HAZARD MITIGATION AND DISASTER PREPAREDNESS PLANNING AT AMERICAN COASTAL UNIVERSITY: SEEKING THE DISASTER-RESISTANT UNIVERSITY

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This study employed a qualitative case study method to evaluate the efforts of one university to conduct hazard mitigation and disaster preparedness planning activities and used the Federal Emergency Management Agency framework and selected writings of sociologist and disaster researcher E.L. Quarantelli as models for evaluating the institution’s approach. The institution studied was assigned a fictitious name and the identities of the study participants withheld in order to protect the integrity of the institution’s planning efforts and its personnel. The study utilized a 92-item questionnaire, field interviews, and review and analysis of documentary materials provided by the institution for data collection purposes. Pattern-matching techniques were applied to identify themes and trends that emerged through the course of data collection. The results indicate the institution has developed an organizational culture that is broadly responsive to and engaged in disaster preparedness planning at multiple levels in a manner generally consistent with principles identified in select writings of Quarantelli. Results further indicate the institution has engaged in identifying hazard mitigation priorities but not in a manner consistent with that advocated by the Federal Emergency Management Agency in its publication entitled *Building a Disaster-Resistant University*. 
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By

Toby W. Osburn
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CHAPTER 1

INTRODUCTION

Background

The 2005 hurricane season occurring along the southeastern Atlantic and Gulf coast areas of the United States was among the most serious and costliest in history in terms of financial damage and operational disruptions in teaching, research and service for colleges and universities.

On August 29, 2005, Hurricane Katrina, a record-breaking Category 5 hurricane, turned toward the Mississippi River basin, diminished in intensity to a Category 3 storm, and barreled toward its direct-hit rendezvous with the city of New Orleans, Louisiana. By landfall Katrina secured its place as “one of the most devastating natural disasters in United States history” (Knabb, Rhome, & Brown, 2006a, p. 1). An estimated 100,000 college and university students and untold numbers of faculty and staff personnel were subsequently scattered from institutions throughout the central Gulf Coast region (Mangan, 2005a), and campuses across southeastern Louisiana were closed for days, weeks, and even months because of storm damage and subsequent levee failures that virtually reconstituted the population, culture and economy of America’s crescent city.

Less than one month later, and still reeling from the effects of the nation’s largest national disaster event in recorded history that displaced an estimated 73,000 students from Louisiana institutions alone (Mangan, 2005d), higher education administrators and emergency management officials along the Gulf of Mexico coastline watched in dismay as Hurricane Rita, yet another record-breaking Category 5 storm, charged toward the Texas/Louisiana border. By the time Hurricane Rita completed its Category 3 landfall on
September 24, 2005 (Knabb, Brown, & Rhome, 2006b), another 18,000 students from campuses in southeastern Texas and southwestern Louisiana had been impacted (Mangan, 2005b). Additional direct and indirect effects of Hurricane Rita’s wind, rains and tornadoes were observed from eastern Texas to Alabama, and floods associated with the storm’s initial entry into the Gulf of Mexico were recorded in certain areas of the Florida Keys (Knabb, Brown, & Rhome, 2006b). Damages to 27 Catholic colleges and universities because of hurricanes Katrina and Rita alone resulted in estimated “physical losses of about $1.4 billion, plus millions more in lost tuition revenue and salaries” (Mangan, 2005c, p. 40).

As if to add insult to injury, Hurricane Wilma, a Category 3 storm, made landfall along the southwestern Florida peninsula one month later on October 24, 2005, producing ten tornadoes in seven different counties and securing its rank as “the third costliest hurricane in U.S. history, behind only Katrina and Andrew” (Pasch, Blake, Cobb, & Roberts, 2006, p. 5). While direct effects of Hurricane Wilma on college and university campuses appeared to have been minimal, the fury of the third in a series of powerful and costly tropical weather systems reiterated the particular vulnerabilities confronting college and university campuses along coastal regions. The season’s final storm to make landfall in the United States resulted in an estimated $13 million in damages to nine private institutions and almost $20 million in damages to public university campuses (Mangan, 2005c).

Rationale for the Study

Planning for and responding to crises and disasters on college and university campuses is not a recent development in American higher education. Institutional
histories are filled with stories of near financial collapse, damage to buildings by natural
and man-made causes, suicides and homicides by students and faculty, athletic
compliance scandals, theft of federal research funds, and a host of other real and
perceived crises and disasters. Countless campuses possess, within the annals of their
oral and written traditions, tales of natural and man-made disaster incidents whose
legacies persist over time as critical moments and significant turning points in
institutional histories.

The 1970 terrorist bombing of Sterling Hall on the University of Wisconsin’s
Madison campus, Pennsylvania floods associated with Hurricane Agnes that devastated
Wilkes University and King’s College in 1972, the 1994 earthquake affecting California
State University-Northridge, the 1998 tornado that struck Gustavus Adolphus College in
Minnesota, and damages to the Borough of Manhattan Community College’s Fiterman
Hall because of the New York terrorist attacks of September 11, 2001, are recent,
preKatrina examples of the natural and man-made risks and vulnerabilities faced by
campus officials on a regularly occurring basis. The proverbial “not a matter of if, but
when” a major crisis or disaster will strike is a common chord echoed among college
and university administrators of every institutional type at every level and in every
geographic location. Yet another common chord reflected in the literature of relevant
professional journals and the content of professional meetings and conference
proceedings is recognition of the need to equip and empower institutional leaders to
effectively anticipate, plan for, and recover from natural and man-made crisis and
disaster situations.
The Federal Emergency Management Agency (FEMA) has recognized the need for campus officials to become proactive participants in preparing their campuses for disasters. Noting that the agency had, in the 10 years prior to the 2003 publication of *Building a Disaster-Resistant University*, distributed millions of dollars to higher education institutions in addition to the untold sums paid out by private insurers, FEMA posits a “systematic, four-phased process for identifying and implementing actions to reduce or eliminate loss of life, property, and function due to natural and man-made hazards” that relies largely on a planning model generally recommend for municipalities (2003, p. 1). Since “higher education institutions are themselves communities in many ways [and] can draw on important lessons from the efforts of counties and municipalities to reduce disaster risks” (p. 1), and since most colleges and universities are, by their very nature, centers of research and development of intellectual capital, this study seeks to gain insight into the manner in which one institution has attempted to mitigate a variety of natural and man-made hazards and has readied itself to cope with and recover from disaster according to the model provided in *Building a Disaster-Resistant University* (2003). If the academy, then, possesses traits and characteristics akin to those of counties and local municipalities and can learn from those entities, it is conceivable, therefore, the academy may, in like manner, benefit from analysis of its readiness to respond to and recover from disasters in light of disaster and preparedness planning principles such as those suggested by Quarantelli (1982; 1997)

**Statement of the Problem**

The problem of the proposed study is whether or not the institution under consideration has implemented hazard mitigation and disaster preparedness processes,
the extent to which such processes are congruent with models recommended by the Federal Emergency Management Agency as reflected in Building a Disaster-Resistant University (2003) and the principles of disaster and preparedness planning offered by Quarantelli (1982; 1997), and the efficacy of these models for developing new or revising existing hazard mitigation and disaster preparedness processes and plans. In order to protect the identity of the institution and the maintain the confidentiality of personnel associated with it who will be selected to participate in the study, a fictitious name, American Coastal University, has been ascribed to the university under consideration.

Purposes of the Study

The purposes of the proposed study are to determine whether or not at American Coastal University:

1. Internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and the extent to which such identification and organization is congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli.

2. Comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and the extent to which such activities are congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli.

3. Hazard mitigation actions have been formalized and written plans created, and the extent to which such actions and plans are congruent with the disaster-resistant
4. Formal institutional hazard mitigation plans have been adopted and implemented, and the extent to which the adoption and implementation of such plans is congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli.

5. Hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management and Quarantelli are efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes and plans.

Research Questions

The research questions for which answers are sought from American Coastal University are:

1. What internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and to what extent are such identification and organization congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli?

2. What comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and to what extent are such activities congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli?
3. What hazard mitigation actions have been formalized and what written plans created, and to what extent are such actions and plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

4. What formal hazard mitigation plans have been adopted and implemented, and to what extent are such plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

5. To what extent are hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management and Quarantelli efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes?

Significance of the Study

The 2005 tropical storm and hurricane season proved to be the most active on record in the United States with 11 named tropical storms and 15 named hurricanes originating within a few hundred miles of the southeastern United States. For the first time since storms began receiving name designations from lists used by the National Hurricane Center in 1953, the entire list of approved storm names was exhausted, and an additional set of six names, commencing with Alpha and ending with Zeta, were utilized from an alternate list derived from Greek alphabet characters (Knabb & Brown, 2006a; Knabb & Brown, 2006b). Governmental and scientific officials with the National Weather Service noted that above-normal Atlantic hurricane activity has occurred since
1995, notwithstanding the unusually near-normal season of 2006, and projected the 2007 season would yield a sharp increase in activity from the prior year (2007).

With almost 700 regionally accredited colleges and universities in the Gulf Coast states, from Texas to Florida, and along the lower half of the Atlantic seaboard states, from Florida to Virginia alone, institutional leaders, accrediting bodies, governing boards, denominational authorities, state legislatures, and governors will be increasingly accountable to develop and execute well-defined hazard mitigation plans in order to reduce the adverse impact of natural disasters on their campuses and increase the speed and efficiency with which the academy’s core functions of teaching, research, and service is able to resume following such events. In addition to the propensity for adverse tropical weather systems and the inherent residual effects of floods, tornadoes, and damaging winds associated with them, the 21st-century reality of terrorist attacks on mainland American soil, combined with the ever present prospect of man-made disasters, pandemic threats, and civil unrest within the free and open environments of most campuses, reinforces the importance of advanced assessment of vulnerabilities and adequate planning for an array of disasters before they occur.

The proposed study seeks to assist higher education administrators, governing boards, emergency management officials, and public policy makers to become better equipped to mitigate the hazards and risks associated with both natural and man-made disasters by describing and assessing one institution’s efforts. Results of the study may serve as a springboard for further research and development of policies and practices concerning disaster preparedness, prevention, response, and recovery at institutions whose operations are at risk of interruption by disasters of many types, but especially
among campuses located in high-risk areas for frequently less-than-predictable natural disasters associated with hurricanes, earthquakes and other similar weather and geological events.

Assumptions

I assumed that higher education institutions will continue to experience natural and man-made disasters in the future. I also assumed that public and private accountability for adequate hazard mitigation and disaster planning will continue to grow as public and private funds are directed toward campus disaster response and recovery efforts. I assumed that responding officials at American Coastal University have undertaken some form of hazard mitigation and disaster preparedness planning across all teaching, research, and public service functions to increase the disaster-resistance capacity of their institution relative to the publication of *Building a Disaster-Resistant University* in 2003 and in light of disaster and preparedness planning principles such as those offered by Quarantelli. I also assumed that while *Building a Disaster-Resistant University* represents one of the most comprehensive, audience-specific resources currently available to college and university emergency managers and disaster planners seeking guidance on preparing for and managing hazards and risks associated with natural and man-made disasters, neither it or Quarantelli’s principles of disaster preparedness planning constitutes a framework that can adequately anticipate or prepare for every potential catastrophe that might threaten an institution.

I assumed that the institution might have utilized models for hazard mitigation and disaster preparedness planning other than those recommended by the Federal Emergency Management Agency and in selected writings of E.L. Quarantelli, and I did
not, therefore, assume that the institution adhered strictly to the models used for purposes of this study. I further assumed that most, if not all, of the campus officials participating in the study had at least an introductory knowledge of and general familiarity with the types of processes and practices advocated in Quarantelli’s principles and *Building a Disaster-Resistant University*.

I assumed that responding officials were acquainted with hazard mitigation and disaster preparedness plans and processes that have been adopted and implemented to varying degrees on their campus. I further assumed that the results of the study will provide insight into the practical challenges confronting campus officials as they attempt to prepare their institution for disaster threats and events, and as they prepare to quickly and efficiently restore their campus to pre-event capacity following disasters. I further assumed there was diversity of opinion among responding officials regarding the strength and efficacy of hazard mitigation and disaster preparedness activities undertaken at the institution under study. It is also assumed that campus officials who completed and submitted surveys did, to the best of their awareness and ability, accurately reveal the nature and scope of their institution’s hazard mitigation and disaster planning processes. Finally, the I assumed that college and university officials who completed questionnaires were honest in their responses to questions asked of them and genuinely communicated their understanding of hazard mitigation and related disaster planning processes on their campus.

**Definitions**

The following terms and concepts were utilized in conducting the study:
• Congruent: The extent to which generally one thing predominantly corresponds to or is consistent with another; the extent to which specifically actions, activities, processes and plans relative to hazard mitigation undertaken by American Coastal University are, more often than not, predominantly compatible or complementary of the actions, activities, processes and plans recommended by the Federal Emergency Management Agency in its 2003 publication entitled *Building a Disaster-Resistant University* and the principles outlined by Quarantelli.

• Disaster-resistant: Generally, refers to organizational or institutional capacity to withstand the impact of a natural or man-made event with less adverse impact than might be normally expected; specifically refers to the capacity of American Coastal University to withstand the impact of natural or man-made events with less adverse impact that might be normally expected had certain advance actions and activities not been undertaken in anticipation of such event(s).

• Hazard: Generally, that which has the unrealized potential to be very dangerous, costly, or interruptive of normal conditions; specifically a condition that, left unaddressed, could result in dangerous, costly or interruptive consequences at American Coastal University in the event a natural or man-made disaster occurs.

• Mitigation: Generally, the process of lessening the likely impact or seriousness of a possible event or incident as the result of specific advance action; specifically the process of lessening the likely impact or seriousness of
• Risk: Generally, the yet-unrealized potential for damage or loss due to a given natural or man-made incident or event; specifically the yet-unrealized potential for damage or loss due to a given natural or man-made incident or event that has been identified by American Coastal University.

• Vulnerabilities: Generally, that for which there is inadequate protection; specifically issues or circumstances for which American Coastal University recognizes there is inadequate protection in the event of a natural or man-made disaster.
CHAPTER 2

LITERATURE REVIEW

The literature regarding hazard mitigation planning specifically for college and university campuses is limited. For the purposes of the proposed study, therefore, the field of literature from which information about hazard mitigation and predisaster planning is expected to be drawn will primarily consist of information contained in government agency-generated planning guides, nationally developed standards documents, scholarly and professional journals, books and other print resources geared toward community planners and elected and appointed officials working in local city, county, and related municipal government environments and students and practitioners of public administration, emergency administration and planning, and public policy. The general field of business continuity planning, because of its applicability to multiple organizational environments and settings, will also be relied upon to provide an understanding of the major themes and issues involved in planning for natural and man-made disasters and mitigating the hazards and risks of such threats in higher education. Resources directly targeted at hazard mitigation and disaster planning within college and university contexts, albeit limited, will also be utilized.

The Need for Disaster Planning and Preparedness in Higher Education

As noted previously in Chapter 1, colleges and universities are not invulnerable from the hazards associated with man-made and natural disasters. Much as they exist as microcosms within communities, higher learning institutions, regardless of size, type, mission, or location daily face many of the same risks and threats that confront small businesses, multinational corporations, governmental bodies, and private citizens.
Institutions in existence for practically any length of time have likely faced multiple threats ranging from financial problems related to enrollment challenges to public relations scandals involving high profile students or employees to credibility crises stemming from research or grant funds abuses to natural weather and geological events such as floods, tornados, hurricanes, earthquakes, landslides, fires, and droughts to public disturbances related to campus or societal and political unrest. That disasters and crises of various types are going to happen is not contested. The responsibility to anticipate and plan for potential crisis and disaster events is most certainly one few educational leaders would deny.

In 2003, the Federal Emergency Management Agency (FEMA), in collaboration with emergency planning officials at six public and private higher education institutions located throughout the United States, turned its attention to the specific issue of hazard mitigation and risk planning related to natural and man-made disaster threats of concern to college and university campuses. In publishing *Building a Disaster-Resistant University*, FEMA itself acknowledged the influence of its own “mitigation planning guidance for local communities” in shaping its suggested activities for strengthening campus preparedness and response capabilities (2003, p. 1). Authors of the document acknowledged that “higher education institutions are themselves communities in many ways, and they can draw on important lessons from the efforts of counties and municipalities to reduce disaster risks” (2003, p. 1).

Systematic plans and disaster preparedness activities that take into account a variety of potential hazards, and provide strategies for assessing and mitigating those hazards in advance of a disaster situation, appear to make a difference. Noting data
from the Institute for Business and Home Safety that indicates residential property
damages alone accounted for more than $26 billion in insurance claim payments over a
six-year period between 1994 and 2000, Burby (2005) suggested these losses could
have been reduced by nearly half if state governments required local communities to
develop comprehensive hazard mitigation plans. Burby further suggested that yet
another approximate 50% reduction in claim payments could have been achieved by
these same communities had hazard mitigation considerations been factored into these
plans (2005).

Specifically referencing damages to American college campuses, FEMA has also
noted that in the period of 10 years prior to 2005, the agency “awarded millions of
dollars in disaster assistance to public and private universities and colleges” and that
additional millions of dollars in insurance payments had been made during the same
period (2003, p. 1). The sole issue of financial losses incurred as a result of disaster
damages and recovery costs often prompts communities and institutions to look at
planning anew, and post-disaster reflections on the January 17, 1994, earthquake that
impacted the Northridge district of Los Angeles, California, included observations that
communities with historical experiences “of repetitive or sometimes catastrophic losses”
are increasingly looking to disaster planners to create policies and plans that can
reduce risks, often with mandated planning requirements that analyze prior losses and
earthquake resulted in an eight-year, $407 million campus reconstruction project to
rebuild California State University, Northridge, and further prompted the California Office
of Emergency Services to prepare a planning guide specifically targeting college and
university campuses in an effort to prevent future building collapses should subsequent seismic events occur (Kennedy, 2004). Cavanaugh (2005) reminded college and university administrators that recovery of all expenses associated with disaster restoration through mechanisms such as insurance and federal assistance seldom occurs and cautioned of the concurrent financial burden such recovery expenses will create.

Olshansky (2006) has called for the city and entire metropolitan area of New Orleans, Louisiana, to undertake comprehensive planning activities to ensure issues such as land use, infrastructure, safety and design are effectively integrated into the reconstructed region lest the relatively short postdisaster period of Hurricane Katrina slip away with such actions unrealized. Numerous forms of disaster-related assistance may carry inherent requirements that communities complete hazard identification and mitigation actions in order to be eligible to receive funding (Grant, 1996). Planning and preparedness may be conceived, therefore, as a necessary, strategic and competitive undertaking among organizations, including higher education institutions that seek to be crisis-prepared rather than crisis-prone (Pauchant & Mitroff, 1992).

The Language of Disaster Preparedness and Planning

Disasters, crises, hazards, risks, threats, and vulnerabilities, whether man-made or natural, are among the terms frequently and interchangeably used throughout various sectors of literature on disaster planning and preparedness, emergency management, business continuity, and risk management. Planning, preparedness, mitigation, and risk management are utilized in similarly interchangeable ways to describe the process of
anticipating and responding to disaster situations. Each of these terms and more convey unique nuances appropriate to various contexts in which they are presented.

Disasters: Nonroutine Events

Kreps offered a definition of disasters as “non-routine events in which societies or their larger subsystems (e.g. regions, communities) are socially disrupted and physically harmed” (1994, p. 169) and further contended that “(1) length of forewarning, (2) magnitude of impact, (3) scope of impact, and (4) duration of impact” (1994, p. 169) are hallmark traits of disaster events. Zdziarski, Dunkel, Rollo and associates defined disasters, in contrast to critical incidents (events with limited impacts affecting a limited segment of a campus community) and campus emergencies (events that disrupt orderly conduct of institutional operations or mission), as “crisis events [that] have major impact well beyond the borders of the campus” and that result in disruptions to broad operational and mission-specific activities throughout the campus as well as in the community in which the campus is located (2007, p. 39).

