

PRE-DISASTER EMERGENCY MANAGEMENT IN  
COMAL COUNTY TEXAS:

AN ANALYSIS OF AWARENESS, CONCERN, AND ATTITUDES

BY

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# CHAPTER ONE

## INTRODUCTION

### Introduction

Most simply put, hazards beget disasters.<sup>1</sup> Disasters or mass emergencies are normally characterized as calamitous or widespread events which result in substantial damage. The scope of an event differentiates disaster from non-disaster events. T.

Cannon defines disaster in the following way:

an event associated with the impact of a hazard, which leads to increased mortality, illness and/or injury, and destroyed or disrupted livelihoods which affects people of an area such that they (and/or outsiders) perceive it as being exceptional and requiring external assistance for recovery.<sup>2</sup>

This distinction is important because it implies that disasters are beyond the scope of normally operating law enforcement, fire and emergency medical service systems. In fact these systems and other normal functions of society and community are often completely overwhelmed or destroyed by disaster. One needs only remember the Loma Prieta earthquake (1989), Hurricane Andrew (1992), or the bomb blast at the Alfred P. Murrah Federal Building (1995) to visualize the devastation encountered by the people of San Francisco, Homestead, and Oklahoma City. With this in mind it is important to consider how disasters or mass emergencies can be planned for and managed.

Indeed, emergency management has become an important consideration for all levels of government, for business and industry, and for academics in a multitude of

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<sup>1</sup> Hazards are best classified as 'natural' (e.g., tornadoes, ice storms, hurricanes, wild fire, flood, earthquake, etc.) and 'man-made' (e.g., oil spills, chemical releases, riot, terrorist acts, military action, and others).

<sup>2</sup> Cannon, 1993: 104.

disciplines. Although there is variation in the order and sometimes the terminology, disaster researchers and practitioners generally agree that there are four inter-related phases or stages of emergency management:<sup>3</sup> (1) Mitigation or prevention. (2) Preparedness. (3) Response. (4) Recovery. Generally speaking, mitigation and preparedness are considered pre-disaster activities while response and recovery activities take place post-disaster. The four phases as accepted present a solid organizing principle, or framework, for disaster studies as well as the practice of emergency management.<sup>4</sup> A more exhaustive discussion of emergency management in general and the phases in particular follows in chapter two.

For now, a brief description of the four phases is presented. In short, mitigation activities usually constitute actions taken to alleviate the impact or prevent a hazard event. Preparedness activities consist of emergency planning, training, and exercising, warning systems and other activities and tools undertaken in advance of disaster. Response includes all those actions immediately prior to, during, and immediately following the hazard occurrence, usually the implementation of the emergency plan. Finally, recovery includes long-term response and reconstruction activities. The conception of this project came by considering these phases in a public administration context, especially as it may be useful to local jurisdictions.

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<sup>3</sup> Originally proposed by the National Governor's Association in 1979.

<sup>4</sup> See Clary, Comfort, Drabek, Godschalk, McLoughlin, Quarantelli and others for variations on the phases/stages framework.

## **Emergency Management in the Public Administration Context**

Emergency management is relevant to public administration research and practice, in part because of the multitude of inherent relationships. Considerations of inter-jurisdictional, inter-sectoral, inter-organizational and intergovernmental relations exist prior to, during, and following the onset of a hazard. Public administrators and policy makers at all levels of government are responsible to assure that effective coordination of these relationships occurs in all phases of emergency management. Public administration is also widely concerned with issues of policy development and implementation. Here too, emergency management provides many challenges.<sup>5</sup>

William J. Petak (1985: 3) asserts that public administration has generally been limited to crisis-reactive management approaches. He suggests that the pre-disaster phases of mitigation and preparedness should receive greater attention and demand a more proactive stance. This project is an attempt to provide attention to the pre-disaster aspects of emergency management in Comal County, Texas.<sup>6</sup> In so doing, a framework or methodology is presented that might be used in any community or local jurisdiction and improved upon as it is used. Two research questions are examined to meet Petak's challenge of providing greater attention to the pre-disaster phases.

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<sup>5</sup> Petak (1985: 8) cites the following: 1. Policy makers view other current problems as more pressing, lack of political support and resources. 2. No powerful political force. Legislation tends to be enacted in the wake of a disaster, often urgent with incomplete information. 3. Political and economic costs are seen as disproportionate with benefits. 4. Hazard problems are rife with complexity and uncertainty, not necessarily responsive to conventional economic rationality. 5. Local governments limited technically and administratively. 6. Factual issues not easily reconciled with social values, inability in the regulatory process to integrate facts, values, and judgment.

<sup>6</sup> Two distinct jurisdictions will be examined: Comal County and the city of New Braunfels.

## Research Questions and Purposes

Research question one asks: What is the status of pre-disaster emergency management in Comal County, Texas? The purpose of research question one is exploratory; to depict the pre-disaster emergency management 'lay of the land,' so to speak. This exploration process can be likened, metaphorically, to using a line on a map in order to show the profile or contour of the land.<sup>7</sup> In this case, lines of questioning<sup>8</sup> are established in order to depict the pre-disaster emergency management lay of the land for specific jurisdictions.

The following lines of questioning are the organizing mechanism for research question one. 1a) What is the jurisdiction's disaster history? 1b) What has been shown by assessment and analysis of hazards, vulnerability, and risk? 1c) What is the status of the jurisdiction's plans, planning processes and tools? 1d) What efforts have been made by the jurisdiction to establish necessary relationships and to foster community involvement? 1e) How does the jurisdiction respond to matters of opinion? Each of these lines of questioning have their roots in the emergency management literature and in suggestive materials produced by government authorities. Full development of each line is found in the section on conceptual frameworks in Chapter Two.

The second research question is directed to those individuals who, by the nature of their positions in the community, might be expected to have a part in emergency management. A working list of these potential participants is developed in Chapter Three. Research question two has three parts: 2a) How aware are participants of preparedness

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<sup>7</sup> Contour lines (on a map) are lines joining points of equal elevation on a surface and are used to show shape and depth.

<sup>8</sup> The idea of lines of questioning as a conceptual framework is described further in Chapter Two.

issues? 2b) How concerned<sup>9</sup> are participants for preparedness issues? 2c) What are participant attitudes toward mitigation issues?

The purpose of research question two is descriptive; to (1) describe participant levels of awareness of and concern for issues of preparedness, and to (2) describe their attitudes toward issues of mitigation. Descriptive categories derived from key issues in these pre-disaster phases of emergency management provide organization for this assessment. These categories are fully developed in the section on conceptual frameworks in Chapter Two.

Examining issues of pre-disaster mitigation and preparedness in this way gives public administrators, policy makers and their stake-holders the information they need. It meets the first half of Petak's challenge. The information gathered can then be used to cultivate and coordinate necessary relationships and to develop and effectively implement sound policy. Efforts of this kind would constitute a proactive stance, satisfying the second half of the challenge.

