumption made in prioritizing mitigation strategies herein rests upon the premise that a natural hazard which has the highest amount of possible financial loss would also possess a higher probability of loss of life. Further, using the assumption that a natural hazard occurred at maximum levels of destruction (intensity and range); we can also assume that the benefits of conducting mitigation actions to prevent said losses would be a top priority. Lastly, the assumption was made that the strategies which carry a smaller price tag have a higher degree of achievability; thus having a higher degree of benefit. This being said, implementation of a mitigation strategy which requires a minimal financial contribution carried a higher weight, resulting in a higher priority. The resulting mitigation strategies for each respective county-level hazard were all prioritized with these attributes in mind.

MITIGATION STRATEGY: PRIORITIZATION

Mitigation strategies reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life which would otherwise be incurred in the event of a natural disaster. Evaluating natural hazard mitigation provides decision makers with an understanding of the potential benefits and costs of an activity, as well as a standpoint to compare alternative projects.

Evaluating mitigation strategies is a complex and difficult process which is influenced by many variables. First, natural disasters affect all segments of the community, including citizens, businesses, and public services. Second, while some of the direct/indirect costs of natural disaster damages are measurable, some of the costs are non-financial; therefore, they are difficult

to financially quantify. Third, many of the impacts associated with a natural disaster have compounding effects on the community, which in turn increases social and economic impacts a disaster may have.

The mitigation strategies provided in this Plan are listed in accordance to their respective natural hazard and prioritized in the following manner:

1) Each natural hazard is evaluated at each respective county level.
2) At the county level, a natural hazard with the highest amount of possible financial loss is listed at the beginning of the mitigation strategies, with those of lesser financial loss listed in subsequent order.
3) Once the possible financial loss is calculated for each respective hazard and ordered as detailed in #2 above, the mitigation strategies are then prioritized with those requiring a minimal financial contribution at the beginning of the hazard mitigation strategies and those with higher funding requirements or unknown funding requirements listed towards the end of the prioritization for that specific hazard.

The theoretical assumption made in prioritizing mitigation strategies herein rests upon the premise that a natural hazard which has the highest amount of possible financial loss would also possess a higher probability of loss of life. Further, using the assumption that a natural hazard occurred at maximum levels of destruction (intensity and range); we can also assume that the benefits of conducting mitigation actions to prevent said losses would be a top priority. Lastly, the assumption was made that the strategies which carry a smaller price tag have a higher degree of achievability; thus having a higher degree of benefit. This being said, implementation of a mitigation strategy which requires a minimal financial contribution carried a higher weight, resulting in a higher priority. The resulting mitigation strategies for each respective county-level hazard were all prioritized with these attributes in mind.

PRIORITIZATION USING THE FEMA STAPLEE METHOD

In addition to the above mentioned prioritization method, mitigation strategies were selected and prioritized utilizing the concepts of the STAPLEE explained in FEMA 386-3. Normally used to evaluate alternative mitigation strategies for a single identified problem, the STAPLEE process was used as a rational basis to determine the prioritization of each mitigation strategy. Each respective County level NHMP Planning Team believes that using the STAPLEE provided a reasonable and objective means to determine relative priority of the mitigation strategies identified in this plan. The STAPLEE process allows for a review of each strategy based upon the following considerations:

- **Social**- Is the proposed action/project socially acceptable to the community and does it unfairly affect one segment of the community?
- **Technical**- Is the action/project feasible from a technical standpoint? Can it be accomplished using available engineering practices?
- **Administrative**- Is there adequate staffing, funding and maintenance available for the proposed mitigation project?

- **Political**- Is there political support for the proposed action/project?
- **Legal**- Does the jurisdiction possess the appropriate legal authority to undertake the action/project?
- **Economic**-Are there sources of funding to accomplish the action/project? What benefits does the action/project provide and are the estimated costs in line with the benefits the action/project would provide?
- **Environmental**-Will the proposed action/project have an adverse effect on the environment (land, water, endangered species) and will the action/project comply with applicable environmental laws?