Institutional responders in disaster situations, it is noted, may fill dual roles as caregivers as well as victims, and virtually every aspect of operations of both the institution and surrounding community are “compromised and functioning at less than full capacity” (Zdziarski et al., 2007, p. 39). Such events require leveraging of outside resources to restore the campus and community to pre-event status, assume a prominent position within institutional and community memory and legacy, and frequently result in “memorials on the anniversary of the event” and other forms of recognition that “keep the experience of the disaster in the consciousness of the community for many years” (Zdziarski et al., 2007, p. 40).
Disasters and crises are further identified as being predictable or unpredictable (Fanelli, 1997; Zdziarski et al., 2007), anticipated and unanticipated (Newsom, VanSlyke, & Kruckenberg, 2000) and inevitable (Elsubbaugh, Fildes, & Rose, 2004; Cavanaugh, 2006). Disasters may then be conceptualized as expected or unexpected events, broad in adverse impact on both the campus and the surrounding community, and the personnel and citizens associated with each, disruptive of numerous mission-specific activities, requiring substantial intervention by internal and external forces in order to restore operations to pre-event conditions, significant in the collective memory of those affected, and recognized in the continuing historical record of the institution and community.

Preparedness: Expecting the Unexpected

Preparedness is defined and described in numerous ways within the literature of planning in general and hazard mitigation and disaster preparedness specifically. Perry and Lindell refer to preparedness as “the readiness of a political jurisdiction to react constructively to threats from the environment in a way that minimizes the negative consequences of the impact for the health and safety of individuals and the integrity and functioning of physical structures and systems” (2003, p. 338). Kurtz and Browne identify “preparedness activity” as policy developed to prevent or limit the effect of disaster (2004, p. 141). Citing it as second in a series of five crisis phases, Pearson, Clair, Misra, and Mitroff (1997) describe preparation as a period in which time, effort and resources are expended in order to avoid potential crises and manage crises that occur.

Christensen suggested a central task of such preparation “is to discover, assess, and address uncertainty” (1985, p. 63) in an effort to eliminate or reduce it.
Distinguishing it from “the allure of directly ‘saving lives’ [or] of providing an ‘escape from poverty,’” Christoplos, Mitchell, and Liljelund urged against simply regarding disaster mitigation and preparedness activities as a set of actions to be taken and instead suggested the two must be viewed as “a challenge to think” (2001, p. 196) within the context of appropriate policy development and risk management processes. Kreps regarded disaster preparedness as “[pointing] to a predefined role of obligations that are called forth by the occurrence of something unusual” (1994, p. 59).

Calloway and Keen affirmed preparation and prevention as doing “what is possible to prevent crises from occurring and to manage effectively those which still happen” (1996, p. 19). And as noted previously in Chapter 1, Quarantelli (1982; 1997), during his respective tenures at the Ohio State University Disaster Research Center and the University of Delaware Disaster Research Center, suggested a series of disaster and preparedness planning principles that demonstrated the progression of his research and observations on the subject. Quarantelli’s principles are summarized in comparison format in Table 1. Principles for which there is an apparent relationship to the hazard mitigation and disaster preparedness planning model recommended in *Building a Disaster-Resistant University* are identified in italic type font; recommended principles that are held in common between the 1982 and 1997 publications in which Quarantelli specifically identified the concepts are aligned parallel with each other.
### Table 1

**Quarantelli’s Principles of Disaster Preparedness Planning**

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- **Is a continuous process.**
  - Highlights a continuing planning process rather than the production of an end-product, such as a written plan.

- **Involves attempting to reduce the unknowns in a problematical situation.**
  - Encourages appropriate actions by anticipating likely problems and possible solutions or options.

- **Aims at evoking appropriate actions.**
  - Builds on social-science research findings derived from systematic data rather than personal anecdotes or ‘war stories’.

- **Should be based on what is likely to happen.**
  - Focuses on general principles rather than specific details.

- **Must be based on valid knowledge.**
  - Emphasizes the need for intra- and inter-organizational integration in the process.

- **Should focus on general principles.**
  - Builds on the notion that what is needed is a model that focuses on the coordination of emergent resources, rather than trying to impose some kind of command and control.

- **Is partly an educational activity.**
  - Views disasters as both quantitatively and qualitatively different from accidents and minor emergencies.

- **Always has to overcome resistances.**
  - Adopts a multi-hazard rather than single-hazard focus, and is generic rather than agent-specific.

- **Must be tested.**
  - Assumes potential victims will react well, instead of badly, during the emergency time of crisis.

- **Is not management.**
  - Includes all four phases of the planning process (mitigation, preparedness, response, and recovery) rather than a single phase.
Noting that “better planning appears to follow or to be organized around certain general principles” (1982, p. 23), Quarantelli suggested that good planning practices are frequently obvious and not so obvious (1982), and that there is often a failure on the part of many involved in both planning for disasters and managing disasters once they occur to recognize the differences between the two functions (1997). Distinguishing between the two can perhaps best be understood by drawing a parallel to the distinction made in the military arena between strategy and tactics. In general, strategy is the overall approach to a major problem or basic objective. But there are always contingencies or factors specific to the situation that have to be taken into account in particular circumstances. The military considers this the province of tactics. Thus, if we think in parallel terms, we can equate good disaster preparedness planning with the best strategy that could be followed in readying a community for a sudden disaster, while good management involves the use of the best tactics for handling the specific contingencies that surface during the emergency time of a particular disaster. (Quarantelli, 1997, p. 39-40)

Quarantelli then affirmed the impossibility of anticipating precise tactics that might be employed in an actual crisis event since such tactics would, by necessity, be tailored to the unique circumstances of the event, but asserts that identification of such tactical matters should be highlighted “in efficient and effective disaster management” (1997, p. 41).

Preparedness is widely viewed in the literature, therefore, as a state of predetermined readiness to prevent, limit, and reduce the impact of uncertain disaster effects that potentially threaten an organization’s human, fiscal, and mission-specific resources in order to further enhance the capability of an organization to effectively respond to and recover from disasters.
Planning in the context of disaster preparedness, hazard mitigation, and resilience may take many shapes and forms. Clarke (1999) identifies no less than three types of planning activities organizations may undertake in anticipation of a disaster: functional planning, symbolic planning, and nonsymbolic planning. Functional planning is that which helps an organization understand what must be done and how, and relies heavily on history to aid planners in establishing the extent to which they are likely capable of fulfilling plan goals. In contrast, symbolic plans, which Clarke referred to as “fantasy documents[,] [are] rhetorical instruments that have political utility” (1999, p. 13) in reducing risks. Such plans, and more importantly, the process of arriving at such plans, becomes the point of planning as organizations compile data they will not use or attempt to project an image that the organization is taking action. Nonsymbolic plans are those that offer likelihood of reasonable execution and effect.

Planning then, for many organizations, becomes a “sign that organizations hang on themselves, advertising their competence and forethought, announcing to all who would listen, ‘we know what this problem is and we know how to solve it. Trust us.’ Thus do organizations try to control the uncontrollable” (Clarke, 1999, p. 4). The appearance of stability and order associated with planning activities and documents may give a false impression of security by reflecting such conditions solely on paper and not in reality in an effort to calm both internal and external concerns regarding vulnerabilities and threats (McConnel & Drennan, 2006). The use of tested and adopted prevention and preparedness plans in which potential threats and risks are actively identified and scanned, early warning signals of weakness or vulnerability are detected, and proposed
response actions are tested and made familiar to plan participants, give the participants the capacity to respond appropriately within the context of a disaster event (Pauchant & Mitroff, 1992).

The process of disaster preparedness planning is one broadly recognized by organizations as valuable, yet frequently treated as minimally necessary. Kreps notes that most organizational planning “is not substantial, mainly because of the infrequency of events, the absence of resources and constituencies to promote hazard awareness and mitigation, and considerable uncertainty about how much of either is needed” (1994, p. 63). Perry and Lindell caution against confusing the obtainment of a written plan with the ever-present and continuing planning process itself, and suggests a plan is a “snapshot of the process at a specific point in time” (2003, p. 338). They further contend that written plans, while important to the preparedness process, do not constitute a sufficient condition of preparedness, noting that “preparedness is dynamic and contingent upon ongoing processes” and “is a state of readiness to respond to environmental threats” (Perry & Lindell, 2003, p. 338). Planning may therefore be viewed as either a functional or symbolic process through which an organization continuously strives to anticipate or maintain a relative state of stability and continuity in the context of an unexpected event.

Hazard Mitigation as a Central Planning Function

The literature broadly recommends mitigation/prevention and preparedness/planning as crucial first steps in managing an array of crisis and disaster situations (Grant, 1996; Kennedy, 2005; McLoughlin, 1985; Schneider, 2002; Settle, 1985). McConnell and Drennan (2006) identified the establishment of procedures and
development of organizational cultures as capacity-building activities that can aid an organization in coping with an array of serious threats. Rike (2003) recommended an eight-step planning process that includes the support and commitment of appropriate organizational leaders, creation of a planning committee or similar leadership team, risk assessment, establishment of procedural and operational priorities, data collection, preparation of a written plan, and plan testing. Similarly, officials at Delgado Community College in New Orleans, Louisiana, upon reflection of the impact of Hurricane Katrina on their campus, specifically recommend that higher education institutions initiate plans that serve to “identify, prepare, and equip the emergency leadership team early . . . select an advance headquarters where the emergency response team can gather to carry out its work . . . secure information technology resources at a distant site . . . have a well-established communications protocol . . . provide access to facilities for workers . . . and provide group and individual counseling immediately” (Johnson, Nolan, & Siegrist, 2006, p. 46).

Perry and Lindell cited planning as the final of four phases in the preparedness process wherein the end product, plan development, “defines the organizational structures by which a coordinated response is to be made” (2003, p. 338). Kovel (2000) contended that in order for effective planning to occur, issues such as facility evaluations, available recovery resources, and likely extent of damages to facilities must also be considered. Kovel further indicated that this type of information is too frequently gathered during the disaster recovery phase “in an ad-hoc manner” (2000, p. 27) when it is not readily available, and further suggested that modeling potential disaster scenarios on the basis of information collected can help create “a series of ‘what-if’
scenarios that can be analyzed” (2000, p. 29), with the ultimate benefit being that of a more effective final plan product (2000).

Hazard mitigation within disaster planning and preparedness is viewed as a critical activity in emergency management, particularly concerning “recurrent natural hazards that are generally predictable” (Schneider, 2002, p. 141). Schneider identified two types of mitigation activities: structural mitigation (structure design, municipal codes, and construction practices) and non-structural mitigation (protection of natural features, avoidance of development in unsafe or high risk locations). Hazard mitigation is at its best, according to Schneider, when such efforts “result in a shift from a disaster-driven system to a policy- and threat-driven system of emergency management” (p. 142). A proactive rather than reactive approach, said Schneider, changes the paradigm of disaster preparedness from one primarily concerned with reacting and responding to crises to one that promotes existence in an environment with risks and threats that can be known and understood, and ultimately results in resilient communities (2002).

McLoughlin (1985) suggested that analysis of potential hazards should consist of two parts including knowledge of potential hazards that threaten and knowledge of community features and resources at risk. “When knowledge of hazards is combined with knowledge of their potential impacts in the community,” McLoughlin said, “the result is the measure of a community’s vulnerability” (p. 168). Mitigation then follows as preventable hazards are addressed and actions to reduce the impact of nonpreventable hazards are taken.
Planning for “All Hazards”

One factor frequently reiterated in the literature is that no plan can fully and completely prepare an organization for every risk, threat, or vulnerability (Boin & McConnell, 2007; Bruins, 2000; Pearson & Mitroff, 1993; Roberts, 2005). A study conducted by Mitroff, Diamond, and Alpaslan found that most colleges and universities surveyed “were generally prepared only for those crises that they had already experienced” (2006, p. 65), and that most of the 117 responding institutions were, at best, in the very early phases of crisis-management program development. Institutions, like communities and other organizations, may benefit from adoption of an “all-hazards” model in which numerous risks and vulnerabilities are considered and anticipated in the context of a disaster or crisis preparedness portfolio (Cavanaugh, 2006; Godschalk & Brower, 1985; Mitroff, 2001; Mitroff et al., 2006; Pearson & Mitroff, 1993; Waugh, 2000). Application of this model might result in identification of numerous specific potential hazard situations to which institutions are vulnerable, or might result in the establishment of clusters or families of hazards around which mitigation and planning activities can then be constructed (Mitroff, 2001).

While no plan can, in fact, fully anticipate the full range of potential threats and vulnerabilities before an organization, the all-hazards model or others akin to it can offer institutions the opportunity to maximize their planning efforts toward an array of disaster scenarios while at the same time focusing on those posing the most likely or imminent risk. Since campus officials who develop and oversee crisis and disaster preparedness and hazard mitigation plans are increasingly coordinating their efforts in conjunction with those of appropriate political governments in their communities in advance of disaster
impact (Bennett-Johnson, 2004; Cavanaugh, 2006; Grant, 1996; Kennedy, 2005; McConnell & Drennan, 2006; Mitroff et al., 2006), the all-hazards model may provide for greater ease of integration and coordination with existing and developing plans already in place via local municipal, county, and state emergency management and planning entities.

Public and Quasi-Public Standards for Hazard Mitigation and Disaster Planning

Substantial standards and resources have been developed in recent years in support of the broad concepts of disaster planning and preparedness and hazard mitigation at the national level and are generally, but not exclusively, directed at state and local government entities. One of the oldest disaster and emergency management standards programs is that of the National Fire Protection Association (NFPA), originally released in 1995 as NFPA 1600, Recommended Practice for Disaster Management. The most current version of NFPA 1600, Standard on Disaster/Emergency Management and Business Continuity Programs (NFPA 1600) “continues to be developed in cooperation with FEMA, [the National Emergency Management Association], and [the International Association of Emergency Managers]” (2007, p. 1600-1).

NFPA 1600 prescribes five major categories of topics under which programs are to be developed including administration, referenced publications containing relevant standards, key definitions of terms within the standard, program management, and program elements. Entities desiring to adopt the standards set forth in NFPA 1600 may do so through a system of voluntary compliance for which there is no formal mechanism of enforcement to ensure adherence. Among its five major sections (administration,
mitigation is addressed as a program element under items 5.5.1-5.5.3 and specifies that

5.5.1 The entity shall develop and implement a mitigation strategy that includes measures to be taken to limit or control the consequences, extent, or severity of an incident that cannot be reasonably prevented.

5.5.2 The mitigation strategy shall be based on the results of hazard identification and risk assessment, impact analysis, program constraints, operational experience, and cost-benefit analysis.

5.5.3 The mitigation strategy shall include interim and long-term actions to reduce vulnerability. (2006, p. 6)

NFPA 1600 also includes several annexes including A.5.5.1 which states

A.5.5.1 The mitigation strategy should include the following:

(1) Use of applicable building construction standards

(2) Hazard avoidance through appropriate land use practices

(3) Relocation, retrofitting, or removal of structures at risk

(4) Removal or elimination of the hazard

(5) Reduction or limitation of the amount or size of the hazard

(6) Segregation of the hazard from that which is to be protected

(7) Modification of the basic characteristics of the hazard

(8) Control of the rate of the release of the hazard

(9) Provision of protective systems or equipment for both cyber and physical risks

(10) Establishment of hazard warning and communication procedures
(11) Redundancy or diversity of essential personnel, critical systems, equipment, information, operations, or materials

(12) Acceptance/retention/transfer of risk (insurance programs)

(13) Protection of competitive/proprietary information. (2007, p. 12)

NFPA 1600 Annex A.5.5.2 further advises that “the mitigation strategy should establish interim and long-term actions to reduce the risks from hazards (2007, p. 12).

The Guide for All-Hazard Emergency Operations (SLG 101) was published in 1996 to serve as a guide for state and local emergency management officials seeking to develop plans that could aid in responding to hazards, integrate mitigation as a component of traditional response and recovery actions, and ensure appropriate coordination with federal authorities and resources during major disaster scenarios (1996). SLG 101 was developed in order to update an array of previously published planning guides and views mitigation as “... actions involving lasting, often permanent, reduction of exposure to, probability of, or potential loss from hazard events” (1996, p. 1-3). While mitigation typically addresses issues such as construction location and standards, SLG 101 urges that it also include educational activities directed at diverse stakeholder groups regarding “simple measures they can take to reduce loss and injury, like fastening bookshelves, water heaters, and file cabinets to walls to keep them from falling during earthquakes” (1996, 1-3).

The National Response Plan (NRP) was released by FEMA in 2004 as an all-discipline, all-hazards plan that establishes a single, comprehensive framework for the management of domestic incidents. It provides the structure and mechanisms for the coordination of Federal support to State, local, and tribal incident managers and for exercising direct Federal authorities and responsibilities. The NRP assists in the important homeland security mission of
preventing terrorist attacks within the United States; reducing the vulnerability to all natural and manmade hazards; and minimizing the damage and assisting in the recovery from any type of incident that occurs. (2004, p. iii)

The NRP provides guidelines for disaster preparedness planning, organizational structures to support the various functional roles required to effectively manage disaster scenarios, and operational guidance for multi- and interagency management of multiple hazards from an all-hazards viewpoint. Also included in the NRP are prescribed incident management actions “ranging from initial threat notification to early coordination efforts to assess and disrupt the threat, to preparatory activation of the ESF structure, to deployment of Federal resources in support of incident response and recovery operations” (2004, p. 46) and guidance for continued management and maintenance of plans. NRP views the concept of hazard mitigation as “activities designed to reduce or eliminate risks to persons or property or to lessen the actual or potential effects or consequences of an incident. Mitigation measures may be implemented prior to, during, or after an incident” (2004, p. 46). Assumptions and guidelines contained within the NRP are functionally based on the National Incident Management System (NIMS), a first-ever standardized emergency management system designed to create a unified approach to disaster preparedness, response, and recovery efforts among local, state, and federal interests released in March 2004 under the authority of the Secretary of Homeland Security pursuant to a directive of the president of the United States (2004).

In 2006 the U.S. Department of Homeland Security, in cooperation with the U.S. Department of Transportation, undertook a comprehensive review of the National Response Plan. The purposes of this review, released in Phase 1 (February 2006) and Phase 2 (June 2006), were, as noted in the February 2006 report, to
identify acute planning deficiencies and quickly target assistance to aid in their correction; identify a range of solutions to strengthen catastrophic planning; update Federal planning guidance and doctrine; strengthen the linkage of homeland security grants to emergency plans; identify constraints to effective planning; improve definition, measurement, and reduction of risk; develop collective national confidence in the adequacy and feasibility of our plans. (2006, p. 4)

Outcomes of both phases of the Nationwide Plan Review (NPR) included findings that nationwide planning does not adequately provide for synchronization of all local, state, and federal resources required to respond disasters, that most emergency plans and planning processes in place at the state and local level are not sufficient to appropriately respond to catastrophic disasters, and that issues pertaining to operations continuity are not adequately addressed in most plans (2006a, 2006b).

Following release of the Nationwide Plan Review in 2006, the Department of Homeland Security released the National Response Framework (2008). This document, identified as an improvement to the National Response Plan, specifies that state, tribal, and local officials, not the federal government, have responsibility to develop detailed, robust all hazards plans . . . with supporting procedures and protocols to address their locally identified hazards and risks . . . to identify hazards and associated risk[s] . . . and to improve protection from natural- and human-caused hazards (2008, p. 80).

The Emergency Management Accreditation Program (EMAP) offers a national, voluntary accreditation framework for emergency management entities at the local, tribal, territorial, and state levels. Organized under an independent, nonprofit organization, EMAP traces its origins back to the 1997 Annual Conference of the National Emergency Management Association and was significantly shaped by the influence of multiple agencies and organizations, including the Federal Emergency Management Agency, International Association of Emergency Managers (IAEM), and
the U.S. Departments of Justice and Transportation. Offering a five-year reaccreditation process, EMAP “encompasses all organizations, agencies, and individuals responsible for emergency management functions” (2006, p. 19), provides assessment tools by which jurisdictions may conduct self-assessments in light of EMAP standards, and prescribes hazard mitigation guidelines that constitute a near mirror image of those recommended by the National Fire Protection Association (2006).

Public and quasi-public standards and planning resources since the September 11, 2001, terrorist attacks in the United States reflect a substantial emphasis on man-made hazards and disasters, further reinforcing the desirability of an all-hazards approach to mitigation and preparedness planning activities.

Hazard Mitigation and Disaster Planning in Higher Education

No fewer than five dissertations have been written since 1981 pertaining to the broad issue of emergency management and disaster response on college and university campuses. Hartzog (1981) conducted a descriptive study of emergency management planning at 312 public institutions enrolling more than 5,000 students. His findings indicated that planning for emergency situations had increased in the 10 years prior to the study, and that oversight for such planning activities was undertaken by a variety of institutional personnel, most often originating within administrative divisions such as finance, operations, or business affairs.