### **Organization of the Report**

The report is organized in the following manner. Chapter two contains the literary foundations for this project along with the detailed conceptual frameworks showing the organization of the project in order to answer the research questions. The operationalization of the conceptual frameworks is accomplished in the third chapter. There the research methodology is discussed including the research techniques employed,

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<sup>9</sup> Here 'concern' means involvement with, interest in, or, that importance is applied to the issue or item.

the sources of information, the data to be collected and a description of the statistical techniques used.

Chapter four is divided into two sections. First, the research setting is presented, including a summary of the location and history of Comal County and New Braunfels, Texas. This is followed by descriptions of the jurisdictions' physical characteristics and government structures and, finally, information about their populations. The second section of chapter four discusses the disaster setting. There, the Texas Disaster Act of 1975, the State Emergency Management Plan, and local emergency management plans are discussed. In addition to these items, findings from the first research question are reported, providing the pre-disaster emergency management "lay of the land" as it exists in the identified jurisdictions. Chapter five displays the results of the second research question and provides a detailed analysis of the findings. Finally, chapter six provides summation of the report along with this researcher's conclusions and recommendations.

### **Aspirations for the Research**

It is hoped that the results of this Applied Research Project will have the following impacts. First, the survey respondents will undergo a research effect that will lead them to become more aware, interested, and involved in issues of emergency management. Second, active participants in emergency management will utilize the analysis of the current status to continue sound efforts and improve where indicated. Third, policy makers and constituents will use the information to make public policy that reflects the community's knowledge, attitudes, and beliefs about emergency management.

Finally, the tools developed here will be used by other jurisdictions to evaluate their emergency management status.

## CHAPTER TWO

### LITERATURE REVIEW

#### **Introduction**

The purpose of this chapter is a review of the disaster-related literature. Disaster-related topics and the area of emergency management have been studied for most of this century. In 1970, Russell R. Dynes wrote Organized Behavior in Disaster that showed what really happens when a crisis breaks out. At the time Dynes wrote the book, he relied on existing disaster literature contained in various forms at the Disaster Research Center Library at the Ohio State University.<sup>1</sup> He noted at the time that the information was not routinely available through most libraries. Over time that situation has changed dramatically. Disaster topics have been taken up by most disciplines and all sectors of society in one form or another and there has developed an abundance of information. In addition, formal research sites have been developed at universities around the world, and business and industry, the military, all levels of government and private organizations such as the Red Cross have developed formal mechanisms for considering disaster topics.

While every aspect of disaster and emergency management have received attention, much of the effort has been focused on post-disaster topics of response and recovery. Field research, case studies and post-event surveys have been the predominant approaches, especially for behavior-focused research.<sup>2</sup> This review of the literature

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<sup>1</sup> The Disaster Research Center has since moved to the University of Delaware.

<sup>2</sup> Many frameworks have been developed to study the reactions of people, organizations, and governments during and after disasters. The Natural Hazards Research and Applications Information Center at the University of Colorado and The Disaster Research Center at the University of Delaware have vast holdings and are tremendous resources for disaster-related research.

focuses on pre-disaster topics in order to establish the foundation for the project introduced previously. The remainder of this chapter takes the following form. First, commonly held emergency management concepts are described. Next, a discussion of the importance of studying pre-disaster mitigation and preparedness topics is presented. Finally, this project's conceptual frameworks are presented in detail.

### **Emergency Management Concepts**

As stated earlier, the four phases of mitigation, preparedness, response, and recovery are widely regarded as the best organizing principle for the study and practice of emergency management. As described here, mitigation and preparedness occur prior to the onset of disaster and the response and recovery phases are activated when disaster occurs. What follows is a closer look at each of the phases.

#### Mitigation<sup>3</sup>

Increasing numbers of people have become exposed to natural and man-made hazards stemming from changes in human settlement patterns and in technology.<sup>4</sup>

Mitigation of hazards is normally associated with attempts to reduce the intensity of a hazard, or to make some other modification that is supposed to lessen its impact.<sup>5</sup>

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<sup>3</sup> According to David Godschalk (1991: 132) mitigation deals primarily with four basic elements; hazard, risk, vulnerability, and disaster. *Hazards* are natural, technological, or civil threats to people, property, and the environment. *Risk* is the probability that a hazard will occur during a particular time period. *Vulnerability* is susceptibility to injury or damage from hazards. *Disaster* is a hazard occurrence resulting in significant injury or damage. (Emphasis added)

<sup>4</sup> Perry and Nigg, 1985: 72

<sup>5</sup> Cannon, 1993: 101, Clary, 1985: 20.

Mitigation is most often regarded as acting before a disaster strikes to obtain those results but it is also used effectively after a disaster to reduce the risk of a repeat disaster.<sup>6</sup>

Godschalk and Brower (1985: 64-65) describe three major goals sought by hazard mitigation strategies. The first is containing or modifying the hazard. Here the idea is to change the nature of the threat. The second is protecting people and facilities in hazard areas. Through this goal the vulnerability to damage is decreased. The third goal is limiting the uses of hazard areas to reduce the exposure of people to the threat. The type of hazard effects the choice of the mitigation goal. For example, the goal is to eliminate the cause or reduce the chance of occurrence when dealing with man-made, technical hazards. Alternatively, the goal is to reduce the harm from periodic impacts by acting on structures and human activities in the case of natural hazards.

### Preparedness

Preparedness is a multi-dimensional concept. It is made up of many activities designed to lessen the disruption following disaster.<sup>7</sup> Examples of preparedness activities include forecasting and warning, education, training and exercising, devising emergency operations plans, stockpiling resources, and securing funding for emergency management. These activities are undertaken prior to disaster so that fewer injuries and deaths result and to lower the costs associated with disaster. T. Cannon claims that, in contrast to mitigation, preparedness should aim at reducing the impact of a hazard by improving the protection of people in ways that center on people and on reducing their

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<sup>6</sup> Godschalk, 1991: 131.

<sup>7</sup> Banerjee and Gillespie, 1994: 345.

vulnerability.<sup>8</sup> A critical issue in that regard is how information can be delivered to the population at risk.<sup>9</sup> Individuals need information so they can act expeditiously in the case of an emergency. Inherent in a discussion of preparedness is the multitude of relationships that exist and how communication occurs between and among different actors.

### Response

The response phase begins prior to or at the onset of a hazard occurrence. The focus of the response phase is in providing emergency aid and assistance, reducing the probability of secondary damage and minimizing the problems of recovery operations.<sup>10</sup> A coordinated emergency response is required. Response-related activities include, mobilizing personnel and resources, warning the public, taking protective action, assessing the damage, restoring essential public services, informing the public, keeping records and planning the recovery.<sup>11</sup> Effective response relies upon solid preparedness planning, leadership, sound decision systems, and tactical skills.<sup>12</sup>

Davis and Bickmore (1993: 547-548) suggest a number of requirements for effective response: 1) Political commitment that is maintained at all levels of national and local government. 2) A governmental structure with clearly defined authority and an appropriate budgetary commitment to maintain effective disaster planning. 3) A realistic, up-to-date, well-rehearsed preparedness plan that is comprehensive in scope, operational

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<sup>8</sup> Cannon, 1993: 101.