These factors were all considered in determining the relative priority for each mitigation strategy listed in each respective county level mitigation strategies section. The resulting mitigation strategies, listed in accordance with their respective natural hazard, are presented in an effort to provide macro-level risk reduction.

MITIGATION STRATEGY: IMPLEMENTATION & ADMINISTRATION

This Natural Hazard Mitigation Plan is non-regulatory in nature and provides a series of recommendations, many of which are closely tied to existing planning mechanisms. The authors of this Plan sincerely hope that each participating jurisdiction will incorporate the recommended mitigation strategies into existing programs and procedures. The police powers afforded to jurisdictions enable the protection/ preservation of health, safety, and welfare within the community. This plan serves the purpose of accomplishing these goals by protecting life and property from natural disasters and hazards. This Plan provides an inventory of known areas of natural hazards in an effort to encourage development to be limited by the degree to which the natural hazard occurs within the areas of proposed development. Additionally, the jurisdiction can use this Plan as a resource in their development of a Natural Hazards element in their jurisdictional general plan, which will in turn precipitate more stringent zoning regulations and/or planning documents.

Many of the mitigation strategies provided herein are directly related in context to the built environment. This being said, it will become very important for each respective county building, planning, and engineering departments to be diligent in their administration/enforcement of applicable building standards. Another significant opportunity for proliferation of hazard mitigation efforts is at the capital improvement level. This Plan provides planning, research, and mapping materials, which can be used in a jurisdictions capital improvement due-diligence efforts. This continued diligence will undoubtedly enable risk reduction measures to be implemented at the time of development, which is the most optimal time for natural hazard mitigation.

NHMP Mission: to substantially reduce the vulnerability of communities, within the region, to natural hazards.

Ultimately, this Plan shall serve as the impetus for jurisdictions to further evaluate natural hazards within their respective community. Ideally, this evaluation will translate into more stringent legislative actions being adopted which will provide the legal authority for hazard risk analysis and mitigation efforts.

Repetitive Losses
FEMA has indicated that this updated plan must identify if there has been repetitive loss properties located within identified flood hazard areas. Repetitive loss properties are defined in §201.6(c)(2)(ii) as those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year rolling period since 1978. There have been no repetitive loss properties.

Previous Goals and Strategies Incorporated if Relevant
This Plan, while technically considered an update, is essentially a complete rewrite of the previous *Five County Association of Governments Natural Hazard Mitigation Plan (Adopted 2004)*, which takes into account that the hazards knowledge base and institutional knowledge from the previous planning process enabled new Plan that is more concise and readable. This Plan supersedes the previous Plan. The Goals and Mitigation Strategies found in the 2004 Plan were reevaluated and incorporated into this Plan only if they were still relevant. Goals and Strategies which were determined to be non-relevant were deleted and thus not incorporated into this document.

This Plan contains several mitigation strategies that apply to all jurisdictions within the Five County region. Those are mostly regional risks, i.e., radon gas, or severe weather that cross jurisdictional boundaries. Other mitigation strategies are specific to individual jurisdictions.

Updating this Plan in the Future
The Five County Association of Governments Community and Economic Development staff will be prepared to provide staff expertise to prepare the next required update of the Natural Hazard Mitigation Plan in consultation with the State of Utah Hazard Mitigation Officer. The Five County Association of Governments provides professional staff expertise to local elected and appointed officials for the purpose of aiding in the development and implementation of effective decision-making process. The mission of the Five County Association of Governments is to Plan, Prepare and Partner with federal, state and local governments to strengthen the role of southwestern Utah local officials in the execution of state and federal programs at the local level. The overall purpose of the Association is to provide a forum to identify, discuss, study, and resolve area-wide planning and development concerns.

Regional Natural Hazard Mitigation Planning and Local Land Use Ordinances
This document is a guide to local jurisdictions, but it does not, nor can it, provide regulations enforceable in those jurisdictions. Under the State of Utah land use enabling legislation, each jurisdiction has the sole authority to adopt and enforce local land use ordinances. This document encourages local entities to enact appropriate local land use and hazard mitigation ordinances.