Farber (1982) conducted case studies of disaster response decision making at King’s College and Wilkes College in Wilkes-Barre, Pennsylvania, following flood impacts associated with Hurricanes Agnes and Eloise in 1972 and 1975, respectively.
His research confirmed that decision making is accelerated in a disaster scenario, that the quality of decisions made within disasters is compromised, and that alternative information was frequently utilized when primary information sources were not readily available during in-disaster decision making.

Farber further concluded that decisions made by institutional officials were frequently made on the basis of insufficient data during disasters. His studies also confirmed the idea frequently noted in disaster-related literature that long-term outcomes were often sacrificed on the altar of short-term needs, that small, closely-knit groups of individuals generally make most decisions during disasters, and that disasters involved sharp discontinuities which required changes or realignments of the financial and material resources of King’s College and Wilkes College. Similar realignments were also evidenced in the roles of individuals as well as the institutional functions or operations at both colleges. Such realignments were basically temporary in duration and only necessary in direct response to disaster events (Farber, 1982, p. 147).

Wilson (1992) conducted case studies of three universities confronting significant crisis situations occurring between 1964 and 1987: Student demonstrations against the administration at the University of California-Berkeley in 1964; injuries to nine and the deaths of four students at Ohio’s Kent State University at the hands of National Guard servicemen following protests over President Richard Nixon’s announcement that American troops had been sent into Cambodia in 1970; and the 1987 earthquake that contributed to the death of one student and resulted in substantial disruptions to operations at California State University-Los Angeles were studied. Findings in these studies included an assertion that “none of the institutions studied had given adequate attention to crisis planning. In one case there was no crisis plan and, therefore, crisis
planning was done as the events of the crisis unfolded, on a day-to-day basis” (Wilson, 1992, p. 166). Wilson’s study further found that where plans did exist, they were insufficient to meet the demands of the organization in responding to crises. Multiple failures pertaining to communication with internal and external constituencies at all three institutions involved in the study were also identified.

Zdziarski (2001) studied the perceptions of campus disaster preparedness of student affairs administrators at over 120 institutions associated with the National Association of Student Personnel Administrators. Among his findings include the assertion that geographic location usually determines the type of natural crisis plan developed by institutions and that “current crisis management practices within higher education tend to be reactive rather than proactive” (Zdziarski, 2001, p. 104). Zdziarski also found that while most institutions did not adequately plan for the variety of crisis situations that might confront them, institutions did appear to have appropriate systems for effectively managing crises. Results of this study further found that simulations and tabletop exercises, while widely regarded in disaster planning and hazard mitigation literature and practice as among the most effective preparedness activities, were utilized less often than expected.

Johnson (2007) conducted a comparative analysis of hurricane recovery actions undertaken by the University of West Florida following Hurricane Ivan in September 2004, and Tulane University following Hurricane Katrina in August 2005. Using a qualitative case-study methodology, this researcher attempted to match the various stages of disaster recovery processes and administrative decision-making and actions to existing disaster recovery models present within the literature. Johnson concluded
that six strategies (advance preparation, decisive leadership, addressing employee needs, use of multiple communication methods, empowering key personnel, and creativity regarding the academic enterprise) and four action items (establishment of alternative operational centers, outreach to key external partners and vendors, rapid data access, commencement of immediate remediation) emerging from her study were essential for successful recovery following disasters on college and university campuses, generally, and at the institutions studied, specifically.

Zdziarski, Dunkel and Rollo and associates (2007) published one of the most comprehensive resources for campus administrators seeking practical information and insight pertaining to the general concepts of crisis management, response, and recovery. Drawing significantly on the literature of crisis and disaster preparedness planning, the authors suggested that, with respect to crisis management plans,

there is no fill-in-the-blank crisis management plan outline or turnkey software solution that can adequately address the characteristic and culture of the campus community. . . . The existence of a written crisis management plan is perhaps the single most important crisis management tool a campus can have. It is the foundation and framework from which a campus will operate. Having a written plan establishes a level of clarity and consistency . . . and avoids confusion or debate on key issues that may arise in the heat of the moment. . . . Without even a modicum of planning, a campus's ability to respond will be limited and handicapped (Zdziarski et al., 2007, p. 74).

Zdziarski et al. included in this work planning forms, checklists and related materials administrators might adapt to fit the unique needs of their campus communities. hile the focus of the authors on multiple aspects of crisis management appears practical and therefore highly useful to campus officials, the primary emphasis of the text is on responding to crises (short term threats or interruptions to normal campus operations) rather than hazard mitigation and preparedness planning.
specifically for disasters (significant interruptions of campus and community operations).

One of the most recent and perhaps most comprehensive quasi-public policy planning document in the literature of hazard mitigation planning and disaster preparedness specifically targeting colleges and universities is the Federal Emergency Management Agency’s publication entitled *Building a Disaster-Resistant University*. Developed as a complement to state and local mitigation planning guides previously developed by the agency for use primarily by city, county and other municipal authorities, this guide “is both a how-to guide and a distillation of the experiences of six universities and colleges across the country that have been working over the past several years to become more disaster-resistant” (2003, p. iii). Six institutions of higher learning, representing diverse geographic, geological, meteorological, cultural, and sociological regions of the country, participated in development of the document, including Tulane University in New Orleans, Louisiana, University of Alaska-Fairbanks, University of California-Berkeley, University of Miami, University of North Carolina-Wilmington and University of Washington. Citing the increasing rise in disaster-related losses, *Building a Disaster-Resistant University* noted that hazard mitigation is accepted as good practice and many government jurisdictions now require it. Higher education institutions have an interest on many levels to become more disaster-resistant. Administrators, faculty, and staff are realizing that improving their campus’ resistance to disaster will not only protect their own lives and those of their students, it will also safeguard the campus’ instruction, research and public service (2003, p. 1).

Hazard mitigation planning, it is suggested, “is a systematic, four-phased process for identifying and implementing actions to reduce or eliminate loss of life, property, and function due to natural and man-made hazards” (2003, p. 1). Components of each phase include the following:
Phase 1 -- Organize Resources. This first step involves identifying and marshaling the information resources, existing planning documents, and personnel essential to the planning process. Strategic planning processes, outcomes and deadlines are developed to guide the overall hazard mitigation effort.

Phase 2 -- Hazard Identification and Risk Assessment. This step involves pinpointing specific natural and man-made institutional vulnerabilities. Profiles of various potential hazards are developed, response resources inventoried, and potential losses anticipated and valued, where possible, in terms of human impact, physical damages, and functional interruptions to institutions.

Phase 3 -- Developing Hazard Mitigation Strategies. This step results in the formulation of a written hazard mitigation plan. Previously developed plans are appropriately incorporated into a new plan unique to the role, scope and mission of the individual institution. Integration with local and state planning documents is sought and mechanisms for continuously updating and implementing the plan across all organizational levels of the institution and within each functional area of teaching, research, and public service are implemented.

Phase 4 -- Developing a Mitigation Plan. The final step in the hazard mitigation and disaster planning process involves plan adoption by various instructional, administrative, and governing interests of the institution. Organizational cultures potentially resistant to change are navigated and reoriented toward the ultimate goal of increasing the institution’s disaster-resistant capability. Mechanisms for
ongoing development and modification of the plan in response to future changes in institutional conditions and operational challenges are solidified in order to ensure the plan is always timely and relevant to the institution’s needs.

Developed for higher education institutions regardless of size or type, *Building a Disaster-Resistant University* outlines a thorough, multidivisional and multistakeholder framework for assisting campus administrators as they plan and implement appropriate disaster prevention and preparation actions within a model easily adapted to unique the characteristics and challenges of each institution. The model draws extensively from known best practices and standards within the broad field of hazard mitigation and disaster preparedness planning as applied in local municipal contexts and draws upon the agency’s own experience and expertise in assisting local and state officials with similar planning issues and challenges. The recognition expressed through this model that university campuses are, in many respects, akin to small cities, and that campuses should, therefore, draw upon the expertise and best practices already applied in municipalities, lends credibility to the FEMA model as one that should guide planning and preparedness policies and outcomes within the academy.

**Disasters: Unpredictable is Not an Option**

Noting that research findings had led him to conclude that even a small amount of advance preparation and experience with disaster situations could be potentially beneficial to organizations, Kreps warned that “too much of either breeds false confidence” (1994, p. 63). McConnell and Drennan also warned that those who study crisis management should be conscious of the limitations of pre-crisis training and
exercises since “crises are chaotic, unpredictable, threatening, and do not provide crisis managers with the time or the information they would ideally like before making decisions” (2006, p. 67). A potential solution to these and other perils of disaster planning and preparedness might be, again, in the view that the entire activity is a continuing process in which no plan is ever fully perfected and in which new threats and response mechanisms are continually considered and incorporated into the process (Perry & Lindell, 2003). As Pauchant and Mitroff (1992) have suggested, much remains to be done in the area of understanding and managing crises, but treating disasters with reactive, rather than proactive, responses is not a viable solutions for organizations. And as Cavanaugh reflected, on having weathered six hurricanes and countless other man-made and natural crises in his tenure in higher education leadership, “unpredictable is not an option, and it will not be if you seek advice from a broad range of experts and discuss possible scenarios across a wide variety of potential disaster types” (2006, p. 50).

Conclusions

The literature addressing hazard mitigation and disaster preparedness planning is rich, particularly with respect to state, municipal and related governmental entities. Additional literature specifically addressing the concepts of business operations continuity within the context of public and private for-profit entities is widespread and in recent years, particularly in association with widespread concerns about computer systems integrity relative to Y2K, is frequently linked with critical data and information systems backup, redundancy, and retrieval strategies. Such issues are also of interest to college and university officials who bear common concerns for their capacity to
restore critical business functions, such as accessing student academic records and
initiating employee payroll, functions essential to the support of the academy’s core
tasks of teaching, research, and service. As noted in the literature review, colleges and
universities share much in common with municipal concerns when it comes to
operational issues of facilities and utilities infrastructure; human services such as
hospitals and emergency response; convenience functions such as food service, retail
shopping and dining; multipurpose arts, cultural, and athletic performance venues; and
residential concerns pertaining to student and employee housing.

Growing within the literature are studies and expert insights into the array of
issues and concerns for which higher education leaders and policy makers must
prepare in order to adequately anticipate and respond to various disaster events. The
literature provides few schema or conceptual frameworks for hazard mitigation and
disaster preparedness that specifically target the unique operational, instructional,
research, and scholarly aspects of the academy. Quarantelli’s principles, for instance,
assume application in community and related municipal contexts. Building a Disaster-
Resistant University itself contains references to the fact that, although developed for
use on college campuses, the practices prescribed within it are largely drawn from
those generally applied in municipal contexts.

To date, I found no model for hazard mitigation and disaster preparedness
planning that contains specific instrumentation to assist campus officials in assessing
the efficacy of hazard mitigation and disaster preparedness processes and plans once
implemented. The literature would benefit from development of assessment
mechanisms through which an institution’s hazard mitigation and disaster preparedness
processes, plans and actions may be evaluated, thereby providing a basis for additional
research and further development of tools to aid campus planners, emergency
managers, executive officials, and policy makers. *Building a Disaster-Resistant
University* offers a basis for generating assessment instrumentation that may prove
useful to campus officials in assessing the efficacy of hazard mitigation and disaster-
preparedness planning processes. The model set forth in *Building a Disaster-Resistant
University* was developed by FEMA in consultation with emergency management and
planning officials at six public and private universities across the United States, and
draws extensively from known best practices and standards within the broad field of
hazard mitigation and disaster preparedness planning as applied in local municipal
contexts, in addition to drawing upon the agency’s own experience and expertise in
assisting local and state officials with similar planning issues and challenges.

The recognition expressed through this model, that university campuses are, in
many respects, akin to small cities, and that campuses should, therefore, draw upon the
expertise and best practices already applied in municipalities, lends credibility to the
FEMA model as one that can effectively guide planning and preparedness policies and
outcomes within the academy.

Disaster planning principles, such as those offered by Quarantelli (1982; 1997), that are
broadly referenced in the literature of disaster planning offer additional bases upon
which assessment instrumentation may be developed and disaster planning processes
evaluated. Quarantelli’s identification of a core set of disaster preparedness planning
principles originates in more than 50 years as a student, researcher, and scholar of
disasters. The literature of hazard mitigation and disaster planning frequently identifies
and affirms, in whole or in part, Quarantelli’s principles. It is rich with references to the numerous research findings, books, book chapters, journal articles, monographs, papers and related publications originating in his work within disaster research centers at two universities over a 30-year period, and in his work as a principal investigator on numerous research projects in collaboration with, among others, the Federal Emergency Management Agency and the National Science Foundation.

I therefore determined, based on the review of relevant literature, that Building a Disaster-Resistant University and Quarantelli’s principles represent two complementary frameworks containing broadly accepted planning concepts sufficient to form measures for assessing the efficacy of hazard mitigation and disaster-preparedness planning processes on college and university campuses. I therefore proposed to develop assessment instrumentation based on these frameworks according to the approach described in Chapter 3.
CHAPTER 3
RESEARCH DESIGN

Overview

I proposed to conduct qualitative research using the case study method in order to understand the extent to which American Coastal University engaged in and achieved congruence with the dominant themes and concepts outlined in *Building a Disaster-Resistant University* and Quarantelli’s principles of disaster preparedness planning. In order to conduct this study in a credible manner I proposed to employ triangulation techniques by using three data collection methods including a questionnaire to be completed by approximately 30 university officials, field interviews with a select subgroup of approximately 10 questionnaire respondents representing the various institutional and noninstitutional stakeholders participating in the study, and researcher review and analysis of physical documents pertaining to disaster preparedness policies, plans and practices. Triangulation is a tool used to strengthen the credibility of qualitative research by gathering data from multiple sources relative to a phenomena or issue rather than relying on a sole source (McMillan, 2000; Stake, 1995).

The use of three data collection methods not only permitted me to utilize triangulation but also, through the use of field interviews and analysis of documentary evidence, further strengthened the reliability of observations through member checking: that is, permitting study participants to review and offer input on data contained in field interview notes and document analysis notes (McMillan, 2000; Stake, 1995). Response frequencies from the questionnaire, response frequencies and field notes pertaining to
field interview questions, and researcher analysis of documentary materials were tabulated. Descriptive statistics were used to generally summarize data collected from questionnaire responses and field interviews and a series of illustrative figures were used to report the data. Inductive narratives were created to report data collected from review and analysis of documentary materials. Pattern-matching techniques were used to identify major themes and trends that emerge from the data. A question-and-answer format was employed to report findings and conclusions.

Methodology

As noted in Chapter 1, the purposes of the proposed study were to determine whether or not at American Coastal University:

1. Internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and the extent to which such identification and organization is congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency (FEMA) and the principles recommend by Quarantelli;

2. Comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and the extent to which such activities are congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli;

3. Hazard mitigation actions have been formalized and written plans created, and the extent to which such actions and plans are congruent with the disaster-
resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli;

4. Formal institutional hazard mitigation plans have been adopted and implemented, and the extent to which the adoption and implementation of such plans is congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli; and

5. Hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management and Quarantelli were efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes and plans.

In order to accomplish these purposes I employed the following methods:

a. Developed an original questionnaire instrument closely modeled after a 2003 planning guide published by the Federal Emergency Management Agency entitled *Building a Disaster-Resistant University* and administered it among approximately 30 personnel at American Coastal University;

b. Conducted a series of field interviews among a subgroup of approximately 10 personnel at American Coastal University who participated in completion of the questionnaire instrument using 12 interview questions that were directly linked to the four major hazard mitigation and disaster preparedness planning concepts contained with *Building a Disaster-Resistant University* (resource organization, hazard identification and risk assessment, development of hazard mitigation strategies, development of a hazard mitigation plan);
c. Studied policy, planning, and related documents pertinent to institutional hazard mitigation and disaster preparedness at American Coastal University in view of select principles of disaster and preparedness planning advocated by Quarantelli’s possessing an apparent relationship to hazard mitigation strategies referenced in *Building a Disaster-Resistant University*;

d. Utilized descriptive statistics and pattern-matching techniques to analyze and synthesize the collected data;

e. Offered a report of findings and conclusions using a question/answer format regarding the extent to which American Coastal University has implemented hazard mitigation and disaster preparedness plans congruent with the framework recommended in *Building a Disaster-Resistant University* and advocated through select principles of disaster and preparedness planning noted by Quarantelli.

Research Questions

As noted in Chapter 1, the research questions for which answers were sought from American Coastal University were:

1. What internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and to what extent are such identification and organization congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli?

2. What comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and to what extent are such
3. What hazard mitigation actions have been formalized and what written plans created, and to what extent are such actions and plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

4. What formal hazard mitigation plans have been adopted and implemented, and to what extent are such plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

5. To what extent were hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency management and Quarantelli efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes?

Participants

The participants in the proposed study consisted of personnel at American Coastal University, an institution of higher education located in close proximity to ocean waters just off the coast of the United States. American Coastal University is a fictitious name I ascribed to the institution studied.

American Coastal University is a regional state university accredited by the Southern Association of Colleges and Schools (SACS) Commission on Colleges and is authorized to award associate, bachelor’s, master’s, specialist and doctoral degrees.
The Carnegie Foundation for the Advancement of Teaching classifies American Coastal University as a four-year or above institution with a high undergraduate enrollment profile. American Coastal University enrolls approximately 10,000 students from 50 states and almost 100 countries. Public in character, American Coastal University offers more than 100 undergraduate degrees, specializations, and minors and more than 80 graduate, specialist, and doctoral fields of study. I selected the institution to be studied on the basis of its geographic proximity to an area prone to natural disasters and its experience with natural disaster events in the 10-year period preceding the study.

Selection of Participants

The sample of institutional personnel selected to participate in the study generally included those identified as essential to hazard mitigation and disaster preparedness planning in *Building a Disaster-Resistant University*. These persons are representative of virtually every major organizational unit of the institution under study (executive leadership, academic affairs, business affairs, institutional planning, institutional research, student affairs, development and public affairs, auxiliary campus operations, faculty) and were selected in consultation with appropriate emergency planning officials at American Coastal University to ensure relevance of input and capacity to meaningfully contribute to the study.

Additional participants not directly associated with American Coastal University, such as city, parish or county, state, and federal officials with specific awareness of the university’s hazard mitigation and disaster preparedness plans were invited to participate in the study. Noninstitutional personnel invited to participate in the study were identified and selected based on relevance of their function and role to hazard
mitigation and disaster preparedness planning at American Coastal University in consultation with university officials. Seventeen persons participated in the study.

Questionnaire Instrumentation

The questionnaire proposed for development through this study sought to provide an assessment tool to ascertain the extent to which college and university administrators at the institution studied have initiated or implemented hazard mitigation and disaster-preparedness actions congruent with the framework recommended by the Federal Emergency Management Agency. Closely modeled in content and sequence to the Federal Emergency Management Agency’s Building a Disaster-Resistant University, the questionnaire consisted of 92 items compiled under four specific themes including resource organization (questions 1-22), hazard identification and risk assessment (questions 23-45), development of hazard mitigation strategies (questions 46-69) and development of a hazard mitigation plan (questions 70-92). Each of the four themes from which questionnaire items originated correspond to the research questions and problem statement outlined in Chapter 1.

Respondents completing the questionnaire were given an opportunity to personally assess their institution’s hazard mitigation and disaster preparedness plans, policies, and practices as identified in the 92-item questionnaire according to the following scale: minimal congruence, low congruence, moderate congruence, or high congruence. Respondents were also given opportunity to provide additional anecdotal comments and observations in a designated location at the conclusion of the questionnaire. A copy of the questionnaire is attached as Appendix A. Participants were urged to read and consider, in advance of completing the questionnaire, material
contained in an executive summary of Building a Disaster-Resistant University (Appendix B) in order to orient themselves to the general themes and concepts advocated in the publication, and were provided a hyperlink to the entire publication to facilitate further review and consideration.

Questionnaire Instrument Data Collection Procedures

The questionnaire was given through paper administration directly to pre-identified personnel at the selected institution. The questionnaire I developed (Appendix A) consisted of 92 items drawn from recommended disaster preparedness and hazard mitigation planning strategies set forth in Building a Disaster-Resistant University. Participants were contacted by telephone, email, and written correspondence and notified that the questionnaire was being sent to them via regular postal mail. Participants further received an executive summary of Building a Disaster-Resistant University (Appendix B) with the questionnaire instrument and were directed to carefully read and consider the summary in advance of completing the questionnaire.