<sup>9</sup> Dymon and Winter, 1993: 13.

<sup>10</sup> Petak, 1985: 3

<sup>11</sup> Kreps, 1991: 40-42.

<sup>12</sup> Godschalk, 1985: 64.

at all levels, as well understood and accepted by the relevant authorities and the affected population. 4) An emergency management system. This system needs to be linked to designated responsibilities within line agencies. 5) A mitigation plan, leading to its application with a wide diversity of structural and non-structural measures. 6) The gradual 'normalization' of disaster planning and implementation. This requires public education, the development of enabling legislation, emergency management, institution building and the application of resources.

Davis and Bickmore (op. cit.) suggest that with such measures in place the safety of persons and the protection of property can ultimately be integrated into the culture of a society. It should be clear that what is said to entail effective response relies very heavily on actions taken prior to disaster in the mitigation and preparedness phases. With first response delegated to local jurisdictions, the work they do and the relationships they develop, in advance of disaster, take on extreme importance.

### Recovery

The long-term response activities, as well as rebuilding and reconstruction constitute the recovery phase. In recovery there is usually significant pressure to rebuild in such a way as to return the affected community to its pre-disaster condition as quickly as possible.<sup>13</sup> States of emergency, if declared, allow for the influx of state and federal money to fund such efforts. Recovery is the most costly and often times the most controversial phase of emergency management.

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<sup>13</sup> See, for example, Berke, et al., Clary, and Rubin and Barbee for discussion of recovery priorities.

For Berke et al. (1993: 93) the recovery period offers an opportunity to strengthen local organizational capacity to facilitate economic, social, and physical development long after the disaster. Another opportunity they see is to alter physical development patterns to reduce future hazard vulnerability. With support for hazard mitigation typically at its strongest immediately following a disaster, a rebuilt community can be at lower risk to future disasters, compared to pre-disaster conditions through the implementation of appropriate construction, repair, and land use standards. Moreover, long standing community problems can be resolved through reconstruction. It is at this point that the phases connect. In fact, much discussion of mitigation occurs in the context of recovery from disaster.

### CEM and IEMS

In 1979, Presidential Executive Order 12127 created the Federal Emergency Management Agency (FEMA) as the lead agency in federal emergency management efforts.<sup>14</sup> Prior to this the federal disaster effort was fragmented and uncoordinated with separate emergency management functions contained within at least four federal agencies.<sup>15</sup> In order to promote a generalized approach to emergency management that encourages a dual-use orientation for resources, FEMA pushed the long-term objective of Comprehensive Emergency Management (CEM). By fiscal year 1984, in an effort to achieve comprehensive emergency management, FEMA began the Integrated Emergency

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<sup>14</sup> May, 1985: 40 and Clary, 1985: 23.

<sup>15</sup> The General Services Administration, the Department of Defense and two agencies within the Department of Housing and Urban Development. Clary, 1985: 23.

Management System (IEMS) at all levels of government as the implementation strategy.<sup>16</sup>

Mushkatel and Weschler (1985: 50) explain that CEM and IEMS are multiple-hazard approaches based upon the assumption that all disasters have characteristics in common. These approaches require a single flexible system capable of adjusting to many kinds of hazards. The CEM and IEMS approaches place great importance on the role of state and local actors. The dual-use orientation mentioned earlier encourages these local actors to maximize the systems and resources presently available.

According to Louis Giuffrida (1985: 2), the Director of FEMA at the time, IEMS is meant as a rational system of management. The basic functions of emergency management (the phases) are conducted using plans and systems that are generic, such as communications systems, emergency operations centers, and shelters for evacuation. This provides for the effective assignment of duties for managing emergencies in a rational context in a given community without imposing a rigid system. One of the keys to successful implementation of an integrated emergency management system is commitment to taking action. Federal and state authorities have training programs for leaders in emergency management that facilitate the development of the necessary skills. Both levels of government provide grants and guidance for planning activities, as well as financial aid for mitigation measures.

While it seems that pre-disaster mitigation and preparedness should naturally receive a great deal of attention and support based on their importance in alleviating the impact of disaster, that is not necessarily the case. E.E. Alley (1993: 72) believes that

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<sup>16</sup> Drabek, 1985: 85.

lack of attention to preparedness and prevention issues by governments continues to be a major shortcoming. Resistance to both these phases is a given.<sup>17</sup> In general, local officials tend to be less concerned over disasters as a public policy issue than actors at other government levels.<sup>18</sup> Preparedness takes time and effort that doesn't show an immediate benefit, especially when compared to more salient public policy issues. Much of the problem with mitigation is a perception that it is too restrictive, too costly, and incompatible with the community's economic development goals.<sup>19</sup> However, there are signs that things have started to change.

### **The Importance of Studying Pre-Disaster Topics**

Alley (1993: 67) suggests there has been a growing awareness, on the part of governments, for the need to focus more attention on disaster mitigation and preparedness. In addition, the National Research Council (1991: 29) states that business and industry are taking more responsibility for augmenting community emergency response capabilities for disasters. The remainder of this section highlights the importance of pre-disaster mitigation and preparedness.

Probably the most salient reasons for supporting heightened pre-disaster efforts revolve around the loss of life, property, and financial well-being as well the costs of recovery. According to E.E. Alley (1993: 72), the implementation of more effective ways to protect people and property would eliminate, or at least reduce, the need for some relief, and would certainly substantially reduce losses and suffering. The National

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<sup>17</sup> Kreps, 1991: 36.

<sup>18</sup> Rubin and Barbec, 1985: 58.

<sup>19</sup> National Research Council, 1991: 21.

Research Council (1991: 21) cites studies confirming the fundamental fact that community investment in mitigation pays direct dividends in terms of loss when disaster occurs. Finally, Petak and Atkisson (1982: 318) projected that annual expected losses from natural hazard exposures may be reduced by more than forty percent through the application of available risk-reducing technologies and policy mitigations.

According to Daines (1991:161) the majority of disasters are responded to by the local governments in the jurisdictions where they occur. This, he says, is because local elected officials have an inherent or a statutory responsibility to protect lives and property with coordinated response. Elected officials delegate operational authority of responsibilities like these to administrators and departments. The remainder of this chapter contains the conceptual frameworks for the project that are designed to produce a meaningful mechanism for assessing the pre-disaster activities at the local government level.

### **Conceptual Frameworks<sup>20</sup>**

In designing this research it was necessary to create conceptual frameworks where they currently do not exist. A multitude of issues and items closely associated with the pre-disaster phases of emergency management exist in the literature. However, there are no clear-cut conceptual groupings available that addressed the research purposes or that aided in answering the research questions posed. Drawing from John Dewey,<sup>21</sup>

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<sup>20</sup> Conceptual frameworks are used to aid in answering questions. They should address the research purpose. Examples include working hypotheses, conceptual categories, ideal types or standards, formal hypotheses, and models (Shields: ?, 41).

<sup>21</sup> See Shields' works on pragmatism and public administration for discussion of Dewey and research.

researchers have a choice of finding a tool that exists or inventing one that can be improved upon, over time, as it is used. Both conceptual frameworks for this project fall in the latter category.

### Research Question 1

As introduced in the first chapter, the conceptual framework for the first research question (What is the status of pre-disaster emergency management in Comal County, Texas?) consists of lines of questioning.<sup>22</sup> The subsequent discussion presents the lines within which the key issues are identified.

1a) What is the jurisdiction's disaster history?

Here the researcher looks for hazard onsets, major emergencies, and disasters that have befallen the jurisdiction over time. Is it ancient history? Is it fresh in the community's collective mind or is it forgotten? Did changes result from the event?<sup>23</sup> For instance, did people's awareness of mitigation and preparedness become heightened? Did behaviors change? This line of questioning gets the researcher started and may take them in many directions.

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<sup>22</sup> To the list identified by Shields I have added 'lines of questioning,' a type that addresses the exploratory purpose of the research question. I conceived of these 'lines of questioning' as a hybrid between working hypotheses, conceptual categories and ideal types/standards.

<sup>23</sup> Durham and Suiter (1991: 101) state that disasters themselves often serve as the impetus for change.

**1b) What has been shown by assessment and analysis of hazards, vulnerability, and risk?**

This line of questioning starts simply with a look at the hazards with which the jurisdiction is concerned. Is this a long-standing concern or a newer one? Has there been an onset of this particular hazard or are conditions favorable? Have conditions changed over time? The line then moves into questions of assessment and analysis. What assessment and analysis of hazards has been done?<sup>24</sup> Of the community's vulnerability? Of risk?<sup>25</sup> Have outside resources been used for these tasks? Finally, the line of questioning moves into what use has been made of the information gathered. Has it been incorporated into master planning<sup>26</sup> or other policy making? Is the information shared with the public in any formal manner?

**1c) What is the status of the jurisdiction's plans, planning processes and structural arrangements?**

This line of questioning has, by far, the most details and inter-connections. It can be compared to an onion in that no matter how many layers are peeled off, seemingly, there are more remaining. Most of the issues and items in this line of questioning could

<sup>24</sup> Godschalk and Brower (1985: 67) discuss multiple hazard analysis which can take on varying forms ranging from relatively simple matrix tabulations through risk and vulnerability mapping to more complex estimates of expected economic loss. Kasperson and Pijawka (1985: 9) point to four major steps in hazard assessment. 1) Hazard identification. This includes research, engineering analysis, screening and monitoring, and diagnosis. 2) Assign priorities. 3) Risk estimation. 4) Social evaluation. They add that no simple relationship exists between scientific estimates of risk and public response and that a great deal of confusion and conflict arises from this departure.

<sup>25</sup> Vulnerability and risk assessment can be done for built facilities, people, the economy, and other human activities (Spence, 1993: 410-411). Spence (1993: 414-416) identifies predicted and observed vulnerability assessment approaches. See also Smith (1996), Scanlon (1991) and Petak and Atkisson (1982).

<sup>26</sup> Petak and Atkisson, 1982: 460.

be spun off as research projects of their own, using a derivation of this framework or another found in the literature.<sup>27</sup> At this juncture, one looks to see if emergency operations plans exist and if they are current.<sup>28</sup> Are there specific mitigation and preparedness plans? What mitigation objectives have been pursued and what measures have been used or proposed to those ends?<sup>29</sup>

Next, the jurisdiction's emergency operations plan is examined for content. The most common format is to have a basic plan supported by functional annexes and appendices.<sup>30</sup> Other essential supporting documents include reciprocal, inter-local agreements and mutual aid agreements,<sup>31</sup> training schedules, exercise programs<sup>32</sup> and schedules, and inventories of resources.<sup>33</sup>

Finally, the planning process is reviewed.<sup>34</sup> Is there a planning directive and schedule? Is the hazard vulnerability analysis reviewed and updated. Is there a planning committee? Who is on it? Is there going to be an evaluation of the draft plan?

1d) What efforts have been made by the jurisdiction to establish necessary relationships and develop community involvement?

When it comes to emergency management there are many concerned parties in the community. There are more still that should be concerned with the issues but are not or

<sup>27</sup> These issues and items were identifiable because they have been the focus of study and found to be of importance to successful emergency management.

<sup>28</sup> Scanlon (1991: 98) suggests annually.

<sup>29</sup> See Petak and Atkisson, 1982: 266-282 and May, 1985.

<sup>30</sup> Examples include implementation guides, department and support agency plans, maps, brochures, etc.

<sup>31</sup> Kreps, 1991:40.

<sup>32</sup> For example, table-top, functional, full-scale, and multi-jurisdictional.

<sup>33</sup> Both human and material.

<sup>34</sup> Daines (1991: 174-184) suggests these items are important.

that are simply unaware of the issues from the start. In this line of questioning the researcher is concerned primarily with relationships and communication. For instance, who are the essential parties?<sup>35</sup> Are the essential parties active in emergency management? What other parties could be involved? How often does interaction occur? Is there a great initiator in the community? This line also asks if there are any unresolved jurisdictional issues?<sup>36</sup> What messages do the public need to receive? What techniques<sup>37</sup> are used to get messages to the public? Finally, how much debate and discussion occurs with regard to emergency management?<sup>38</sup>

1e) How does the jurisdiction respond to matters of opinion?

There are matters in the pre-disaster emergency management realm which do not fit nicely into any grouping scheme. They are, however, key parts of the lay of the land and should be considered by the community. This line of questioning was devised, not as a catch-all, but because of a common quality. Each issue is a matter of opinion needing discussion or debate to reach consensus.

Here the researcher asks about the balance in emphasis between natural and man-made technical hazards.<sup>39</sup> Is the plan itself or the process of planning more important and valuable?<sup>40</sup> What phase of emergency management should get the most attention and how big a priority is emergency management to begin with? Is mitigation particularly

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<sup>35</sup> Rossi, et al., 1982: 190.

<sup>36</sup> Quarantelli, 1988: 381.

<sup>37</sup> Perry and Nigg, 1985: 75.

<sup>38</sup> Scanlon, 1991: 89.

<sup>39</sup> Zimmerman, 1985: 29.

<sup>40</sup> Scanlon (1991: 98) and Daines (1991: 174) both pose this question.

complex for the jurisdiction?<sup>41</sup> If so, does it get less or more attention as a result? Who should bear the cost of mitigating hazards, government or private individuals and businesses?<sup>42</sup> How is a balance struck between public responsibility and individual freedom? Are some emergency management decisions simply non-decisions?<sup>43</sup> Do people pay attention to warning systems?<sup>44</sup> Is the emergence phenomenon good or bad?<sup>45</sup> Should it be prevented or handled in another way? Is there a need for a distinct Emergency Coordinator position in the jurisdiction? Finally, have reconstruction priorities been considered?<sup>46</sup>

### Research Question 2

The second research question deals with the community's awareness of and concern for issues of preparedness as well as its attitudes toward mitigation issues. 2a) How aware are participants of preparedness issues? 2b) How concerned are participants for preparedness issues? 2c) What are participant attitudes toward mitigation issues? In order to provide organization to this effort it was necessary to create conceptual categories or bins within which the preparedness and mitigation issues are grouped. Preparedness issues are organized as oriented to 1) plans, 2) planning, 2) coordination and mechanisms, and 4) outreach, training and exercise. Mitigation issues are divided into 1) policies, 2) activities and functions, 3) tools, and 4) concepts.