Participants were asked to complete the questionnaire to the best of their knowledge in light of hazard mitigation and disaster preparedness plans in place at the institution. Participants were also advised to anticipate the questionnaire would require approximately 30 minutes to complete, and were further advised to answer on the basis of their own knowledge or awareness rather than with the input or assistance of others. While the questionnaire required disclosure of the identity and employment function of each respondent, the final study and summary of findings in no way identified individual persons within the institution, and no references to individually identified personal responses were made to other participants in the study. A section at the end of the
instrument gave participants an opportunity to provide anecdotal information, reflections and observations regarding hazard mitigation and disaster preparedness plans, policies and practices at the institution.

Participants were expected to return to the researcher the completed questionnaire in the self-addressed, stamped envelope provided to them according to a prescribed calendar. From the completed questionnaires, I tabulated frequencies in a series of illustrative figures that are reported within the narrative of Chapter 4.

Interview Data Collection Procedures

I collected interview data through field interviews with a select subgroup of respondents who completed the 92-item assessment instrument described in prior sections of this chapter. This group consisted of one individual from each of the major organizational units of the university involved in the study (executive affairs, academic affairs, student affairs, business affairs, development and public affairs, institutional planning, institutional research, auxiliary operations, public service and outreach) as well as a representative from non-university interests among local, regional, or state emergency preparedness entities. Approximately 10 persons participated in field interviews, depending on the organizational structure of the institution and availability of personnel.

Relying on initial responses provided via the previously discussed 92-item questionnaire, I attempted to conceptualize the individual subgroup respondent assessments of institutional adequacy or inadequacy of the institution’s efforts to address the four major hazard mitigation and disaster preparedness principles outlined in *Building a Disaster-Resistant University* (resource organization, hazard identification
and risk assessment, development of hazard mitigation strategies, development of a
hazard mitigation plan). I then administered a set of 12 standardized field interview
questions to the participants in order to obtain further insight into the interviewees’
assessments of institutional hazard mitigation and disaster preparedness planning, and
from responses to these questions utilized additional, response-specific probing
questions to elicit additional information in order to more accurately conceptualize the
interviewees’ perceptions of institutional plan adequacy or inadequacy. Each field
interview participant was assigned an alpha-numeric identifier in order to accurately
tabulate responses and protect individual identities. Field interview questions are
provided in Appendix C and are shown with respect to their relationships to four of the
five research questions under consideration in the study. I tabulated the responses
provided by each respondent and entered the frequency data into illustrative figures that
are reported within the narrative of Chapter 4. Additional information derived from
inductive analysis of field interview notes is reported in narrative form.

Written Archival Records and Document Review Data Collection Procedures

I requested access to archival records and hazard mitigation and disaster
preparedness documents relevant to the four major hazard mitigation and disaster
preparedness planning principles outlined in Building a Disaster-Resistant University
(resource organization, hazard identification and risk assessment, development of
hazard mitigation strategies, development of a hazard mitigation plan) and Quarantelli’s
principles of disaster preparedness planning (1982; 1997). It was anticipated these
documents might include memoranda, planning documents, written policies, written
procedure manuals, press releases, handbooks, public assistance project worksheets
related to FEMA-funded hazard mitigation and disaster recovery funding, and related documentary items.

I identified and coded the major themes and trends that emerged from written records and documents in view of the principles outlined in *Building a Disaster-Resistant University* (resource organization, hazard identification and risk assessment, development of hazard mitigation strategies and development of a hazard mitigation plan) and in view of the principles of disaster preparedness planning promulgated by Quarantelli (1982; 1997). I conceptualized whether or not the records and documents provided by the institution demonstrated evidence that the university employed appropriate planning measures to enhance its disaster resistance. Quarantelli’s principles of disaster preparedness planning that possess an apparent relationship to specific hazard mitigation strategies set forth in *Building a Disaster-Resistant University* were summarized in a series of eight statements (Appendix D) designed to aid me in coding information obtained from documentary evidence that, in turn, determined whether or not the institution employed the principles in its efforts to prepare for disasters and enhance its disaster resistance capability. Upon completion of field interviews, I tabulated and reported findings in an inductive narrative. Names or titles of institutional documents and communications were modified to protect the identity of the host institution when describing or reporting information originating within the items.

**Procedures for Analysis of Data**

Data compiled from completed assessment instruments, field interview notes, and study of archival records and related documents were analyzed using descriptive statistics and pattern-matching techniques (Yin, 2003; Yin, 2005). Descriptive statistics
provided a basic understanding of frequency trends relative to questionnaire responses, interview responses, and evidence from documentary materials. Pattern-matching permitted alignment of the evidence or information collected against the four major hazard mitigation and disaster preparedness principles outlined in Building a Disaster-Resistant University (resource organization, hazard identification and risk assessment, development of hazard mitigation strategies and development of a hazard mitigation plan) and the principles of disaster preparedness planning set forth by Quarantelli. This procedure provided a framework for conceptualizing the extent to which institutional hazard mitigation and disaster preparedness plans, policies, and practices are congruent with the framework recommended by the Federal Emergency Management Agency and the principles offered by Quarantelli.

It was anticipated that certain patterns would be drawn from the review of the instrumentation results, field interviews, and written records, and that other “patterns will emerge unexpectedly from the analysis” itself (Stake, 1995, p. 78). Pattern matching aided in identifying the extent to which the institution studied had, in fact, implemented the hazard mitigation and disaster preparedness framework congruent with that prescribed in Building a Disaster-Resistant University and the principles of disaster preparedness planning offered by Quarantelli. Pattern matching occurred in a highly structured framework since questionnaire responses, field interview results, and the focus of document analysis are each driven by the four research questions, which in turn are closely correlated to the four major themes of hazard mitigation and disaster planning outlined in Building a Disaster-Resistant University and Quarantelli’s thirteen principles of disaster preparedness planning. I also employed member checking (Stake,
1995) by inviting participants to review summaries of field notes related to analysis of interview and documentary evidence findings in order to provide feedback regarding the accuracy of my conceptualization of the interviewees’ responses and of evidentiary documents.

Analysis of obtained data focused on the generally regarded sense and evidence of disaster resistance and disaster preparedness of the institution under study and not on between-group similarities and differences among personnel participating in the study, although such data analysis was undertaken in the event there were notable themes and trends that emerged in the response patterns between the respective subgroups.

Procedures for Reporting Data

I employed a question-and-answer format to report the data obtained from instrumentation, field interviews, and document analysis. The question-and-answer format permitted me to synthesize and summarize findings from instrumentation, field interviews, and document analysis according to the 92 items contained within the questionnaire, the 12 field interview questions, and the 8 principles of disaster preparedness planning against which documentary evidence were evaluated. Clusters of items within the questionnaire instrument, clusters of items within the field interview questions, and the 8-item statement summary of Quarantelli’s principles are directly associated with the four themes outlined in Building a Disaster-Resistant University that formed the basis for the four research questions introduced in Chapter 1. Table 2 illustrates the interrelationship of Quarantelli’s principles and Building a Disaster-
Resistant University themes with the questionnaire, field interview, and documentary evidence statement items.

Table 2

Interrelationship of Data Collection Strategies and Research Questions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Questionnaire items 1-22</td>
<td>Questionnaire items 23-45</td>
<td>Questionnaire items 46-69</td>
<td>Questionnaire items 70-92</td>
</tr>
<tr>
<td>Field interview questions 1-22</td>
<td>Field interview questions 23-45</td>
<td>Field interview questions 46-69</td>
<td>Field interview questions 70-92</td>
</tr>
<tr>
<td>Documentary evidence statement(s) 5, 6</td>
<td>Documentary evidence statement(s) 2, 4, 7, 8</td>
<td>Documentary evidence statement(s) 3, 4</td>
<td>Documentary evidence statement(s) 1</td>
</tr>
</tbody>
</table>

The question and answer technique be employed consisted of answering the five research questions originally introduced in Chapter 1 as noted below:

The research questions for which answers were sought from American Coastal University are:

1. What internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and to what extent are such identification and organization congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli?

2. What comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and to what extent are such activities
3. What hazard mitigation actions have been formalized and what written plans created, and to what extent are such actions and plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

4. What formal hazard mitigation plans have been adopted and implemented, and to what extent are such plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

5. To what extent are hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management and Quarantelli efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes?
Data were collected using three methods: questionnaires, field interviews, and researcher review and analysis of documentary materials provided by the institution. Data collection processes relating to the first four research questions introduced in Chapter 1 are illustrated in the table below.

### Table 3

**Relationship of Research Questions to Data Collection Methods**

<table>
<thead>
<tr>
<th>Research questions</th>
<th>Questionnaire items</th>
<th>Field interview items</th>
<th>Documentary evidence items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1 Resource organization</td>
<td>1-22</td>
<td>A, B, C</td>
<td>5, 6,</td>
</tr>
<tr>
<td>Question 2 Hazard identification and risk assessment</td>
<td>23-45</td>
<td>D, E</td>
<td>2, 4, 7, 8</td>
</tr>
<tr>
<td>Question 3 Development of hazard mitigation strategies</td>
<td>46-69</td>
<td>F, G, H</td>
<td>4</td>
</tr>
<tr>
<td>Question 4 Development of a hazard mitigation plan</td>
<td>70-92</td>
<td>I, J, K, L</td>
<td>1, 3</td>
</tr>
</tbody>
</table>

Research Question 5, unlike questions 1 through 4, which were specifically geared toward assessment of hazard mitigation and disaster preparedness processes at American Coastal University, sought to address the extent to which I concluded the
disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management Agency and by Quarantelli were evident in existing hazard mitigation and disaster preparedness processes at American Coastal University.

**Questionnaires**

A 92-item questionnaire derived from a comprehensive review and analysis of the hazard mitigation and disaster preparedness planning process outlined by the Federal Emergency Management Agency in *Building a Disaster-Resistant University* was provided to 17 participants who completed informed consent forms. The participants included representatives from executive administration, student affairs, university affairs, business affairs, auxiliary services, human resources, facilities and physical plant operations, information technology services, procurement, and affiliated public service units of the university. County emergency management officials were invited to complete the questionnaire but declined citing a lack of familiarity with the specific content of American Coastal University’s hazard mitigation and disaster preparedness processes and planning documents.

All questionnaire participants were selected in consultation with personnel from the university’s Office of Environmental Health and Safety on the basis of known involvement and expected familiarity with hazard mitigation and disaster preparedness planning activities of the institution. Human subject informed consent forms were distributed to and obtained from participants prior to release of questionnaire packets. Questionnaires were then released to prospective respondents and included instructions for proper completion of the instrument. Respondents were asked to consider hazard mitigation and disaster preparedness activities at American Coastal
University, and then indicate which of the responses illustrated in the table below best described their individual assessment of such activities.

Table 4

*Congruence Levels by Description*

<table>
<thead>
<tr>
<th>Congruence levels</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low congruence</td>
<td>This activity is rarely reflective of hazard mitigation and disaster preparedness activities at American Coastal University.</td>
</tr>
<tr>
<td>Minimal congruence</td>
<td>This activity is occasionally reflective of hazard mitigation and disaster preparedness activities at American Coastal University.</td>
</tr>
<tr>
<td>Moderate congruence</td>
<td>This activity is generally reflective of hazard mitigation and disaster preparedness activities at American Coastal University.</td>
</tr>
<tr>
<td>High congruence</td>
<td>This activity is almost always reflective of hazard mitigation activities at American Coastal University.</td>
</tr>
<tr>
<td>Unknown</td>
<td>I am not familiar with or otherwise aware of the status of this hazard mitigation and disaster preparedness activity at American Coastal University.</td>
</tr>
</tbody>
</table>

Respondents were then asked to mark the questionnaire instrument in the appropriate location to communicate their individual assessment according to the scale provided above. Twelve completed questionnaires were returned to me through standard ground mail delivery using self-addressed, postage-paid envelopes that included appropriate coding to protect the identity of the individual respondent. Upon receipt of the questionnaires I created a spreadsheet in Excel® spreadsheet software
Field interviews were conducted at American Coastal University during a four-day period between July 22 and July 25, 2008. The interviews were conducted with persons identified by personnel in the university’s Office of Environmental Health and Safety. Interview participants represented executive administration, student affairs, university affairs, business affairs, and county emergency management officials and were selected on the basis of their known involvement and expected familiarity with hazard mitigation and disaster preparedness planning activities of the institution. Twelve persons participated in field interviews. Ten persons participated in field interviews in private offices; two persons, at their request, participated in a joint interview in a private meeting room.

Prior to commencement of the interviews participants were reminded of human subjects informed consent issues, given opportunity to confirm they had signed informed consent forms, given opportunity to voluntarily proceed with interviews, given opportunity to consent in advance to audio recording of their interviews, and reminded of their right to withdraw participation at any time. I commenced questioning by asking each interviewee a set of 12 standard questions that required each participant to assess as adequate or inadequate the institution’s efforts toward hazard mitigation and disaster preparedness planning. I also asked each interviewee to elaborate on the response made to each question in order to produce a descriptive narrative that the researcher
would later use to analyze the responses of adequacy or inadequacy made by each participant. Topics addressed in field interviews are illustrated in the table below.

Table 5

*Field Interviewee Assessment of Adequacy*

<table>
<thead>
<tr>
<th>Topic</th>
<th>Interviewee assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engagement of campus stakeholders</td>
<td>Adequate, Inadequate, or Unknown</td>
</tr>
<tr>
<td>Engagement of noncampus personnel</td>
<td></td>
</tr>
<tr>
<td>Engagement of institutional management and oversight</td>
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<tr>
<td>Identification of vulnerabilities</td>
<td></td>
</tr>
<tr>
<td>Loss and impact estimates</td>
<td></td>
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<tr>
<td>Identification of mission-critical functions</td>
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<tr>
<td>Identification of mitigation priorities</td>
<td></td>
</tr>
<tr>
<td>Internal and external expert resources consulted</td>
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<tr>
<td>Formal institutional adoption</td>
<td></td>
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<tr>
<td>Oversight structures</td>
<td></td>
</tr>
<tr>
<td>Resource commitment</td>
<td></td>
</tr>
<tr>
<td>Ongoing implementation and assessment</td>
<td></td>
</tr>
</tbody>
</table>

The shortest interview lasted approximately 20 minutes and the longest approximately one hour. One participant was interviewed twice in order to obtain clarification and additional information. Upon conclusion of each interview, participants were given the opportunity to offer additional information or reflections on the issues and themes identified in the questions. Following the conclusion of each interview I reviewed hand-written notes and audio recordings of the sessions, generated comprehensive summary narratives of interview contents, and subsequently routed the summary narratives to individual participants within approximately 24 hours of each interview. Each participant was given the opportunity to provide feedback and additional information in keeping with the researcher’s intent to use member checking as a method
for ensuring accurate conceptualization and articulation of responses to interview questions, as indicated in Chapter 3.

Wednesday, July 30, 2008, was communicated as the final date by which participants could review interview summaries and provide feedback, after which date I began tabulating and analyzing results of the interviews in order to identify major themes and patterns that emerged. Summaries of the interviews were then subjected to review and analysis according to two methods.

First, I reviewed each interviewee’s responses to each of the 12 questions regarding adequacy or inadequacy of the institution’s hazard mitigation and disaster planning processes. I determined, during the course of analysis of these responses, that a third category labeled “unknown” should be added to the reporting and analysis of data in order to account for those items that might have been outside the knowledge or awareness of the interviewees.

Second, I analyzed the narrative summaries of each interview and coded the narratives in a manner that reflected whether or not the interviewee responses to individual questions confirmed the adequacy or inadequacy of the institution’s hazard mitigation and disaster preparedness planning efforts. Data from each interviewee’s assessment of the adequacy or inadequacy of the institution’s hazard mitigation and disaster preparedness planning processes was entered into Excel® spreadsheet software for analysis and reporting according to the alpha-numeric code created in relation to each participant.
Officials with American Coastal University’s Office of Environmental Health and Safety provided numerous electronic policy and planning documents, hyperlinks to resources mounted on the institution’s website, and related printed materials to the researcher over a period of several weeks in advance of visiting the campus. Additional hard copy and electronic resources and materials were provided to the researcher during and immediately following field interviews that were conducted during the week of July 21-25, 2008. Primary documentary materials provided to the researcher included the following items, the names of which have been altered to protect the identity of the institution:

*Business Continuity Operations Plan (BCOP)*

The Business Continuity Operations Plan (BCOP) establishes “a management framework, policies, and objectives for the American Coastal University faculty, employees, and students to facilitate resolution of any emergency crisis on campus and restoration of normal . . . operations” (BCOP, 2008, p. 3). The BCOP assumes an all-hazards model, “is designed to deal with any emergency” and “is adaptable” to any number of situations (BCOP, 2008, p. 3). The BCOP defines crises, establishes authority structures for managing a crisis and activating the emergency response team, prescribes phases in which incidents unfold, communicates criteria for establishment of a command center, prescribes responsibilities for key institutional personnel and apartments, and prescribes procedures for managing specific incidents. The BCOP also includes extensive templates to aid individual departments in creating unit-specific plans that then flow into the university’s complete continuity of operations process.
**Business Continuity Operations Plan Instructions (BCOPI)**


**Emergency Reference Guide (ERG)**

This document functions as a quick reference guide for university faculty, staff, and employees and is designed to provide a framework for appropriate and timely responses to a variety of incidents including general evacuations, civil disturbances or demonstrations, explosion (aircraft crash or similar incident), chemical or radiation spill, fire, psychological crisis, terrorism and acts of mass destruction, weapons and violent or criminal behavior, bomb threat, assault, utility failure, medical and first aid, lock down/shelter-in-place, crisis communication, and hurricane/tornado (ERG, 2008).

**Emergency Operations Guide (EOG)**

This document functions to “integrate the responses of all available university resources and increase the level of emergency preparedness on campus. This plan describes the roles and responsibilities of departments and employees in protecting life and property, in responding to the needs of those affected, and in disseminating accurate and timely information to the campus and the public. Its goal is to ensure an organized, structured, coordinated, and caring response in crisis emergency situations” (EOG, 2008, p.1). The Emergency Operations Guide (EOG) defines crises, establishes
protocols for crisis management, identifies the emergency operations team and corresponding duties of each member and select university departments, establishes criteria for establishment of a command center, prescribes general procedures for select crisis response activities such as building evacuations, emergency shelters, and crisis communications, prescribes specific response plans for select emergencies including hurricanes, bombs/bomb threats, fires, death of a student, death notification, suspicious mail/package, and provides procedures for damage assessment and recovery following disaster events. Additional features of the EOG include identification of the emergency operations team call list and identification of the crisis response call list (2008).

_Hazard Mitigation Grant Program (HMGP) Applications_

The university provided evidence of no fewer than four applications for hazard mitigation grant funds through state emergency management authorities in 2005. These applications prescribed plans for and requested funds to mitigate specific wind damage risks identified in association with five campus buildings (ACU HMGP, 2005a; 2005b; 2005c; 2005d).

_Technology Services Emergency Plan (TSEP)_

This plan identifies specific roles, tasks, responsibilities necessary to respond to hurricanes in a manner that provides for continuation of information technology services at an alternate location and prompt resumption of information technology services on the campus (TSEP, 2008).
After Action Reviews (AAR)

These documents contain summary explanations of a tornado that occurred in the city in which American Coastal University is located in 2007 and a major weather-related disaster that directly impacted the campus in 2004. Each after-action review contains a brief summary of actions by campus officials, observations and inputs regarding actions that were successful, observations and inputs regarding constructive criticism and suggestions, and actions taken in light of issues raised in the review process (AAR, 2004; AAR, 2007).

Miscellaneous Documents

University officials provided copies of numerous memoranda, e-mail correspondence, standard operating procedures, and other formal and informal documents pertaining to hazard mitigation and disaster preparedness planning activities undertaken and under discussion at the university.