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<sup>41</sup> Godschalk (1991: 131) sees a potential problem because the activities are often the primary responsibility of a number of different local government departments.

<sup>42</sup> Smith, 1996: 80.

<sup>43</sup> Clary, 1985: 24.

<sup>44</sup> Valdes, 1997: 2-3. See also, Zimmerman (1985), Scanlon (1991), Perry and Nigg (1985), and Cannon (1993) for discussion of warning systems.

<sup>45</sup> Stallings and Quarantelli, 1985: 94. Also Siegel (1985).

<sup>46</sup> Rubin and Barbee, 1985: 57.

2a) and 2b) Preparedness Issues

The plans category contains the emergency operations plan, search and rescue plan, evacuation plan, and emergency shelter plan. A jurisdiction's emergency operations plan is also known as the 'basic plan' and is the document to which other critical documents are attached.<sup>47</sup> The basic plan generally contains the legal authority, purpose, assumptions, responsibilities, provisions for continuity of government, and instructions on how the plan will be maintained and distributed. Among the attachments are plans for search and rescue, emergency evacuation, and developing emergency shelters. These plans are usually prepared by specified departments and are kept as annexes to the basic plan.

In the planning category the issues and items consist of the jurisdiction's process for planning, the multiple hazards approach to planning (recall the discussion of CEM on page 13), public input into the emergency management planning process, and efforts to obtain state and federal planning grants. These items are mostly self-explanatory.

Certain issues and items in the preparedness phase pertain to the great amount of coordination necessary to achieve high quality. Others are mechanisms of preparedness. Research question two examines the emergency coordinator, agreements<sup>48</sup> entered into by the jurisdiction, and efforts to involve the local media and medical facilities<sup>49</sup> in

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<sup>47</sup> For instance functional annexes and appendices.

<sup>48</sup> Both reciprocal, inter-local (agreements for reciprocal assistance) and mutual aid agreements (contingent, non-reciprocal, acquisition agreements). Gillespie, 1991: 76.

<sup>49</sup> Tierney (1985: 78) refers to hospital 'disaster linkage'.

planning. This category also contains the jurisdiction's emergency operations center, emergency stockpiling efforts, and its warning systems.

The final category of preparedness issues contains those issues related to outreach, training and exercise. Here the jurisdiction's public education programs and hazard awareness programs are examined. In addition to those, the efforts the jurisdiction makes to train its private citizens, public officials, and private businesses and organizations are examined. Finally, the jurisdiction's use of full-scale disaster simulation exercises and its participation in multi-jurisdictional exercises is examined. Table 2.1 displays the conceptual framework for the second research question.

Table 2.1 Research Question 2: Conceptual Framework

PREPAREDNESS ISSUES	MITIGATION ISSUES
<p><u>PLANS</u></p> <p>Emergency Operations Plan Search and Rescue Plan Emergency Evacuation Plan Emergency Shelters Plan</p> <p><u>PLANNING</u></p> <p>Process for Planning Multiple Hazards Approach Public Input into Planning Local Media Involvement State/Federal Planning Grants</p> <p><u>COORDINATION &amp; MECHANISMS</u></p> <p>Emergency Coordinator Reciprocal, Inter-local Agreements Mutual Aid Agreements Hospital - Coordinated Planning Emergency Operations Center Emergency Stockpiling Warning Systems</p> <p><u>OUTREACH, TRAINING &amp; EXERCISE</u></p> <p>Public Education Programs Hazard Awareness Programs Training - Individuals Training - Public Officials Training - Private Business/Organizations Training from State/Federal Government Full-Scale Exercises Multi-Jurisdictional Exercises</p>	<p><u>POLICIES</u></p> <p>Notification Impact/Mitigation Statements Zoning Building Codes, Statutes, Regulations Controls, Prohibitions</p> <p><u>ACTIVITIES/FUNCTIONS</u></p> <p>Hazard/Risk Analysis Geophysical studies Retrofitting Strengthening Shelter Sites Debris &amp; Sediment Clearing Condemnation/Purchase Hazardous Materials</p> <p><u>TOOLS</u></p> <p>Public Education Technical Assistance Loans Grants Tax Deductions/Credits</p> <p><u>CONCEPTS</u></p> <p>Responsibilities Costs Priorities</p>

The ensuing chapter discusses the research methodology. In it the conceptual frameworks presented in this chapter are used to provide the organization in applying the

research tools. The frameworks aid in addressing the research purposes (exploration and description), in collecting information and data, and, finally, for presentation in the setting and results chapters, four and five, respectively.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **Introduction**

This chapter describes the tools and methods used to answer the research questions. Recall that one of the aspirations of this research project is that the tools developed will be used by others and improved upon. Both the conceptual frameworks and the associated research tools were developed as products of this research as much as the qualitative and quantitative information they produce. For the first research question document analysis and structured interviews were employed. These techniques allowed for expediency and accuracy in exploring the status of pre-disaster emergency management in Comal County, Texas. Used in tandem, the tools aided in depicting the lay of the land.

The survey method was chosen to assess awareness and concern for issues of preparedness as well as attitudes toward issues of mitigation. Survey research is an excellent way to obtain people's attitudes and beliefs (Babbie, 1995: 253) and standardized questionnaires are a reliable tool. This project did not evaluate a program which precluded the use of formal hypotheses associated experimental and quasi-experimental designs.

Individuals were identified for participation in the survey because, by the nature of their positions in the community, they might be expected to have a part in emergency management. Where possible, face-to-face surveys were conducted. The advantage of this technique is usually fewer incomplete questionnaires and fewer misunderstood questions,

along with greater flexibility in terms of sampling and special observations (Babbie, 1995: 282).

According to Babbie (Op cit.), it is difficult to gain a full sense of social processes in their natural settings through the use of surveys. While survey research offers standardization of data collected as a strength, they can be somewhat artificial and potentially superficial. By using surveys the researcher runs the risk of excluding topics or answers valuable to the question (Op cit.). Two efforts were undertaken in order to minimize the effects of these weaknesses. First, pre-testing was conducted with persons who were both familiar and unfamiliar with the topics. In addition, the draft questionnaire was shared, via an internet list service, with nearly thirty professionals and academics in the emergency management field. The feedback and suggestions received through these processes was invaluable in producing the final tool.<sup>1</sup>

### **Document Analysis and Structured Interview**

The subjects, or units of analysis, for research question one are Comal County and New Braunfels, Texas. Table 3.1 displays the conceptual lines of questioning side-by-side with the source of information. Appendix A contains the questions used in the structured interviews (SI) with the jurisdiction's emergency coordinators.<sup>2</sup> Most of these same

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<sup>1</sup> Appendix D contains discussion of the process of developing the final questionnaire, including the role of pre-testing and feedback received via the internet.

<sup>2</sup> Comal County: Milton Willman, Fire Marshall/Emergency Coordinator. 2/10/98. Appendix G.  
New Braunfels: Phil Baker, Fire Chief/Emergency Coordinator and Carol Edgett, Assistant Coordinator of Emergency Management. 1/27/98. Appendix F.

questions can be asked of other community members to increase the depth of the qualitative information gathered.<sup>3</sup>

Table 3.1 Research Question 1: Research Methodology Operationalization

Line of Questioning		Source of Information
1a)	What is the jurisdiction's disaster history?	Newspaper archives. SI-1, SI-2, SI-6.
1b)	What has been shown by assessment and analysis of hazards, vulnerability, and risk?	Emergency Operations Plan. Annexes and appendices to basic plan. Maps and other documents. SI-3, SI-4, SI-5, SI-6.
1c)	What is the status of the jurisdiction's plans, planning processes and structural arrangements?	Emergency Operations Plan. Annexes and appendices to basic plan. Mutual aid agreements. Other materials. SI-8, SI-9, SI-10, SI-11, SI-12, SI-16, SI-17, SI-20, SI-21, SI-31, SI-32, SI-33, SI-35, SI-37, SI-39, SI-45, SI-46.
1d)	What efforts have been made by the jurisdiction to establish necessary relationships and develop community involvement?	Emergency Operations Plan. Annexes and appendices to basic plan. Maps, brochures, press releases and other materials. SI-22, SI-23, SI-24, SI-25, SI-28, SI-29, SI-30, SI-34, SI-36, SI-40, SI-41, SI-42, SI-43, SI-44,
1e)	How does the jurisdiction respond to matters of opinion?	SI-7, SI-13, SI-14, SI-15, SI-18, SI-19, SI-26, SI-27, SI-38, SI-47, SI-48, SI-49, SI-50.

### Survey: Population Sampled

There was no attempt to identify a random sample (representative of the communities' citizens, public officials, private organizations and business for example)

<sup>3</sup> A number of the issues and items will be foreign to people unless they are directly involved with emergency management. Some people will only know about the area with which they are concerned or involved.

by traditional methods. Fox and Miller (1996: 137) argue that random selection creates circumstances that maximize the likelihood that those who do not care about the issues addressed will be chosen to provide input. In order to avoid, or at least minimize, that condition a judgmental population of potential respondents was identified. As has been previously stated, the potential respondents for this survey were identified as those individuals who, by the nature of their positions in the community, might be expected to have a part in emergency management; those who have a reason to care about the issues under study. As such, this finite aggregation of individuals is the population about which information was sought.

Table 3.2 Research Question 2: Population (N) of Identified Survey Participants.

<u>Participants</u>	<u>Sub-Total Participants</u>	<u>Total Participants</u>
Community Organizations		39
Hospital	1	
Long-term care	6	
Mental Health	1	
Media	2	
Schools	28	
American Red Cross	1	
Elected Officials		16
County Commissioner's Court	5	
County Constables	4	
City Council	7	
Public Officials		39
Emergency Coordinators	3	
Law Enforcement	17	
Fire/ Emergency Medical Services	9	
County Officials	4	
City Officials	6	
Totals Identified Participants	N = 94	N = 94

Table 3.2 shows the judgmental population for this particular study. The organizing mechanism used here consists of three groups; community organizations, elected officials, and public officials. Each group contains sub-groups consisting of identified participants. The size of the judgmental population can be made larger or smaller by adding or taking away sub-groups or by considering more or fewer participants per sub-group. The population size as proposed was N = 94. Appendix B

breaks out the groups by indicating the specific sub-group entity names and the identified participants' titles.

### **Operationalizing Research Question 2**

The standardized questionnaire is organized using the conceptual framework identified in chapter two. The questionnaire itself is divided into four sections. The first two are devoted to preparedness issues and the final two are mitigation oriented. Section one asks the participant if they are aware of the item or issue that is identified. The participant is prompted to answer yes or no. They are instructed that a yes answer means that they have direct knowledge of the item or issue and they are informed of current developments with regard to the item or issue. Section two uses the same twenty four items. Here the participant is asked to rate their concern with the item or issue identified by answering very concerned, somewhat concerned, or not concerned. For the purpose of this survey, concern means involvement with, interest in, or that importance is applied to the issue by the participant. The use of the word concern comes after careful consultation with the dictionary and thesaurus. Pre-testing demonstrated that respondents were willing and capable of using the word as prescribed and not in its common, negative sense.

Sections three and four deal with mitigation issues. In each the participant was asked to respond on a five point scale. In section three the scale is strongly favor, favor, have no opinion about, oppose, or strongly oppose. Similarly, the scale in section four is strongly agree, agree, have no opinion about, disagree, or strongly disagree. While the scales are different primarily to accommodate grammatical differences in the statements,

their use had the beneficial effect of dividing the mitigation issues into two parts, making the questionnaire easier to use. The use of all four scales made scoring and data entry simple because the answers were easily converted into numeric values.

Table 3.3 displays the operationalization of the second research question. In it the conceptual framework is linked to questionnaire item numbers. Appendix C has a sample of the standardized questionnaire.



Attempts were made to arrange face-to-face meetings with each of the ninety four identified participants to answer the standardized questionnaire. Appendix E has a sample of the score sheet used when the surveys were completed face-to-face. If a meeting was not possible, however, the questionnaire was written so that a participant could complete it on their own for pick up at a later time. Of the forty-three questionnaires completed for this project ten were done face-to-face and thirty-three were done self-directed, by the participant.

Descriptive frequency and percentage statistics were used to present the data in an organized and compelling manner. The data collected is ordinal level of measurement (yes/no, very concerned/ somewhat concerned/not concerned, strongly favor/favor/no opinion/oppose/strongly oppose, strongly agree/agree/no opinion/disagree/strongly disagree). It will be used as interval level data, however, by assuming that the class intervals are equal.<sup>4</sup> Relationships were tested using Pearson's product moment coefficient, Pearson's  $r$ , for correlation and the chi-square test for independence. The former was used to test the correlation between the participants' awareness of and their concern for preparedness. The latter was used to determine if there was a significant difference in response depending upon grouping. Presentation of all these results is found in chapter five.

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<sup>4</sup>DiLeonardi and Curtis, 1988: 20.