Documentary materials were reviewed and analyzed in light of the eight disaster preparedness principles of Quarantelli to determine whether or not the institution had demonstrated adherence to the principles illustrated in the table below.
Table 6

*Determination of Adherence to Principles of Disaster Preparedness Planning*

<table>
<thead>
<tr>
<th>Principle of disaster preparedness planning</th>
<th>Determination of adherence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disaster preparedness planning is a continuous process rather than production of an end-product, such as a written plan</td>
<td>Does not demonstrate or Does not demonstrate</td>
</tr>
<tr>
<td>Disaster preparedness planning involves attempting to reduce the unknowns in a problematical situation</td>
<td></td>
</tr>
<tr>
<td>Disaster preparedness planning aims at evoking appropriate actions by anticipating likely problems and possible solutions or options</td>
<td></td>
</tr>
<tr>
<td>Disaster preparedness planning is knowledge-based via valid research findings derived from systematic data rather than personal anecdotes or “war stories”</td>
<td></td>
</tr>
<tr>
<td>Disaster preparedness planning addresses resistances by emphasizing the need for intra- and inter-organizational integration in the process</td>
<td></td>
</tr>
<tr>
<td>Disaster preparedness planning is different from actual disaster management by focusing on the coordination of emergent resources rather than on issues of command and control</td>
<td></td>
</tr>
<tr>
<td>Disaster preparedness planning views disasters as both quantitatively and qualitatively different from accidents and minor emergencies</td>
<td></td>
</tr>
<tr>
<td>Disaster preparedness planning adopts a multi-hazard rather than single-hazard focus, and is generic rather than agent specific</td>
<td></td>
</tr>
</tbody>
</table>
I processed documentary materials in order to ascertain and describe the extent to which Quarantelli’s eight disaster preparedness planning principles were stated, paraphrased, or otherwise evident in policies, action plans, internal and external communications, and related planning documents collected from American Coastal University. Analysis occurred by reading the contents of the documentary materials and by identifying specific items that related to the disaster preparedness planning principles noted above. I then wrote brief narrative summaries describing whether or not the documents demonstrated the institution had incorporated the principle under consideration into formal planning processes. I provided copies of the narrative summaries to a designated official at American Coastal University and provided an opportunity for response in keeping with the process of member checking described in Chapter 3.

Modifications were made upon verification of evidentiary material previously not available to me and upon identification of material that I previously overlooked, as appropriate.

Research Questions

The research questions for which answers were sought from American Coastal University were:

1. What internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and to what extent are such identification and organization congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?
2. What comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and to what extent are such activities congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli?

3. What hazard mitigation actions have been formalized and what written plans created, and to what extent are such actions and plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

4. What formal hazard mitigation plans have been adopted and implemented, and to what extent are such plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

5. To what extent are hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management Agency and Quarantelli efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes?

Analysis of Data

Data analysis was organized in a question-answer format according to the five research questions previously identified for the study.

Research Question 1

What internal and external resources and personnel required to successfully complete the hazard mitigation process have been identified and organized, and to what extent are such identification and organization congruent with the disaster-resistant
framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

Discussion

Questionnaire items 1 through 22 address issues specific to identification and organization of internal and external resources and personnel. Study participants communicated a perception of moderate to high congruence with respect to these items. Fifty-eight percent of respondents indicated a perception of high congruence, and 17% of respondents indicated a perception of moderate congruence for a total of 75% of respondents indicating perception of moderate or high congruence of the institution’s organization of internal and external resources and personnel. Eight percent of respondents indicated a perception of low congruence, and 4% indicated a perception of minimal congruence for a total of 12% of respondents indicating a perception of low to minimal congruence. Thirteen percent of respondents indicated the institution’s organization of internal and external resources and personnel was unknown to them. The following figure illustrates the distribution of responses on items 1 through 22.

![Figure 1. Responses to questionnaire items 1-22.](image-url)
Field interviews further demonstrated a perception of high congruence with respect to the use of campus stakeholders, noncampus stakeholders, and institutional management of hazard mitigation and disaster planning activities. Interview questions 1 through 3 addressed the use of internal and external stakeholders and institutional management of planning activities. Eighty-three percent of field interview responses reflected a perception that the institution’s efforts to engage internal and external stakeholder groups and the institution’s management of hazard mitigation and disaster planning activities are adequate. The following figure illustrates the distribution of responses on field interview items 1 through 3.

![Figure 2. Responses to field interview items 1-3.](image)

Comments by interview participants further confirmed a perception of adequacy. One respondent commented that he had observed other campuses view such tasks as a function of the physical plant department, but that at American Coastal University “we’ve taken a different approach [and] involved key leadership from all divisions” (08203A1, personal interview). Another respondent observed that recent experiences with natural disasters “have shown we have all the key players in place” (08203C3,
personal interview). Yet another respondent reflected a high level of engagement by internal personnel because of the influence of the recently departed president who led disaster planning activities with a very “hands-on approach” that resulted “in staff below him [following] his lead in a very proactive way” (08203D4, personal interview). Another respondent noted that multiple noncampus stakeholders are engaged in the institution’s disaster planning processes, particularly the county Emergency Operations Center and the American Red Cross. This same respondent said the university has a “number of buildings qualified for emergency public shelter use. When we plan, design, [and] construct we confer with officials regarding potential use” and also observed a “continuing dialogue between [the institution] and the [Emergency Operations Center] as to building development issues” (08203G7, personal interview).

One stakeholder group, academic affairs, was identified through field interviews as lacking adequate engagement in hazard mitigation and disaster preparedness planning activities. One respondent observed that personnel from the academic affairs division “are less engaged” in the process than other organizational units of the university (08203C3, personal interview). It was also identified through field interviews that another stakeholder group, the local emergency management authority, was not aware of specific issues pertaining to the institution’s identification and organization of internal and external resources and personnel and its management of hazard mitigation and disaster planning processes. Interviews further revealed that most interviewees were not aware of the specific role or function, if any, played by local emergency management authorities in the identification and organization of internal and external stakeholders and resources, although almost all interviewees indicated awareness of
institutional personnel being involved in operations of the county emergency operations center during periods of activation.

Documentary evidence confirmed identification and organization of internal personnel and resources. The Business Continuity Operations Plan (BCOP) reflects more than 25 persons representing executive administration and multiple organizational levels of academic affairs, student affairs, and university affairs are engaged in disaster preparedness and have specific functional assignments in plan execution, and that there are clear lines of decision-making authority and responsibility within the context of the plan (2008). The influence of the BCOP as an instrument for identifying and organizing internal personnel and resources is further demonstrated in an elaborate system of plan templates designed for completion by personnel at multiple levels of institutional divisions, departments, and other organizational units. These templates contain elements related to plans and procedures, mission-critical functions, lines of authority and succession, alternate facilities, communications, vital records, logistical and administrative concerns, personnel and personnel coordination, security, test training and exercises, and program management.

In similar fashion the Emergency Operations Guide (EOG) identifies internal personnel and resources that are to be utilized for a variety of disaster response purposes within the campus community as well as prescribing basic steps that may be followed in the course of response activities such as establishment of a central command center, responsibilities for individuals and organizational units of the institution, and procedures for actual responses to a variety of identified crisis or emergency situations (EOG, 2008).
The institution does demonstrate that disaster preparedness planning addresses resistances by emphasizing the need for intraorganizational and interorganizational integration in the process. The institution’s major disaster preparedness planning documents, including the Emergency Operations Guide and Business Continuity Operations Plan, emphasize the need for intraorganizational integration. For example, the Emergency Operations Guide (EOG) states it was prepared to integrate the responses of all available university resources and increase the level of emergency preparedness on campus. The plan describes the roles and responsibilities of departments and employees in protecting life and property, in responding to the needs of those affected, and in disseminating accurate and timely information to the campus and the public. Its goal is to ensure an organized, structured, coordinated and caring response in crisis emergency situations. (2008, p. 1)

The EOG further assumes that “close working relationships must be established among key university staff prior to a crisis situation” (2008, p. 1) and establishes a leadership framework for strategic decision-making that may include representatives from multiple divisions, departments, and levels of the institution’s organizational structure including executive administration, vice-presidents, environmental health and safety, university police, marketing communications, general counsel, academic affairs, student affairs, facilities management, health services, housing and residence life, information technology services, counseling center, food services, human resources, controller, procurement and contracts, and affiliated personnel from satellite centers and other off-site locations associated with the institution. To support establishment of close working relationships among departments, the EOG also specifies likely roles and responsibilities personnel from each of these areas will be called upon to perform and prescribes tactics that may be employed by these personnel in fulfilling their duties.
Individual departments are also directed, under this plan, to “develop intradepartmental response plans for situations that may develop under their purview” (2008, p. 1).

The Business Continuity Operations Plan (BCOP) further emphasizes the need for intraorganizational integration by addressing planning and operations issues that include departmental plans and procedures, mission-critical tasks, authority and lines of succession, facilities considerations, communications, records, logistics, personnel issues, security issues, training activities, and plan management. Contained within the BCOP are templates that must be completed by every organizational unit of the institution in which the major themes of the BCOP are addressed at the microlevel. These templates are incorporated into the overall BCOP document to comprise a comprehensive planning document wherein function roles and responsibilities are clearly delineated and duplication is avoided (BCOP, 2008).

The institution’s major disaster preparedness planning documents contain references to issues of interorganizational integration with outside agencies and entities. The BCOP references the fact that the chief of university police fulfills an “intelligence function and . . . maintains contact with” law enforcement officials such as the [county] sheriff’s department and the Federal Bureau of Investigation (BCOP, 2008, p. 4) and that the “county SWAT may be alerted or requested” (BCOP, 2008, p. 11) under certain circumstances.

The BCOP also refers to capacity of the institution to appeal to the state Department of Health to request resources from the Strategic National Stockpile “for resources of critical pharmaceuticals, medical supplies and equipment if required” (BCOP, 2008, p. 12) and to coordinate efforts, under appropriate circumstances, with
the county Emergency Operations Center, county Department of Health and appropriate state emergency management authorities. The BCOP also indicates that letters of agreement or verbal agreements have been executed with the following local agencies and entities that may be leveraged in a crisis or disaster situation: SWAT, local city police, state law enforcement agencies, county sheriff’s offices, emergency medical services, local health care facilities, workers compensation providers, Department of Health, and county transit authorities. The BCOP further indicates that the institution participates “in emergency drills, as appropriate, with [the county] [Emergency Operations Center], SWAT, and the [state] Department of Health” (BCOP, 2008, p. 35) and that “plans will be tested twice annually, or as requested, by [the Emergency Operations Center] or other agencies” (BCOP, 2008, p. 35).

The institution demonstrated that disaster preparedness planning is a continuous process rather than production of an end-product, such as a written plan. American Coastal University undertakes regular review and revision of existing disaster preparedness plans and considers new information and events in its disaster planning processes. For example, an e-mail communication originating in facilities management office was sent to numerous institutional employees requesting updates to the Crisis Management Plan, now referred to as the Emergency Operations Guide (08203M13, personal communication, August 12, 2005). The university further demonstrated that the institution’s Emergency Operations Guide (EOG) was revised in January 2008 (EOG, 2008). The university demonstrated that disaster preparedness planning is an ongoing process through after-action evaluations to discuss emergency and disaster events involving its own campus interests and other institutions.
An incident occurred in 2007 wherein local law enforcement officials were alerted of a forming tornado that eventually touched down approximately 10 miles southwest of the campus. While the tornado posed no imminent threat to the campus itself, university officials mobilized and activated numerous emergency notification systems including emergency sirens, e-mail, voicemail, and FM radio warning announcements. Upon conducting a review of the incident, university officials identified nine actions that were deemed as strong responses to the tornado threat. The review further identified 18 issues, constructive criticisms, comments, and suggestions as well as 11 specific action items that were deemed beneficial for enhancing future emergency response capability. Action items included daily testing of emergency sirens through deployment of Westminster-style chimes sounded daily at noon, purchase and distribution of NOAA-approved weather radios to various departments on campus, and reinstitution of the previously used practice of appointing individuals in each campus building to serve as points of contact during emergency situations.

Additional recommendations flowing out of this after-action review included exploration of methods for enhancing emergency notification capabilities by using computer-based weather alerts, television monitor alerts in key campus buildings, and use of existing automated fire alarm notification systems for emergency announcements (AAR, 2007). The institution provided evidence of a similar after-action report that was compiled following the direct impact of a major weather-related event in the region in 2004 (AAR, 2004), and provided evidence of e-mail correspondence wherein a vice president of the university sent an e-mail message directing university personnel to
contact officials at another institution to discuss their experience with a shooting in a campus housing facility in 2008 (08203A1, personal communication, May 2, 2008).

The university demonstrated that disaster preparedness planning is an ongoing process by discussing it at the highest levels of institutional governance. E-mail correspondence indicated that a vice president of the university requested addition of an agenda item to the June meeting of the institution’s extended cabinet, which includes the president, vice presidents, associate vice presidents, and academic deans (08203B2, personal communication, May 19, 2006). This agenda item involved a presentation on the Emergency Operations Guide and National Incident Management System requirements by the director of environmental health and safety and director of university police.

E-mail correspondence indicated that a representative of the president’s office made contact with personnel in environmental health and safety to request assistance in preparing an overview of the institution’s crisis management plan to the Board of Trustees at a meeting scheduled to occur in September, 2005 (08203M13, personal communication, August 31, 2005). The university also demonstrated that disaster preparedness planning was an ongoing process by actively participating in “what if” training exercises and scenarios. E-mail correspondence between a university vice president and another institutional employee indicated the university, in cooperation with state law enforcement officials and local and campus law enforcement agencies, hosted and participated in an active shooter training scenario (08203M13, personal communication, May 5, 2008).
Despite the high level of perceived congruence reflected by the participants who completed the questionnaire and participated in field interviews, the data do not indicate that the internal and external personnel and resources that have been identified and organized have been utilized for actual hazard mitigation planning congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency. To the contrary, responses to field interview questions and analysis of documentary evidence provided by the institution indicate that identification and organization of personnel and resources is almost solely leveraged toward the purpose of disaster or emergency response and recovery and not for predisaster hazard mitigation activities. Documented hazard mitigation activities that have been undertaken appear to relate primarily to vulnerabilities and risks made evident through the impact of a weather-related disaster event occurring on the campus in 2004 and are not a result of a broad-based, continuous process of hazard mitigation planning by the institution. The institution provided evidence of four grant applications requesting funds to retrofit and strengthen facilities identified as vulnerable or essential for mission-critical operations in recent years, but there is no evidence that such hazard mitigation activities were born out of a systematic and ongoing process undertaken by the university.

Research Question 2

What comprehensive risk assessment activities have been conducted to identify potential hazards and assess vulnerabilities, and to what extent are such activities congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommend by Quarantelli?
Discussion

Questionnaire items 23 through 45 addressed issues specific to comprehensive risk assessment activities to identify potential hazards and assess vulnerabilities. Study participants communicated a range of perceptions from moderate to high congruence and unknown congruence. Twenty-nine percent of respondents indicated a perception of high congruence and 22% indicated a perception of moderate congruence for a total of 51% indicating moderate to high congruence. Thirteen percent indicated a perception of low congruence and 7% indicated a perception of minimal congruence for a total of 20% indicating low to minimal congruence. Twenty-nine percent of respondents indicated a perception of unknown congruence of the institution’s risk assessment activities. The following figure illustrates the distribution of responses on items 23 through 45.

![Figure 3. Responses to questionnaire items 23-45.](image)

Field interview questions four and five addressed comprehensive risk assessment activities to identify potential hazards and assess vulnerabilities. Overall tabulation of field interview results pertaining to adequacy and inadequacy in these areas further demonstrate a perception of high congruence with respect to
comprehensive risk assessment activities to identify potential hazards and assess vulnerabilities. Fifty-eight percent of field interview respondents reflected a perception that the institution’s efforts to conduct comprehensive risk assessment activities to identify potential hazards and assess vulnerabilities are adequate. Thirteen percent of respondents viewed these efforts as inadequate, and 29% indicated they did not know about such efforts. The figure below illustrates interviewee responses on field interview questions four and five.

![Field Interview Question Responses](image)

*Figure 4. Responses to field interview items 4-5.*

Comments by many interview participants confirmed a perception of adequacy. One interviewee, commenting on the Business Continuity Operations Plan, indicated having personally asked “[I]s it adequate? Does it have the level of detail of assets? Does it anticipate what could happen and particular risks? Do we have adequate contingencies? Turns out we were already well down the line on such issues” (08203A1, personal communication, July 22, 2008). Another interviewee also indicated a perception of adequacy in the area of hazard mitigation and identification of
vulnerabilities by observing that “roofing has been an area for review. [We are] looking at trees around campus to identify weak trees to limit damage from them. [We have] added hurricane shutters to many of the buildings to ensure we are safe there” (08203E5, personal communication, July 23, 2008). Yet another interviewee echoed a perception of adequacy due to the fact that the “leadership of the university is aware of this and has identified what is critical. [We] actually . . . put this into place . . . to ensure resources are there” (08203F6, personal communication, July 25, 2008). This same respondent also commented that the institution has “had some experience with disasters which . . . led to identification of these kinds of priorities. We believe we are prepared well for these” (08203F6, personal communication, July 25, 2008).

As indicated previously, not all interviewees perceive the institution’s risk assessment activities are adequate. One interviewee stated “we do an excellent job mitigating hazards we focus on [weather-related disasters]. Perhaps we’re too focused. . . . No [one has taken] a comprehensive look at [the] horizon of potential risks and asked if we are covering the top-most likely ones. [I] think we have blind spots. . . . Unknowns remain unknowns” (08203C3, personal communication, July 22, 2008). The same interviewee characterized this condition, in part, as a “resource issue; many of us do all this on the side of our normal jobs rather than having a staff dedicated to this function” 08206C3, personal communication, July 22, 2008). Another interviewee conveyed similar sentiments by commenting that “there are pockets of adequacy around the campus where you can quantify such potential losses. [There are] too many areas where we have not quantified these things” (08203B2, personal communication, July 24, 2008). Yet another interviewee, indicating no basis of knowledge about issues
such as loss and impact estimates, indicated a lack of awareness “of any studies or
evaluations of potential loss impacts” (08203G7, personal communication, July 23,
2008).

The institution demonstrated that disaster preparedness planning is different from
actual disaster management by focusing on the coordination of emergent resources
rather than on issues of command and control. The American Coastal University
Operations Plan all address issues of command and control in terms of how disaster-
related response and recovery operations are activated and managed. The primary
emphasis of these planning documents, however, focuses on the diverse resources and
expertise that can be brought to bear in a hazard situation by multiple personnel at
every organizational level of the institution as well as resources and expertise that may
be required from extrainstitutional personnel and entities.

For example, Section IV Departmental Responsibilities of the BCOP indicates
that “all departments will provide support to the Emergency Response Team” (2008, p.
14), identifies 14 different organizational divisions, departments, or units of the
institution whose engagement may be sought, and specifically identifies the types of
resources, functions, and assets each of these may be expected to provide or obtain in
the event of an event that results in significant disruptions to the institution. These
resources, functions, and assets include establishment of food service operations,
transportation services, media communications, accounting for reimbursable expenses,
employee assistance services, student assistance services, housing, health services,
childcare, employee payroll, back-up of vital records, recovery or recreation of lost or damaged data, and psychological intervention services.

The templates utilized by organizational units of the institution for divisional and departmental business continuity planning, and the manner in which the completed templates flow into the larger Business Continuity Operations Plan, further illustrate a focus on resource coordination. These templates offer a systematic approach for providing for identification of buildings, assets, essential staff, hazards, events that could affect functions, contact information for personnel, department-specific plans, alert and notification tactics, plan activation triggers, personnel functions, alternate site designations, supply and support resources maintained on hand, succession and delegation of authority orders, and security considerations unique to each organizational unit of the institution.

The Emergency Operations Guide (EOG) further demonstrates the institution’s focus on coordination of resources rather than issues of command and control in a hazard situation when it addresses the issue of comprehensive resource management delineated in two categories: tactical resources (such as personnel and equipment available or potentially available) and support resources (such as food, communications equipment, tents, supplies, and vehicles). Command and control issues are addressed in specific detail with the EOG, but the concentration of planning effort contained within this document is directed toward personnel, resources, and functions that are essential to operations when the campus is deemed to be in an emergency state (EOG, 2008).

The institution does demonstrate that some of its disaster preparedness planning is knowledge-based via practice and review and annual update efforts. Disaster
preparation planning activities at American Coastal University have been significantly influenced by the experiences associated with a major natural disaster incident in 2004. The knowledge acquired as a result of this experience appears to have shaped disaster preparedness planning in the following ways: first, after-action reports are now compiled following incidents in which emergency preparedness and response activities are engaged. The institution provided evidence of an after-action review regarding a tornado that occurred near the campus (AAR, 2007), and evidence of an after-action review that occurred following the 2004 incident (AAR, 2004). These reviews included summaries of actions done well, issues that were cause for constructive criticism, and actions taken in response to issues raised through review of the incidents.

Second, the Business Continuity Operations Plan (BCOP), Emergency Operations Reference (EOR), Emergency Operations Guide (EOG), and Technology Services Emergency Plan (TSEP), operating procedures and other related planning documents provided to the researcher from units such as business and auxiliary services, procurement, and environmental health and safety give evidence they are subject to period review and modification. The institution has not clearly demonstrated, however, the existence of an ongoing process of research and inquiry targeted at identifying potential risks, developing and implementing strategies for mitigating those risks, and assessing the efficacy of risk mitigation activities once completed using systematic data rather than personal anecdotes or “war stories.” The institution does demonstrate that disaster preparedness planning adopts a multihazard rather than single-hazard focus, and is generic rather than agent specific.
All three of the institution’s primary disaster preparedness planning documents (Emergency Reference Guide, Emergency Operations Guide, and Business Continuity Operations Plan) are addressed toward multiple hazards including natural disasters, man-made disasters, accidents, violence and threats of violence, fires, civil disturbances, and other disaster scenarios. In like manner, all three planning documents prescribe specific actions and protocols that may be invoked in response to any number of hazards depending on the type and severity of the hazard. The Emergency Reference Guide and the Emergency Operations Guide do tend to prescribe agent-specific response and recovery protocols; however, the generic rather than agent-specific nature of the institution’s planning effort is best illustrated in the planning and operational elements that are contained within the institution’s Business Continuity Operations Plan and within the corresponding templates used to collect department-level plans required of each organizational unit of the university. These planning and operational elements include “plans and procedures, mission essential functions, delegation of authority, orders of succession, alternate facilities, interoperable communications, vital records and databases, logistics and administration, personnel issues and coordination, security, test, training, and exercise, and program management” (BCOPI, p. 1, 2008), transcend any number of hazards that could occur within the institutional context, and provide generic rather than agent-specific information and procedures to aid the organizational unit or the institution as a whole to prepare for and respond to disaster scenarios from a flexible, all-hazards approach.

American Coastal University demonstrates that disaster preparedness planning involves attempting to reduce the unknowns in a problematical situation. The
university’s Business Continuity Operations Plan (2008) provides for anticipating likely unknowns that will arise in a variety of crisis and disaster situations and further provides recommended actions for resolving such unknowns before they occur. For example, BCOP Section V, V-1, Evacuation Procedures, anticipates that persons with mobility impairments, visual impairments, and hearing impairments might be particularly vulnerable in the event of a major crisis event that requires evacuation of campus buildings. Specific recommendations are provided for offering assistance to an impaired person as well as strategies for communicating without unique methods such as hand gestures, words, and symbols (2008).

The Emergency Operations Guide (EOG) further provides evidence that the institution has anticipated likely unknowns and potential solutions in advance of disaster events. On page 14 under the heading entitled “Procurement and Contracts” the institution demonstrates it has anticipated the likelihood that certain kinds of supplies and materials may need to be procured in a rapid fashion following a disaster scenario. Tasks associated with maintaining an inventory of disaster recovery materials and supplies currently on hand, maintaining a list of local suppliers and descriptions of the types of materials those suppliers keep in stock, and creation of agreements or contracts with local suppliers and vendors of expected needed supply items are given (EOG, 2008).

The Emergency Reference Guide further provides evidence that the institution has anticipated likely problems and potential solutions in advance of disaster events. The section entitled “Utility Failure” anticipates that utility failures could create unsafe building exiting in buildings not equipped with emergency lights. Departments are
directed to have flashlights on hand in order to mitigate this unsafe condition in the event of a power failure in these buildings. This same section also includes caveats about gas leaks in buildings and how lighting and electrically powered equipment could be inadvertent means of triggering explosions. Planning calls for occupants of these buildings to vacate the area and avoid any action which could potentially ignite flammable material such as turning on lights or electrical equipment, smoking, lighting matches or using other lighter instruments (EPR, 2008).

The 2008 Technology Services Emergency Plan provides further evidence that the institution has anticipated likely unknowns and potential solutions in advance. Anticipating the likelihood that traditional telecommunications could be interrupted by a disaster event, this plan indicates that “[technology services] is currently responsible for six satellite phones” (TSEP, 2008, p. 17) that are to be distributed to key maintenance and police officials, senior administration, and information technology services personnel. The Technology Services Emergency Plan further has provisions for distribution of four Verizon cellular telephones that are stored in a designated location at all times within the department (TSEP, 2008).

Documentary evidence does not confirm comprehensive risk assessment activities to identify potential hazards and assess vulnerabilities are undertaken as a matter of ongoing hazard mitigation and disaster preparedness planning at the institution. The institution did provide evidence that a community-wide planning group in which the university participates had included, in a recent project prioritization list, a series of enhancements to campus buildings including reinforcement of a building for use as a campus emergency operations center, reinforcement and generator installation
for another building, weather hardening and generator installation for two classroom buildings, installation of a remote control transmitter for the campus radio station, and reinforcement of the campus data center building (K. Marshall, personal communication, June 22, 2005; personal communication, June 24, 2005).

Corresponding to this priority list, the institution provided evidence of four applications made to state funding authorities by the institution pertaining to hazard mitigation grant program project requests seeking $1,500,000 in federal funds and more than $500,000 in other fund requests targeted at the five campus buildings noted previously (ACU HMGP, 2005a; ACU HMGP, 2005b; ACU HMGP, 2005c; ACU HMGP, 2005d). These applications for funds appear to be the result of practical experience associated with the impact of a major natural disaster that occurred within the region and the subsequent infusion of public assistance funds into the impact zone for recovery and future disaster hazard mitigation and not the result of a systematic process of ongoing hazard mitigation activities designed to identify risks and hazards and assess vulnerabilities.

Research Question 3

What hazard mitigation actions have been formalized and what written plans created, and to what extent are such actions and plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

Discussion

Questionnaire items 46 through 69 are targeted at issues associated with development of hazard mitigation strategies. Study participants indicated mixed
perceptions regarding the institution’s effort to develop hazard mitigation strategies.

Twenty percent of respondents indicated a perception of moderate congruence; 14% of respondents indicated a perception of minimal congruence; 13% of respondents indicated a perception of low congruence; 13% of respondents indicated a perception of high congruence, and 40% of respondents indicated they did not know or were otherwise unaware of specific undertakings of the institution to develop hazard mitigation strategies. The following figure illustrates the distribution of responses on items 46 through 69.

![Bar chart with levels of congruence and number of responses](image)

*Figure 5. Responses to questionnaire items 46-69.*

**Field Interviews**

Field interviews, in contrast to data conveyed through responses to the questionnaire, indicated that 86% of the respondents perceive the institution’s initiatives to develop hazard mitigation strategies are adequate. Three percent of interview responses characterized hazard mitigation strategy development as inadequate, and 11% of the respondents indicated they were unaware of or unfamiliar with such
activities. Responses to field interview questions six through eight are illustrated in the following figure:

![Graph showing responses to field interview items 6-8.]

Figure 6. Responses to field interview items 6-8.

Most participants in field interviews offered comments that reinforced a strong perception that the institution's initiatives to develop hazard mitigation strategies are adequate. For example, one respondent noted that the institution had identified a clear set of mission critical functions as a result of recent experience with a natural disaster and that “class schedules and class resumption is first and foremost to fulfill our teaching mission. This was the case after [the 2004 disaster]. [E]veryone made that a mission-critical objective” (08203B2, personal communication, July 24, 2008). Another interviewee observed “mission critical functions are [information technology], instruction, business processes, integration with key information sources, library, core facilities that support controller, admissions/records, and related functions. Much of this comes back to [information technology] issues” (08203A1, personal communication, July 22, 2008). This same interviewee also commented that issues pertaining to the “ability to maintain business records, [information technology] resources, communications with internal and external groups, and linkages with key service providers” were also “core areas that
have received most mitigation and preparation effort” (08203A1, personal communication, July 22, 2008).

Another respondent cited examples of mission-critical functions such as “payroll, [human resources], financial services, procurement, academic affairs, facilities and architectural services, environmental health and safety, law enforcement, general counsel, auxiliaries [and] internal audit and management consulting” and further indicated the institution has “a good awareness of where we are vulnerable and are working to improve” (08203E5, personal communication, July 23, 2008). Yet another interviewee described the institution’s commitment to “do lessons learned after events such as hurricanes, foul weather [and] security incidents” and further noted that the institution regularly “checks with peer institutions . . . [checks] with other state universities in [the state]” and “[consults] with vendors and consultants” (08203P16, personal communication, July 23, 2008).

Yet another interviewee cited the institution’s engagement with a retired military official through a local retired professionals organization, a contract with an environmental firm, and agreements with other service providers as a function of the institution having been taught by a recent natural disaster “that we needed to have standing contracts in place with these kinds of folks to help with response efforts” (08203M13, personal communication, July 25, 2008). This interviewee observed that “many mitigation priorities have been proactively identified and are laid out in our hazard mitigation grant program applications” including one “building project [that] received a $499,000 grant to bring it up to American Red Cross shelter standards” (08203M13, personal communication, July 25, 2008).
One interviewee, however, while rating the institution’s overall effort to develop hazard mitigation strategies as adequate, criticized the fact that “training is a mitigation activity and is probably the weakest of all the mitigation activities we do” (08203B2, personal communication, July 24, 2008). Another interviewee reflected that institution had not estimated potential losses and impacts it could encounter in a disaster situation and stated “to my knowledge there has not been [estimates of potential losses and impacts] . . . [these] may have been done in some areas, but not to my knowledge. [The] heartbeat of past experience is what happened to us [in the recent natural disaster]. [We] have not really considered the impact of losses like the building that houses the university data center” (08203C3, personal communication, July 22, 2008). This same interviewee indicated uncertainty as to whether or not the academic division had “really looked through what it would take to deliver a curriculum in a campus shutdown” and indicated campus-wide presence of “pockets where we need more work” (08203C3, personal communication, July 22, 2008). The interviewee went on to point out that there exists no central “wrap of all of our priorities into a master list” and that the primary targets of mitigation efforts had been “physical facilities/infrastructure, supplier relationships, and information technology systems” (08203C3, personal communication, July 22, 2008).

Documentary evidence, as noted previously, indicates the institution has successfully identified a set of hazard mitigation strategies related to enhancing the capacity of five campus buildings to withstand serious weather impacts. These mitigation strategies were identified as a result of the institution’s participation in a local mitigation strategy team. Documentary evidence does not indicate that the institution
has engaged in an ongoing process of developing hazard mitigation strategies.

Documentary evidence does not indicate that the hazard mitigation strategies undertaken by the institution in the years following a major natural disaster impact are reflective of an all-hazards planning model since all of the projects are specifically designed to strengthen buildings, reduce adverse wind impacts, and create power generation primarily in anticipation of a major weather incident. The institution did not provide documentary materials demonstrating a process and plan for continuous identification and prioritization of hazard mitigation projects beyond those associated with retrofits, strengthening, and installation of generator equipment on buildings identified as having such needs in 2005. Documentary materials provided by the institution, as previously noted, demonstrate that after-action reviews are used as a method for creating a base of knowledge for adjusting and modifying disaster preparedness plans, but do not demonstrate the presence of a systematic process of knowledge generation from valid research findings.

Research Question 4

What formal hazard mitigation plans have been adopted and implemented, and to what extent are such plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency and the principles recommended by Quarantelli?

Discussion

Questionnaire items 70 through 92 are related to the development of a hazard mitigation plan. Study participants indicate mixed perceptions of the institution’s development of a hazard mitigation plan. Nineteen percent of respondents indicated a
perception of high congruence of the institution’s development of a hazard mitigation plan. Seventeen percent of respondents indicated a perception of moderate congruence while 13% of respondents indicated a perception of minimal congruence, and 12% of respondents indicated a perception of low congruence. Thirty-nine percent of respondents indicated they did not know or were otherwise unaware of whether or not the institution had undertaken development of a hazard mitigation plan. The following figure illustrates the distribution of responses on items 70 through 92.

![Figure 7. Responses to questionnaire items 70-92.](image)

Field interviews also reflect mixed perceptions of study participants regarding issues pertaining to formal institutional adoption of a plan, oversight structures for a plan, commitment of resources to support initiatives identified within a plan, and ongoing implementation and assessment of a plan. Sixty-six percent of interviewees indicate they view the institution’s efforts toward development of a hazard mitigation plan are adequate. Twenty-one percent of interviewees report they view hazard mitigation plan development as inadequate, and 15% of interviewees responded they did not know of
the development of an institutional hazard mitigation plan. The figure below illustrates the distribution of responses on field interview questions 9 through 12.

![Bar Chart]

**Figure 8.** Responses to field interview items 9-12.

One interviewee indicated American Coastal University “is process-driven . . . like most universities” and that the institution experiences “resistance to non-academic processes such as inventorying equipment and the like” (08203A1, personal communication, July 22, 2008). The interviewee went on to state that “as experience with storms increases faculty value processes more and find it valuable and in their best interest which results in better cooperation and process improvement” (08203A1, personal communication, July 22, 2008). The interviewee also indicated oversight structures for hazard mitigation planning “go all the way to the president” and that “folks who do this work have [the] support of the president and other senior officers of the institution” (08203A1, personal communication, July 22, 2008).

Another interviewee observed that “when we have gone through processes to decide what we are going to do to mitigate, the president and senior management have gotten on board and adopted it. . . . I have yet to find an instance where our senior
management has not been supportive of any grants or any mitigation efforts we’ve undertaken" and that the “administration, top to bottom, is supportive of preparation efforts” (08203M13, personal communication, July 25, 2008). One interviewee indicated ongoing implementation and assessment of plans is a process that results in “[meeting] at least once a year, probably more than once a year . . . [the] last meeting . . . had twenty or thirty first responders there” (08203F6, personal communication, July 25, 2008). This interviewee also conveyed that meetings to discuss plans resulted in reviewing plans and discussions about actions that were being taken by personnel in their assigned areas and that the group would “discuss what may need to be done and what, if anything, may need to change . . . then there are small meetings where we brief the president and vice presidents” (08203F6, personal communication, July 25, 2008).

One interviewee deemed the institution’s handling of multiple issues pertaining to hazard mitigation plan development and implementation as inadequate. Noting the institution did not possess a “well-defined, formal process” the interviewee expressed concerns that inputs to plans that are in place are “routed up to the appropriate authorities” but “no one is checking these for quality. Oversight of our decentralized process is really not there” (08203C3, personal communication, July 22, 2008). This same interviewee further expressed concern that hazard mitigation and disaster planning oversight “pretty much ends at the operational level. Executive cabinet, trustees, and others are not really looking into this. . . . I don’t see feedback that leads me to believe that there is much in the way of oversight in this area . . . [it] could be my ignorance . . . [it] could be the plans I’m responsible for have not merited improvement, but I doubt it” (08203C3, personal communication, July 22, 2008).
The interviewee went on to suggest that “this is a resource issue . . . [and we] don’t have a long-term strategy . . . It’s like buying insurance each year and hating it because you know you have to have it, but last year’s purchase was basically money down the drain” (08203C3, personal communication, July 22, 2008). Another interviewee was “not aware of any efforts to assess plans. [This] may be happening but I’m not aware of it. Tabletop exercises have occurred to practice the plans [but I’m] not aware that information gained from these exercises has been used to make adjustments to the plans which would be a way to assess them and make changes” (08203D4, personal communication, July 24, 2008). And another interviewee suggested the current process for adopting plans is “inadequate, but on the cusp of being adequate” (08203E5, personal communication, July 23, 2008). This interviewee went on to observe that experience has been more of the driver rather than identifying things in a forward manner. . . . Here at the university we base such plans on past experience and not on potential future scenarios and how we mitigate them. I think it’s reactionary so it is inadequate. [The process is] reactionary more than forward thinking and [it] needs to be more forward thinking (08203E5, personal communication, July 23, 2008).

American Coastal University demonstrated that disaster preparedness planning aims at evoking appropriate actions by anticipating likely problems and possible solutions or options. The institution’s Business Continuity Operations Plan (BCOP) embraces this philosophy when it states that “risk mitigation involves reducing the probability of occurrence and the severity of the consequences of each risk via effective faculty, employee, and student communications and a rapid response of emergency police, fire, and medical personnel. Risk mitigation plans are most effective when they
reduce the likelihood of occurrences; but are also required to reduce the severity of the consequences” (BCOP, 2008, p. 4).

The BCOP anticipates numerous potential problems associated with numerous disaster events. Among the potential disaster scenarios include hurricanes, tornados, chemical releases, bombs and bomb threats, fires, student death, suspicious mail or package, power and water interruptions, cyber attack/virus, workplace violence, flooding, terrorist threats and attacks, explosions, aircraft accidents, civil disturbances, sinkholes, and water reclamation facility failures (BCOP, 2008). The BCOP further specifies actions predetermined personnel should be prepared to take in order to initiate an appropriate response and offer effective solutions to problems that arise. For example, Annex 4.2 Hostile Intruder provides for specific actions to be taken and avoided in order to protect the safety of persons from the initial discover of an intruder to evacuation, if appropriate, to gunshots fire, to command and control and re-entry (BCOP, 2008).

In similar fashion the BCOP identifies various scales or levels of alert to be observed with respect to tornados and hurricanes and prescribes specific action checklists to be observed to ensure reasonable preparations for such weather events are made and that actions to mitigate likely impact effects are taken. The actions range from covering and sealing valuable equipment and materials to clearing surfaces of materials subject to damage to turning shelves and bookcases to face walls to closing and latching file cabinets (BCOP, 2008).

In similar fashion the Emergency Operations Guide (EOG) also identifies a series of potential emergency scenarios (classified as disasters, crises, and critical incidents),
and anticipates the kinds of conditions that may accompany each scenario and likely response action that may need to be taken in order to effectively manage the event (2008).

Yet another planning document, the Emergency Reference Guides, provides specific resources and instructions to aid university officials with managing multiple scenarios that may result from civil disturbances or demonstrations, explosions or aircraft crashes, chemical or radiation spills, fire, psychological crisis of an individual, terrorism and acts of mass destruction, weapons, and violent or criminal behavior, bomb threat, assaults, utility failures, hurricanes, and tornados. These instructions are provided in a quick-reference format and assume to “serve as a quick reference for effective and timely action” (EPR, 2008, p. 2).

American Coastal University, as noted previously, has demonstrated that disaster preparedness planning is a continuous process rather than production of an end-product, such as a written plan. The institution’s use of after-action reports (AAR, 2004; AAR, 2007) and evidence of ongoing plan review and modification (BCOP, 2008; EOG, 2008; ERG, 2008; TSEP, 2008) confirms that the institution’s planning effort is continuous in nature.

Research Question 5

To what extent are hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management and Quarantelli efficacious for developing new or revising existing hazard mitigation and disaster preparedness processes?
Discussion

Hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management Agency and Quarantelli are generally reflected in hazard mitigation and disaster preparedness processes at the American Coastal University. Based on the experience of applying the Federal Emergency Management Agency framework and Quarantelli’s principles in a single institution case study, however, I observed one pattern appearing throughout the course of the study that appears to be pertinent to the extent to which the framework and principles are efficacious for developing new or revising existing hazard mitigation and disaster preparedness planning processes.

In order for the Federal Emergency Management Agency hazard mitigation framework, in particular, to be efficacious, institutional personnel engaged in the process of developing new or revising existing hazard mitigation plans must be able to clearly distinguish between the process of mitigating hazards (identifying and resolving or reducing specific risks or threats in advance of their occurrence) and the process of disaster planning (identifying specific actions to be taken before, during and event an event or incident). Participants in this case study frequently appeared to have difficulty distinguishing between these two functions, a condition that repeatedly presented itself through the course of the field interviews. Several interviewees, while indicating confidence in the institution’s hazard mitigation planning processes, were unable to articulate specific activities that had been undertaken to actually mitigate potential risks or threats, were unaware of hazard mitigation activities that may have been occurring within or without their own divisions or departments, and were further unsure of specific
processes or protocols involved in the formal adoption, oversight, commitment of resources, and ongoing implementation and assessment of hazard mitigation projects except those undertaken three years earlier following the a natural disaster that impacted the campus.

This difficulty in distinguishing between hazard mitigation and response and recovery planning was acknowledged by one interviewee, for instance, who observed a sense develops that “if you can handle a [natural disaster] you can handle almost anything. [We] get lulled into thinking our planning is all in place because we’re so well prepared for [weather-related events] . . . you invest so much in planning on [this kind of incident] that, by the time you’re done, you don’t want to try to plan anything else” (08203C3, personal communication, July 22, 2008). This interviewee captured the reality in which many of the other participants appear to operate: that planning for disasters, and particularly for one type of disaster at the forefront of the institutional psyche because of recent experience, is equivalent to being well prepared.

This issue is further reinforced in comments made by other interviewees regarding an array of emergency notification systems that have been implemented on the campus in recent months. Installation of siren poles and electronic emergency notification and alert messaging systems appear to be viewed by many as mitigation instruments that will reduce the likelihood of actual disaster impacts rather than event or incident response and recovery tools that may be deployed at the time a disaster occurs.