## CHAPTER FOUR

### RESEARCH SETTING AND LAY OF THE LAND

#### **Research Setting**

##### Location and History

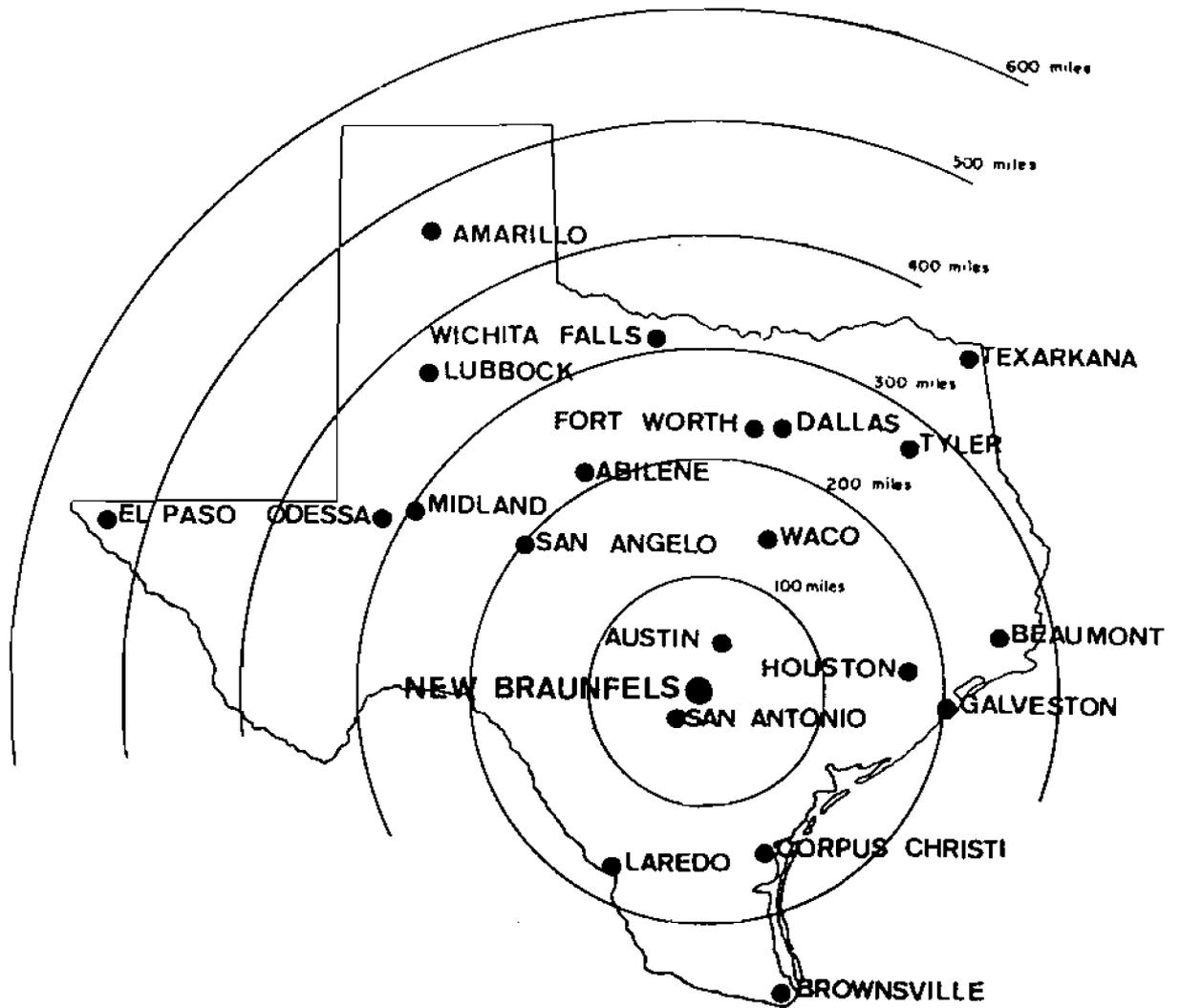
New Braunfels and Comal County, Texas are located in the south central region of the state between Austin and San Antonio (see Figure 4.1). It borders Blanco (N), Hays (NE), Guadalupe (E), Bexar (S), and Kendall (W) Counties (Figure 4.2). The county gets its name from the Comal Springs and Comal River that flow through New Braunfels, the county seat. New Braunfels is stretched out along the southeastern edge of the county which is shaped roughly like a diamond. The major roadways running through the county include Interstate 35 (north/south from Dallas/Ft. Worth to Laredo), U.S. 281 (north/south from Wichita Falls to McAllen), and State Road 46 (east/west from Seguin to Boerne).

New Braunfels was founded on Good Friday, March 21, 1845 by Prince Carl Solms of Braunfels on behalf of the German Emigration Company.<sup>1</sup> Prince Carl purchased the original 1,265 acres of land for \$1,111 from Maria Antonia and Rafael E. Garza. The same year of the founding of New Braunfels saw the end of the Republic of Texas and the admittance of the territory as the 28th State in the United States. Comal County was created by the First Legislature of Texas, on March 24, 1846. It was the first of the counties created from the original Bexar County, within which lies San Antonio.

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<sup>1</sup> The objective of the German Emigration Company was to emigrate Germans, thereby reducing the number of people in the homeland, which they hoped would make the available goods go farther and help solve the problem of poverty, and the plight of the common man in Germany.

**FIGURE 4.1** NEW BRAUNFELS LOCATIONAL MAP



Source: Development Plan of the City of New Braunfels, Texas: 1977-2002.  
March, 1978.



### Physical Characteristics<sup>2</sup>

The south central region of Texas has two distinct ecology types; the prairie and the hill country. The south eastern border of Comal County is defined by the edge of the Balcones Escarpment<sup>3</sup> which is on the Balcones fault line,<sup>4</sup> the boundary line between lowland and upland Texas. Most of Comal County is in the Hill Country, with 80 percent of it lying in the area above the Balcones Escarpment known as the Edwards Plateau. The county, with an area of 567 square miles, has had much of the original tableland removed by erosion. The many streams have cut deep valleys producing a hilly and broken topography. Altitude varies from 650 feet to 1,700 feet above sea level.

Hydrographic features play an important role in Comal County. The Guadalupe River<sup>5</sup> flows eastward through the county coming out of the Balcones Escarpment at New Braunfels. New Braunfels rests in the Guadalupe river Basin. In addition, the city is on the Comal River which has its source in the Comal Springs. The three principle tributaries of the Guadalupe are the San Marcos, the San Antonio, and the Comal Rivers. The first two empty into the Guadalupe down river from Comal County. The western portion of Comal County is within the San Antonio River Basin. Up river from New Braunfels is the Canyon Dam. This structure was built in 1955 by the U.S. Army Corps of Engineers at the request of citizens along the river to control flooding and bring stability to the river basin. This project produced Canyon Lake which, along with the Guadalupe

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<sup>2</sup> Most of the information in this section comes from the Development Plan of the City of New Braunfels, Texas: 1977-2002. March, 1978.

<sup>3</sup> An escarpment is a division between prairies and hill country.

<sup>4</sup> The Balcones fault line runs across Texas from the Rio Grande to the Red River.

<sup>5</sup> The Guadalupe River's headwaters are in Kerr County. It flows eastward through the Hill Country. From New Braunfels it meanders 250 miles across the coastal plain, emptying into San Antonio Bay on the Gulf of Mexico.

and Comal Rivers make water recreation a significant feature of life in Comal County and New Braunfels.