Patterns also emerged in tabulation and analysis of completed questionnaire instruments that appear to reinforce the importance of clear delineation of hazard
mitigation and response and recovery plans. While 75% of respondents indicated moderate to high congruence with respect to the institution’s organization of resources and personnel for planning purposes, the institution’s efforts to develop hazard mitigation strategies was viewed at the level of 33% moderate to high congruence, and adoption and implementation of formal hazard mitigation plans was viewed by respondents at the level of 36% congruence.

Additionally, questionnaire respondents reported lack of familiarity or awareness of organization of personnel and resources for hazard mitigation at 13% unknown, a rate that appears to indicate widespread familiarity with hazard mitigation activities across multiple divisions and levels of the institution. However, the respondents also reported lack of familiarity or awareness with hazard identification and risk assessment activities at 29% unknown, lack of familiarity or awareness with development of hazard mitigation strategies at 40% unknown, and lack of familiarity or awareness with development of a hazard mitigation plan at 39% unknown. The data indicate that, as respondents progressed through questionnaire items, their apparent awareness of and familiarity with hazard mitigation activities, except those associated with identifying personnel and resources to be engaged in the process, progressively decreased.

Even with the challenge of clearly distinguishing between hazard mitigation and response and recovery plans, participants in the study undertaken by American Coastal University enthusiastically embraced critical inquiry into and evaluation of their hazard mitigation and disaster planning processes. One interviewee noted that the institution warmly embraced the opportunity to participate in a study using the frameworks and principles conveyed by the Federal Emergency Management Agency and Quarantelli.
“[The] former president was particularly friendly to this kind of process” observed the interviewee who further commented that the institution has an “interest and commitment to improving. [We] expect to learn from the study process; [it] requires us to think again after having participated in the process” (08203A1, personal communication, July 22, 2008). Another interviewee indicated that the institution’s participation in the study confirms its commitment to maintaining good oversight structures for hazard mitigation and disaster planning and suggested that the institution’s engagement in the study was broadly accepted by the institution as something “we could and should” do (08203M13, personal communication, July 25, 2008).

Summary of Findings

American Coastal University has undertaken formal identification and organization of resources and personnel required to successfully complete the hazard mitigation process congruent with the disaster-resistant framework outlined by the Federal Emergency Management Agency but has utilized such resources and personnel for purposes of disaster preparedness planning rather than hazard mitigation. The institution has demonstrated that disaster preparedness planning addresses resistances by emphasizing the need for intra- and interorganizational integration in the process as proposed by Quarantelli. The institution has also demonstrated that disaster preparedness planning is different from actual disaster management by focusing on the coordination of emergent resources rather than on issues of command control as recommended by Quarantelli.

American Coastal University has conducted comprehensive risk assessment activities to identify potential hazards and assess vulnerabilities but not in a manner
congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency. The institution has demonstrated that disaster preparedness planning involves attempting to reduce the unknowns in a problematical situation as recommended by Quarantelli. The institution has demonstrated that disaster preparedness planning views disasters as both quantitatively and qualitatively different from accidents and minor emergencies. The institution has demonstrated that disaster preparedness planning adopts a multihazard rather than single-hazard focus, and is generic rather than agent-specific as recommended by Quarantelli.

American Coastal University has formalized hazard mitigation actions but has not created hazard mitigation plans congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency. The institution does not demonstrate that disaster preparedness planning is knowledge-based via valid research findings derived from systematic data rather than personal anecdotes or “war stories” as recommended by Quarantelli other than through the use of after-action reviews following critical incidents.

The university has formally adopted and implemented hazard mitigation plans but not in a manner congruent with the disaster-resistant framework recommended by the Federal Emergency Management Agency. The institution has demonstrated that disaster preparedness planning is a continuous process rather than production of any end-product, such as a written plan as proposed by Quarantelli. The institution has further demonstrated that disaster preparedness planning aims at evoking appropriate actions by anticipating likely problems and possible solutions or options as recommended by Quarantelli.
Hazard mitigation and disaster preparedness planning frameworks and principles recommended by the Federal Emergency Management Agency and Quarantelli are reflected in the institution’s attempts to develop new or revise existing hazard mitigation and disaster preparedness plans. This is particularly true with respect to Quarantelli’s principles, almost all of which are evident in disaster plans and related documentary materials. Vestiges of the hazard mitigation framework recommended by FEMA appear throughout various institutional plans and documents, particularly with respect to resource identification and organization, albeit apart from a formal, institution-wide effort that embraces an all-hazards approach to development, adoption, and implementation.
CHAPTER 5
DISCUSSION OF FINDINGS AND CONCLUSIONS

Summary of the Study

As indicated in Chapter 1, the study concerns itself with the extent to which American Coastal University has implemented hazard mitigation and disaster preparedness processes, the extent to which these processes are congruent with the models recommended by the Federal Emergency Management Agency (FEMA) as reflected in *Building a Disaster-Resistant University* and the principles of disaster and preparedness planning offered by Quarantelli (1982; 1997), and the efficacy of these models for developing new or revising existing hazard mitigation and disaster preparedness processes and plans. It is noteworthy that the institution under study has not offered explicit or implicit indications as to whether or not it has attempted to utilize either of the models employed for purposes of this study.

Context of the Study

These research questions are best conceptualized in the context of the literature pertaining to hazard mitigation and disaster preparedness planning, a field broad and rich, particularly in its application to state, municipal and related governmental settings. As noted in Chapter 1, the literature also frequently reflects the practices and interests of private sector organizations seeking to anticipate and avert potential threats and disasters through business continuity planning methodologies. Higher education institutions bear striking similarities to both governmental and private sector entities, and can thus draw valuable information and lessons from both settings. Common concerns between postsecondary and governmental institutions include physical plant and utilities
infrastructure, human services functions such as hospitals and emergency medical services, law enforcement agencies, retail food and shopping entities, small and large scale public events associated with athletic teams, performing arts, and cultural enrichment programs, and residential concerns associated with student and employee housing on or near central campus settings. The literature further speaks to business continuity issues concerning employee payroll, vital records, and mission-critical functions such as, in the unique case of the academy, teaching, research, and public service. These core operational matters provide yet another backdrop against which higher education institutions may wish to consider their capacity to prepare for, withstand, and recover from an array of disaster situations as well as mitigate potential risks in advance of disaster events.

**Discussion of Findings**

American Coastal University has implemented extensive planning processes and policies pertaining to business continuity, emergency procedures, and emergency operations. These processes and policies were frequently referenced by study participants in the context of field interviews, and documentary evidence confirms their presence, use, and continuous review and evaluation. Disaster preparedness planning systems and approaches utilized by the institution, as noted in Chapter 4, generally adhere to the principles of disaster preparedness planning found in the writings of E.L. Quarantelli in that they: are continuous processes rather than end-product plans; involve attempting to reduce unknowns in problematic situations; aim toward evoking appropriate actions by anticipating problems and solutions; address resistances by emphasizing intra- and interorganizational integration; focus on coordination of
resources rather than command and control issues; view disasters as quantitatively and qualitatively different from minor emergencies; and are multihazard rather than single-hazard and generic rather than agent-specific in approach.

The principles of disaster-preparedness planning prescribed by Quarantelli advocate the use of research-driven knowledge over anecdotal information and recounts of personal experiences with disasters, and the institution has not clearly demonstrated its disaster preparedness planning processes include such a research-intensive knowledge core. The institution’s closest apparent attempt to derive research-driven data occurs when after-action reviews are conducted following critical incidents on the campus (AAR, 2004; AAR, 2007). A similar, qualitative data gathering approach appears to occur on occasions such as when critical incidents occur at other campuses. For example, an executive level administrator of the institution directed mid-level officials of the institution to make contact with their peers at a fellow state university in order to review their experiences with a campus shooting incident (08203A1, personal communication, May 2, 2008). Information contained in these reviews appears to indicate the institution makes an effort to incorporate the outcomes of such reviews into future response and recovery plans by identifying actions and modifications to be considered for future incidents.

The institution has not implemented planning processes and policies pertaining to hazard mitigation according to the model proposed by the Federal Emergency Management Agency in the publication entitled *Building a Disaster-Resistant University*. While the institution demonstrates it has made considerable effort to identify and organize internal and external resources, such identification and organization has been
leveraged primarily for the purpose of developing disaster response and recovery plans and not for the purpose of mitigating hazards in advance of a disaster event. As one interviewee described it, “this is a resource issue [and we] don’t have a long-term strategy. . . . It’s like buying insurance each year and hating it because you know you have to have it, but last year's purchase was basically money down the drain” (08203C3, personal communication, July 22, 2008).

That lack of resources or availability of limited resources specifically designated for hazard mitigation activities appears to be confirmed through the institution’s recent history of soliciting external grant funds as the primary funding source projects identified for mitigation following a natural disaster impact in recent years. The absence of an organized hazard mitigation effort is further confirmed through the consistent references by virtually all interviewees who attribute the institution’s experience with a recent natural disaster and its substantial disruption of campus operations and extensive impact on the university’s physical plant as the primary driving force behind mitigation projects that have occurred in the past four years. This same disaster event was repeatedly referenced as a primary influencing factor on virtually all disaster and emergency planning processes. Numerous institutional personnel who completed the questionnaire and field interviews associated with the study further confirm the absence of an organized hazard mitigation effort through their previously noted difficulty distinguishing between hazard mitigation (identifying and resolving or reducing specific risks or threats in advance of their occurrence) and disaster planning (identifying specific actions to be taken before, during, and after an event or incident).
The institution has made a limited effort to identify risks and assess vulnerabilities. Two interviewees made reference to activities that were undertaken pursuant to requirements of state agencies to identify risks associated with the financial value and indemnification of the campus’s physical plant, equipment, and related property assets and to assess vulnerabilities associated with potential criminal behavior that could occur on the physical premises (08203E5, personal communication, July 23, 2008; 08203F6, personal communication, July 25, 2008). While these kinds of efforts are the sort that could be readily folded into a formal hazard mitigation planning effort, it appears these activities occurred in response to regulatory mandates and in isolation from a deliberate and on-going campus-wide effort as prescribed in the disaster-resistant framework recommended by FEMA.

The institution has made an effort to formalize hazard mitigation actions but has not created actual hazard mitigation plans at the departmental or institutional level. Applications for grant funding to strengthen buildings and provide alternative power generation capability have been made in recent years and these applications reflect specific mitigation actions the institution has determined need to occur in order to increase the disaster-resistance capability of the campus physical plant. The genesis behind such mitigation priorities appears, however, to relate almost solely to weaknesses revealed during and immediately following the direct impact of a natural disaster (ACU HMGP, 2005a; 2005b; 2005c; 2005d) and not necessarily as a function of an institute-wide, on-going effort to address mitigation priorities from an all-hazards viewpoint congruent with the disaster-resistant framework recommended by FEMA.
The institution has not adopted and implemented hazard mitigation plans congruent with the disaster-resistant framework recommended by FEMA. As previously indicated, applications for grant funding to address various vulnerabilities identified following a recent natural disaster event were developed, but the institution has not demonstrated that a formal, on-going process for adopting and implementing hazard mitigation plans exists. As one interviewee noted, the institution does not possess “a well-defined, formal process” where plans are “routed up to the appropriate authorities,” checked “for quality” and then “[wrapped] into a master list” (08203C3, personal communication, July 22, 2008). This interviewee also concluded that “oversight of our decentralized process is really not there” and further observed that oversight of hazard mitigation and disaster planning processes tends to receive little or no scrutiny above the level of departmental operations (08203C3, personal communication, July 22, 2008).

An issue previously noted in Chapter 4 and earlier in Chapter 5 relates to the apparent difficulty experienced by most questionnaire respondents and field interviewees in distinguishing between hazard mitigation (identifying and resolving or reducing specific risks or threats in advance of their occurrence) and disaster planning (identifying specific actions to be taken before, during, and after an event or incident). This factor poses difficulty for assessing the extent to which the theoretical models, and particularly the disaster-resistant university framework, can be legitimately applied in the context American Coastal University.
Conclusions

American Coastal University has established an organizational culture that embraces mitigating hazards and preparing for an array of potential threats and risks and has employed an array of mechanisms for addressing such issues within the institution’s operating environment. The institution has demonstrated its interest in reviewing, modifying, and improving systems and processes associated with anticipating potential risks and threats, mitigating impacts in advance of their occurrence, and enhancing its capacity to quickly and efficiently respond to and recover from disaster impacts. Similar cultures likely exist at other institutions of higher learning, particularly those with natural disaster experiences of the scope and magnitude of that experienced by the American Coastal University.

American Coastal University has incorporated many of the themes and elements outlined in *Building a Disaster-Resistant University* and Quarantelli’s principles of disaster preparedness planning into its business continuity and emergency response plans and procedures. It is not readily evident that such incorporation occurred as a result of a deliberate effort, and the institution has not indicated whether or not it has deliberately attempted to follow the models employed in the study. It is likely such incorporation has been a serendipitous result of the diverse challenges and issues emerging out of the institution’s first-hand experience with a major natural disaster event and a subsequent near-miss disaster experience. Similar hazard mitigation and disaster preparedness planning themes likely exist in planning processes and procedures at other institutions impacted by significant natural and man-made disaster events.
Most personnel who directly engage in disaster preparedness planning and response activities at American Coastal University do not actively participate in a clearly defined, deliberate, and on-going campus-wide hazard mitigation planning effort. The subsequent result is an organizational culture that makes few, if any, distinctions between the two activities.

The hazard mitigation framework recommended by FEMA in *Building a Disaster-Resistant University* and the disaster preparedness planning principles offered by Quarantelli constitute theoretical models that provide both conceptual and practical mechanisms for hazard mitigation and disaster preparedness planning at American Coastal University. Given the congruence of many of the university’s efforts with respect to these models, it is conceivable other institutions' efforts would be similarly consistent depending on their experience with disaster situations.

**Implications**

Both FEMA and Quarantelli provide conceptual and theoretical mechanisms for hazard mitigation and disaster preparedness planning that are beneficial to any number of institutional settings. Institutional characteristics such as role, scope, mission, size, location, and governance structure are inconsequential when contrasted with the realities that natural and man-made disaster pose to a campus. Mitigation, response, and recovery capacities may widely differ among institutions depending on any number of factors; risks and threats to institutional operations, viability and survivability are almost universally consistent.

The practical mechanisms of the conceptual and theoretical framework recommended by FEMA and the disaster preparedness planning principles outlined by
Quarantelli are interrelated in terms of the fundamental nature and scope of processes they employ. Conversely, the specific approaches employed and the ultimate outcomes achieved by each are distinctive.

Future Research

Development of research methodologies and instrumentation to further qualify and quantify the congruence of institutional planning models with the theoretical and conceptual framework outlined in *Building a Disaster-Resistant University* and the principles advocated by E.L. Quarantelli is needed to strengthen the utility of the models for institutional hazard mitigation and disaster planning officials. Application of these theoretical and conceptual frameworks and principles to diverse institutional contexts including public, private, two-year, four-year, urban, rural, metropolitan, coastal, inland, and other settings will prove useful to researchers and practitioners alike in identifying the similarities and distinctions among institutional types and the corresponding mitigation and preparedness planning needs of each. Additional research will aid the expansion of the literature of hazard mitigation and disaster preparedness planning, particularly in relation postsecondary institutional applications, and will provide governing boards, postsecondary education regulators, and state and federal funding authorities enhanced capacity for effective policy development and resource allocation. Further research is warranted in order to conceptualized and evaluate the efficacy of what are likely divergent models utilized by higher education institutions for hazard mitigation and disaster preparedness planning.

Additional research is necessary to provide specific strategies for addressing the interests and needs of persons with unique challenges and disabilities within campus
communities. Further research is also warranted relative to hazard mitigation and disaster preparedness strategies for alternative methods that may be employed by higher learning institutions in order to accomplish instructional delivery, research, and service functions.
APPENDIX A

HAZARD MITIGATION/DISASTER PREPAREDNESS

D-RU QUESTIONNAIRE
**Hazard Mitigation and Disaster Preparedness D-RU Questionnaire**

Instructions: select one rating (low, minimal, moderate or high) using an “x” for each of the ninety-two items noted below. Select “unknown” if appropriate.

<table>
<thead>
<tr>
<th>Hazard Mitigation and Disaster Preparedness for the Disaster Resistant University</th>
<th>Low Congruence</th>
<th>Minimal Congruence</th>
<th>Moderate Congruence</th>
<th>High Congruence</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as the chief executive officer/president/chancellor.</td>
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<td>2. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as the chief academic officer/vice president/dean/provost.</td>
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<tr>
<td>3. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as the chief business officer/financial officer.</td>
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<tr>
<td>4. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as institutional planning entities (planning councils or committees; master plan committees).</td>
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<tr>
<td>5. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as institutional research entities (offices, divisions, or committees that collect and conduct institutional research).</td>
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<tr>
<td>Hazard Mitigation and Disaster Preparedness for the Disaster Resistant University</td>
<td>Low Congruence</td>
<td>Minimal Congruence</td>
<td>Moderate Congruence</td>
<td>High Congruence</td>
<td>Unknown</td>
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<tr>
<td>Instructions: select one rating (low, minimal, moderate or high) using an “x” for each item noted below. Select “unknown” if appropriate.</td>
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<td>6. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as development office personnel (offices and individuals experienced in establishing public/private partnerships).</td>
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<td>7. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as public service and outreach personnel (units whose personnel possess and communicate information about the institution within the surrounding community).</td>
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<td>8. The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as auxiliary/administrative personnel (institutionally owned or controlled hospitals, schools, housing, food service, parking, athletics, public safety, environmental health and safety, risk management, telecommunications, information systems, physical facilities and project design management).</td>
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### Hazard Mitigation and Disaster Preparedness for the Disaster Resistant University

**Instructions:** select one rating (low, minimal, moderate or high) using an “x” for each item noted below. Select “unknown” if appropriate.

<table>
<thead>
<tr>
<th>Item</th>
<th>Low Congruence</th>
<th>Minimal Congruence</th>
<th>Moderate Congruence</th>
<th>High Congruence</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.</td>
<td>The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as academic/instructional/research personnel (academic deans, department heads and program coordinators, faculty; sponsored programs and research).</td>
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<tr>
<td>10.</td>
<td>The institution has identified on-campus stakeholders deemed crucial to disaster-resistance initiatives such as student development/affairs/services enterprises (student affairs or services units and personnel; student organizations; alumni).</td>
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<tr>
<td>11.</td>
<td>The institution has identified off-campus stakeholders deemed crucial to disaster-resistance initiatives such as local government officials (governing bodies, emergency managers, community planners, local school, special municipal services and related districts).</td>
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<tr>
<td>12.</td>
<td>The institution has identified off-campus stakeholders deemed crucial to disaster-resistance initiatives such as infrastructure providers (utilities representatives, transportation specialists, community housing agencies).</td>
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</table>
Hazard Mitigation and Disaster Preparedness for the Disaster Resistant University

Instructions: select one rating (low, minimal, moderate or high) using an “x” for each item noted below. Select “unknown” if appropriate.

<table>
<thead>
<tr>
<th></th>
<th>Low Congruence</th>
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<td>13.</td>
<td>The institution has identified off-campus stakeholders deemed crucial to disaster-resistance initiatives such as state government officials (legislature, state agencies, university system officials, governing boards, state-wide emergency managers, state hazard mitigation officers).</td>
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<td>14.</td>
<td>The institution has identified off-campus stakeholders deemed crucial to disaster-resistance initiatives such as federal government officials (Federal Emergency Management Agency, U.S. Geological Survey, National Weather Service, National Oceanic and Atmospheric Administration, Department of Education).</td>
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<td>15.</td>
<td>The institution has identified off-campus stakeholders deemed crucial to disaster-resistance initiatives such as nonprofit organizations (American Red Cross, Salvation Army, United Way).</td>
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<td>16.</td>
<td>The institution has identified off-campus stakeholders deemed crucial to disaster-resistance initiatives such as private sector interests (business and industry).</td>
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<td>17. The institution has formed an advisory committee consisting of stakeholders representing both on-campus and off-campus interests.</td>
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<td>18. The institution has identified a project manager and given that manager the time and authority to focus exclusively on disaster-resistance initiatives.</td>
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<td>19. The institution has formally endorsed the composition and work of the advisory committee and/or project manager.</td>
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<td>20. The institution, advisory committee, and/or project manager have established a timeline for completion of tasks.</td>
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<td>21. The advisory committee and/or project manager have developed a mission statement in order to assist committee members in understanding desired outcomes of disaster-resistance initiatives.</td>
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<td>22. The advisory committee and/or project have developed a communication plan that identifies how, when, and to whom planning process and planning information will be released.</td>
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<td>23. The institution has conducted a hazard identification and risk assessment to identify the natural and man-made hazards that presents risks to the institution.</td>
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<td>24. The institution developed a full list of potential hazards likely to affect the campus.</td>
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<td>25. The institution has prioritized potential hazards likely to affect the campus based on their likelihood of occurrence.</td>
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<td>26. The institution has created detailed profiles of potential hazards likely to affect the campus.</td>
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<td>27. The institution has identified in specific terms the scope and extent of damage potential hazards could cause.</td>
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<td>28. The institution has created a campus base map upon which various hazard events can be profiled.</td>
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<td>29. The institution has created a campus base map which displays multiple features of the campus such as instructional buildings, residence halls, communications and computer information system infrastructure, laboratories, libraries, police and emergency services centers, medical centers, shelters, laboratories and hazardous material storage facilities, animal research facilities, critical campus infrastructure such as streets and utility routes, and residential/industrial zones, municipal services and transportation venues located close to campus.</td>
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<td>30. The institution has conducted an inventory of campus assets in identified hazard areas.</td>
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<td>31. The institution has identified how campus assets identified in hazard areas could affect the components and operations of the campus.</td>
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<td>32. The institution has developed detailed descriptions of buildings and other facilities in hazard areas that include square footage, construction and materials type, age, descriptions of occupancy and use, maintenance and repair</td>
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<td>schedules, and cost estimates for replacement of structures and contents.</td>
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<td>33. The institution has identified unique research centers, laboratories, and materials and contents within buildings and other facilities in hazard areas.</td>
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<td>34. The institution has identified unique aspects of buildings and other facilities and/or their floor plans, elevation and topography that are particularly relevant or noteworthy to the hazard areas in which they are located.</td>
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<td>35. The institution has described the conditions and vulnerabilities of internal utilities, communications, and technology systems.</td>
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<td>36. The institution has identified the location and vulnerability of critical campus operations and systems such as payroll, accounts payable, purchasing, risk management, and student records.</td>
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<td>37. The institution has determined the vulnerability of critical campus data and related technology functions and has identified appropriate backup plans for these functions.</td>
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<td>38. The institution has estimated potential losses that could result from a specific hazard event.</td>
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<td>39. The institution has created scenarios that estimate the impact of a hazard event on people, buildings, and infrastructure.</td>
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<td>40. The institution has described in quantitative terms the potential financial impact of lost instructional time, damaged facilities and equipment that directly support teaching and research, and damage to unique historical artifacts and rare library collections.</td>
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<td>41. The institution has described in qualitative terms the potential human and social costs of lost instructional time, damaged facilities and equipment that directly support teaching and research, and damage to unique historical artifacts and rare library collections.</td>
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<td>42. The institution has compiled loss estimates using a traditional loss function model based on the following three types of potential losses: life, property (structure and contents) and function.</td>
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<td>43. The institution has compiled loss estimates using separate loss function models that take into account unique equipment, research facilities, and related assets that are particularly vulnerable.</td>
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<td>44. The institution has collapsed asset inventory and hazard event profile information into a geographic information system (GIS) in order to create composite loss maps that illustrate areas of the campus most vulnerable to man-made and natural disasters.</td>
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<td>45. The institution has developed estimates of potential economic impact an interruption in teaching, research, and public service would have on the community and surrounding region.</td>
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<td>46. The institution developed mitigation goals and objectives based upon an understanding of the problems revealed in a formal risk assessment plan.</td>
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<td>47. The institution's mitigation plan addresses all of the hazards identified.</td>
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<td>48. The institution's mitigation plan prioritizes hazards based on vulnerability to particular natural and man-made hazards.</td>
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### Hazard Mitigation and Disaster Preparedness for the Disaster Resistant University

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<td>49. The prioritization of hazards has involved the comparison of the institution’s mission with the results of the hazard identification and risk assessment process.</td>
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<td>50. The prioritization of hazards has resulted in ranking mitigation needs according to their risk and relevance to instructional, research, and public service functions.</td>
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<td>51. The institution has identified specific mitigation actions to address hazards prioritized as most critical to mission-critical functions in terms of prevention measures such as planning/zoning modifications, preservation of undeveloped space, soil erosion prevention, sediment control, improving roofing materials.</td>
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<td>52. The institution has identified specific mitigation actions to address hazards prioritized as most critical to mission-critical functions in terms of property protection measures such as relocation, installation of shutters or other window/door protection or reinforcement devices, creation of flood barriers, obtainment of flood insurance, structural retrofits of critical buildings and facilities,</td>
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<td>52.</td>
<td>improvement of fire sprinkler systems, and improvements to backup systems for power, water, and electronic records.</td>
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<td>53.</td>
<td>The institution has identified specific mitigation actions to address hazards prioritized as most critical to mission-critical functions in terms of public education and awareness measures such as outreach projects, hazard information centers and publications, technical assistance, and training for critical personnel.</td>
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<td>54.</td>
<td>The institution has identified specific mitigation actions to address hazards prioritized as most critical to mission-critical functions in terms of natural resources protection measures such as erosion and sediment control, stream corridor protection, and wetlands preservation.</td>
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<td>55.</td>
<td>The institution has identified specific mitigation actions to address hazards prioritized as critical to mission-critical functions in terms of emergency services measures such as hazard threat recognition, hazard warning systems, emergency response, protection of critical facilities, and construction of safe rooms.</td>
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<td>56. The institution has identified specific mitigation actions to address hazards prioritized as most critical to mission-critical functions in terms of structural projects measures such as revetments, high flow diversions, spillways, retaining walls, storm sewers, and improved roofing materials.</td>
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<td>57. The institution has ranked, in priority order, the hazard mitigation actions needed to implement the hazard mitigation plan.</td>
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<td>58. The institution has developed a prioritized timeline for implementation of the hazard mitigation actions identified within the hazard mitigation plan.</td>
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<td>59. The institution relies or relied on an internally developed matrix to help drive prioritization of mitigation actions and schedules.</td>
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<td>60. The institution relies or relied employment of an external consultant to help drive prioritization of mitigation actions and schedules.</td>
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<td>61. The institution relies or relied on campus-based experts from the faculty to help drive prioritization of mitigation actions and schedules.</td>
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<td>62.</td>
<td>The institution relies or relied on campus-based experts from the staff to help drive prioritization of mitigation actions and schedules.</td>
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<td>63.</td>
<td>The institution relies or relied on external emergency management officials to help drive prioritization of mitigation actions and schedules.</td>
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<td>64.</td>
<td>The institution has determined how it will fund prescribed mitigation actions.</td>
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<td>65.</td>
<td>The institution has determined which organizational units and personnel will be responsible for overseeing implementation of mitigation actions.</td>
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<td>66.</td>
<td>The institution has determined the likely timetable in which mitigation actions will be implemented.</td>
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<td>67.</td>
<td>The institution has formally shared the contents of its hazard mitigation plan with appropriate emergency management personnel at the local level.</td>
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<td>68.</td>
<td>The institution has formally shared the contents of its hazard mitigation plan with appropriate emergency management personnel at the state level.</td>
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<td>69. The institution has formally shared the contents of its hazard mitigation plan with appropriate emergency management personnel at the federal level.</td>
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<td>70. The institution’s hazard mitigation plan has been formally presented to the chief executive officer for review and/or adoption.</td>
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<td>71. The institution’s hazard mitigation plan has been formally presented to key stakeholders on campus such as the faculty senate, student government association, employee unions, and other internal advisory or advocacy groups for review and/or adoption.</td>
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<td>72. The institution’s hazard mitigation plan has been formally presented to appropriate governing authorities (boards of trustees, supervisors, or regents; legislative authorities; accreditation bodies) for review and/or adoption.</td>
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<td>73. The institution’s hazard mitigation plan has been formally presented to key personnel in administrative units.</td>
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<td>74. The institution’s hazard mitigation plan has been formally adopted by key personnel in administrative units.</td>
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<td>75. The institution’s hazard mitigation plan has been formally presented to key personnel in academic units.</td>
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<td>76. The institution’s hazard mitigation plan has been formally adopted by key personnel in academic units.</td>
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<td>77. The institution’s hazard mitigation plan has been formally presented to key personnel within sponsored programs or research administration.</td>
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<td>78. The institution’s hazard mitigation plan has been formally adopted by key personnel within sponsored programs or research administration.</td>
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<td>79. The institution’s hazard mitigation plan has been formally presented to key personnel within student affairs and services.</td>
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<td>80. The institution’s hazard mitigation plan has been formally adopted by key personnel within student affairs and services.</td>
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<td>81. The institution has appointed an advisory committee to coordinate and oversee implementation of the hazard mitigation plan.</td>
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<td>82. The institution has appointed a project coordinator to coordinate and oversee implementation of the hazard mitigation plan.</td>
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<td>83. The advisory committee and/or coordinator has developed an implementation strategy for the hazard mitigation plan.</td>
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<td>84. The institution has identified which persons within the institution will be affected by implementation of prescribed hazard mitigation actions.</td>
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<td>85. The institution has identified which persons within the institution will be responsible for implementation of prescribed hazard mitigation actions.</td>
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<td>86. The institution has identified existing resources that are available to support implementation of prescribed hazard mitigation actions.</td>
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<td>87. The institution has determined whether or not implementation of prescribed hazard mitigation actions can be accomplished with existing resources.</td>
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<td>Hazard Mitigation and Disaster Preparedness for the Disaster Resistant University</td>
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<td>Instructions: select one rating (low, minimal, moderate or high) using an “x” for each item noted below. Select “unknown” if appropriate.</td>
<td>88. The institution has identified additional resources that will be required to implement prescribed hazard mitigation actions such as resources from local, state and federal governments and private organizations and individuals.</td>
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<td>89. The institution has identified a timetable in which to complete the prescribed hazard mitigation actions.</td>
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<td>90. The institution has determined how it will measure the effectiveness of the prescribed hazard mitigation actions once implemented.</td>
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<td>91. The institution has identified a timetable for periodic review of the efficacy of hazard mitigation actions once implemented.</td>
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<td>92. The institution has identified a process through which incremental modifications to the hazard mitigation plan will be developed, implemented, and communicated to internal and external stakeholders.</td>
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Provide additional comments, reflections and anecdotal information here; attach additional sheets, if necessary:

Respondent Identifier Code: ____________________________________________
APPENDIX B

BUILDING A DISASTER-RESISTANT UNIVERSITY:

EXECUTIVE SUMMARY
Introduction

The Federal Emergency Management Agency (FEMA) released Building a Disaster-Resistant University in August, 2003, as a planning resource guide for colleges and universities. Closely modeled after planning guidance provided by FEMA for counties and local municipal governments, this publication provides a fundamental recommended framework for organizing resources, identifying hazards and assessing risks, developing hazard mitigation strategies, and adopting and implementing hazard mitigation plans at all levels of institutional concern and across the institution’s teaching, research, and public service interests. While colleges and universities are clearly distinctive within the local cities or counties in which most are located, campuses frequently share numerous similarities with municipalities such as residential dwellings, retail shopping and restaurant facilities, streets and pedestrian thoroughfares, complex utility and telecommunications infrastructure, structures of diverse size, age, and function, law enforcement agencies, fire departments, medical treatment clinics and hospitals, and publicly-utilized facilities for arts, culture, recreation and sports entertainment. In short, “higher education institutions are themselves communities in many ways, and they can draw on important lessons from the efforts of counties and municipalities to reduce disaster risks” (2003, p. 1).

Reducing and Eliminating Risk

Noting that disasters affecting college and university campuses always result in financial losses and interruptions of core functions of teaching, research, and public service, campus officials are urged to become sensitive to the fact that such impacts “can be measured by faculty and student departures, decreases in research funding,
and increases in insurance premiums” (2003, p. iii). Such losses, it is contended, may be significantly reduced or even eliminated by taking steps to plan and mitigate risks in advance of disaster situations. Risk identification, vulnerability assessment, and hazard mitigation plan development are actions recommended for higher education institutions as a means of reducing such losses and minimizing the impact of natural and man-made disasters.

Hazard Mitigation: A Four Phase Process

FEMA defines hazard mitigation as “a systematic, four-phased process for identifying and implementing actions to reduce or eliminate loss of life, property and function due to natural and man-made hazards” (2003, p. 1). The four phases of the hazard mitigation process include:

Phase 1: Organizing Resources

This phase involves the initial identification of internal and external resources and personnel that will be required to successfully complete the hazard mitigation process. Persons whose functional role or practical interest make them appropriate participants are brought together to form a leadership structure for the process and existing planning guides and related documents are assembled and reviewed. A project management plan, complete with expected outcomes, completion dates, and protocols for how the planning process will be managed and communicated to internal and external constituents is developed.

Phase 2: Hazard Identification and Risk Assessment

This phase addresses the process of identifying hazards and risks to the campus community. Specific vulnerabilities of the institution, both man-made and natural, are
identified and examined. Profiles of potential hazard events are created, resources available for responding to hazard events are inventoried, and likely loss scenarios are anticipated and recorded in terms of their value, where appropriate, with respect to human life, physical structures and their contents, and function within the institution.

Phase 3: Developing Hazard Mitigation Strategies

This phase initiates the actual development of a written hazard mitigation plan. Existing plans that complement the hazard mitigation process are incorporated into a new document that accurately reflects the unique role, scope, and mission of the institution. Integration with local and state emergency management resources is sought to ensure compatibility of the plan with those of agencies and jurisdictions who are most likely to be involved in response and recovery alongside university personnel, and a mechanism for ensuring the plan is regularly updated and continually implemented across all organizational levels and within each of the institution’s teaching, research, and public service interests is enacted.

Phase 4: Developing a Mitigation Plan

Once the hazard mitigation plan has been written it is necessary to obtain adoption by appropriate administrative, instructional, and governing interests of the institution and begin the process of actually implementing plan objectives. Institutional cultures that may be inherently resistant to change must be successfully adjusted and navigated with the end-goal in mind of giving the institution an enhanced position of disaster-resilience. Mechanisms to maintain and modify the plan, as changing
institutional conditions warrant, are solidified in order to keep the plan timely and relevant to the operational needs of the campus.

Results of Hazard Mitigation and Disaster Planning

The primary goal of the initial hazard mitigation planning process is to marshal the institution’s essential human and fiscal resources, build awareness of potential vulnerabilities, write and adopt a plan, establish a baseline against which progress in implementing plan objectives can be measured, and create a context for periodically modifying the plan. In addition to offering guidance through the four phases, Building a Disaster-Resistant University also includes a series of eight worksheets to assist institutions in working through the following pertinent planning issues:

- Build the Planning Team
- Hazard Identification and Risk Assessment
- Identify the Hazards
- Profile Hazard Events
- Inventory Assets
- Assess Priority Assets
- Estimate Losses
- Identify Mitigation Actions

Initial hazard mitigation and disaster preparedness plans constructed by colleges and universities using the approach recommended by FEMA will create “a baseline from which to measure progress. As you implement and evaluate actions, your knowledge of hazards and how to best reduce your vulnerabilities increases tremendously” (2003, p. 42). Experiences gained as additional stakeholders participate in planning and
mitigation will increase institutional capacity to prepare for and respond to disaster situations. And institutional resilience to the effects of both man-made and natural disasters will be strengthened as incremental reviews and revisions to plans are achieved.

Conclusion

Six university communities participated in the development of *Building a Disaster-Resistant University* including: Tulane University, University of Alaska—Fairbanks, University of California, Berkeley, University of Miami, University of North Carolina at Wilmington, and the University of Washington. Their efforts toward increasing disaster-resistance of their campuses, combined with already existing mitigation planning guides geared toward state and local governments, have resulted in the development of resources that “provide basic information designed for institutions just getting started as well as concrete ideas, suggestions, and practical experiences for institutions that have already begun to take steps to becoming more disaster-resistant” (2003, p. iii). *Building a Disaster-Resistant University* is available in a PDF format through FEMA at http://www.fema.gov/library/viewRecord.do?id=1565.
APPENDIX C

FIELD INTERVIEW QUESTIONS
Research Question 1
*Engagement of Campus Stakeholders (Questionnaire Items 1-10)*
A. Would you describe the use of campus stakeholders as adequate or inadequate in the hazard mitigation and disaster planning process? Please elaborate.

*Engagement of Non-Campus Personnel (Questionnaire Items 11-16)*
B. Would you describe the use of non-campus stakeholders as adequate or inadequate in the hazard mitigation and disaster planning process? Please elaborate.

*Engagement of Institutional Management & Oversight (Questionnaire Items 17-22)*
C. Would you describe the institution’s management of hazard mitigation and disaster planning activities adequate or inadequate? Please elaborate.

Research Question 2
*Identification of vulnerabilities (Questionnaire Items 23-37)*
D. Would you describe the institution’s identification of vulnerabilities as adequate or inadequate? Please elaborate.

*Loss and impact estimates (Questionnaire Items 38-45)*
E. Would you describe the institution’s estimates of potential losses and impacts as adequate or inadequate? Please elaborate.

Research Question 3
*Identification of mission-critical functions (Questionnaire Items 46-56)*
F. Would you describe the institution’s identified mission-critical functions as adequate or inadequate? Please elaborate.

*Identification of mitigation priorities (Questionnaire Items 57-59)*
G. Would you describe the institution’s identified mitigation priorities as adequate or inadequate? Please elaborate.

*Internal and external expert resources consulted (Questionnaire Items 60-69)*
H. Would you describe the institution’s use of internal and external expert resources as adequate or inadequate? Please elaborate.

Research Question 4
*Formal institutional adoption (Questionnaire Items 70-80)*
I. Would you describe the institution’s process for adoption of hazard mitigation plans as adequate or inadequate? Please elaborate.

*Oversight structures (Questionnaire Items 81-85)*
J. Would you describe the institution’s oversight structures for hazard mitigation and disaster planning as adequate or inadequate? Please elaborate.

*Resource commitment (Questionnaire Items 86-88)*
K. Would you describe the institution’s commitment of resources to hazard mitigation and disaster planning as adequate or inadequate? Please elaborate.

*Ongoing implementation and assessment (Questionnaire Items 88-92)*
L. Would you describe the institution’s strategy for ongoing implementation and assessment of hazard mitigation plans as adequate or inadequate?
APPENDIX D

PRINCIPLES OF DISASTER PREPAREDNESS PLANNING

ERROR! BOOKMARK NOT DEFINED.
1. The institution does/does not demonstrate that disaster preparedness planning is a continuous process rather than production of an end-product, such as a written plan (Development of a Hazard Mitigation Plan Phase/RQ 4).

2. The institution does/does not demonstrate that disaster preparedness planning involves attempting to reduce the unknowns in a problematical situation (Hazard Identification and Risk Assessment Phase/RQ 2).

3. The institution does/does not demonstrate that disaster preparedness planning aims at evoking appropriate actions by anticipating likely problems and possible solutions or options (Development of a Hazard Mitigation Plan Phase/RQ4).

4. The institution does/does not demonstrate that disaster preparedness planning is knowledge-based via valid research findings derived from systematic data rather than personal anecdotes or ‘war stories’ (Hazard Identification and Risk Assessment Phase/RQ2 & Development of Hazard Mitigation Strategies Phase/RQ3).

5. The institution does/does not demonstrate that disaster preparedness planning addresses resistances by emphasizing the need for intra- and inter-organizational integration in the process (Resource Organization Phase/RQ1).

6. The institution does/does not demonstrate that disaster preparedness planning is different from actual disaster management by focusing on the coordination of emergent resources rather than on issues of command and control (Resource Organization Phase/RQ1).

7. The institution does/does not demonstrate that disaster preparedness planning views disasters as both quantitatively and qualitatively different from accidents and minor emergencies (Hazard Identification and Risk Assessment Phase/RQ2).

8. The institution does/does not demonstrate that disaster preparedness planning adopts a multi-hazard rather than single-hazard focus, and is generic rather than agent specific (Hazard Identification and Risk Assessment Phase/RQ 2).

*Based on:


BIBLIOGRAPHY


American Coastal University. (2005a, June). *Hazard Mitigation Grant Application*.

American Coastal University. (2005b, June). *Hazard Mitigation Grant Application*.

American Coastal University. (2005c, June). *Hazard Mitigation Grant Application*.

American Coastal University. (2005d, June). *Hazard Mitigation Grant Application*.