New Braunfels and Comal County enjoy a rather mild climate, falling close to the subtropical zone classification. Temperatures range from a January normal of 51.5 degrees to a July normal of 83.7 degrees. Normal rainfall is well distributed throughout the year. The lightest monthly fall occurs in August and the heaviest in May. The annual rainfall averages between 30 and 34 inches. The county normally experiences rather mild and short winters and has growing season from the first of March to the last of November, some 265 days.

#### Government Structure

Comal County consists of four precincts, each represented by an elected Commissioner. These four individuals, together with the elected County Judge make up the lawmaking body, the Commissioners Court. Justices of the Peace and Constables are elected for each individual precinct. The remainder of the elected officials are elected county-wide. They include the County Court-At-Law Judge, County Clerk, County Attorney, District Attorney, County Treasurer, District Clerk, County Sheriff, and the Tax Collector/Assessor.

There are numerous departments to carry out the work of the county. The County Auditor is appointed by the State District Judges as an aspect of "checks and balances." The County Engineer supervises both the Road Department and the Environmental Health Department. The Agricultural Extension Service operates in conjunction with

Texas A&M University. The other departmental services include animal control, computer services, human resources, maintenance of buildings, public health, rural recycling, and veterans services. Finally, the County Fire Marshall coordinates fire, emergency medical services and emergency management.

The City of New Braunfels consists of six districts, each represented by an elected Council Member. These six individuals (one acts as Mayor Pro-Tem) together with the Mayor, make up the City Council. New Braunfels is operated under a Council-Manager system of government. City departments and services include engineering and streets, finance, planning, library services, parks and recreation, police, and sanitation. In addition to these departments and services, the city maintains an airport and a golf course. The Fire Department is also in charge of emergency medical services, civil defense, and emergency management under the direction of the Fire Chief.

### Population

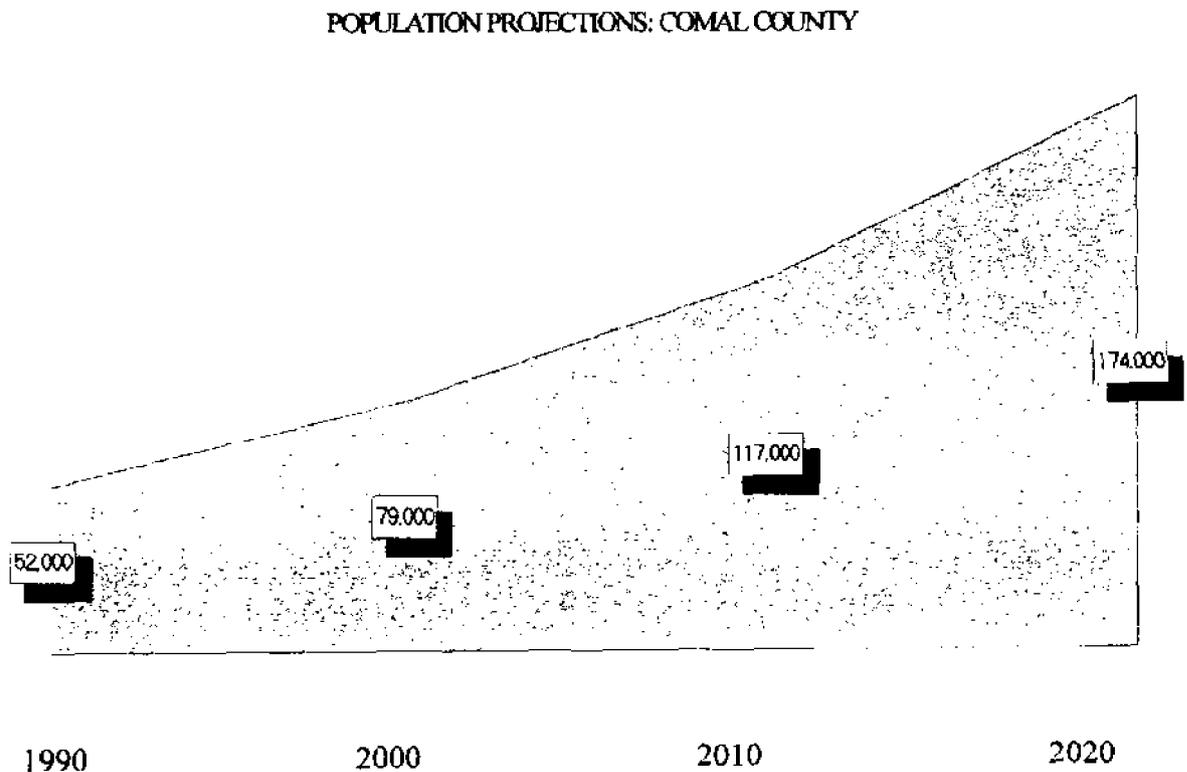
Comal County has an estimated population of 70,000 (1997) while in 1996 the City of New Braunfels had approximately 34,000 people.<sup>6</sup> The county experienced a 35 percent population growth from 1990 (52,000) to 1997. During the same period of time, New Braunfels had similar growth of nearly 4 percent per year. The Commissioners Court expects population growth at the rate of between 4 and 5 percent a year to persist, leading to estimated population figures of 79,000 in year 2000, 117,000 in year 2010, and

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<sup>6</sup> Besides New Braunfels there are three other cities within Comal County; the City of Garden Ridge, population 1450, the City of Schertz, population 10,550, and the City of Selma, population 800, although the majority of Schertz and Selma lie in neighboring Guadalupe County.

174,000 in 2020. These estimates are graphically depicted in Figure 4.3 to show the magnitude of the expected growth. According to Michael Meek, Executive President of the Greater New Braunfels Chamber of Commerce most of the growth in Comal County occurred in the western part, near the U.S. 281 corridor because people are moving out of San Antonio into a rural setting, with a lower crime rate and a higher quality of life.<sup>7</sup> Among the destinations for this movement are other county population centers including Bulverde, Spring Branch, Startzville, and Sattler.

**Figure 4.3**



Source: Comal County EMS Forecast Worksheet, 1998. Courtesy Bracken Volunteer Fire Department.

<sup>7</sup> Michael Meek quotes from Herald Zeitung, 19 March, 1998.

**Disaster Setting****The Texas Disaster Act of 1975**

In 1975 the State of Texas enacted the Texas Disaster Act to fill the need for planning and coordination in the event of emergencies. The expressed purposes of the Act include reducing the vulnerability of the people and communities of Texas to the damage, injury or loss of life and property resulting from disaster situations and the prompt and efficient rescue, care and treatment of those victimized or threatened. The Act calls for providing a setting conducive to rapid and orderly restoration and rehabilitation and clarifies and strengthens the roles of the Governor, state agencies and local governments in mitigation, preparedness, response and recovery. It authorizes and provides for cooperation and coordination of the activities of emergency management by all political entities; federal, state, and local, and provides a comprehensive emergency management system to make the best use of existing public and private organizations and resources, before, during, and after a disaster situation. Finally, the Act assists in the prevention of disasters, especially resulting from inadequate planning and regulation of facilities and land use.

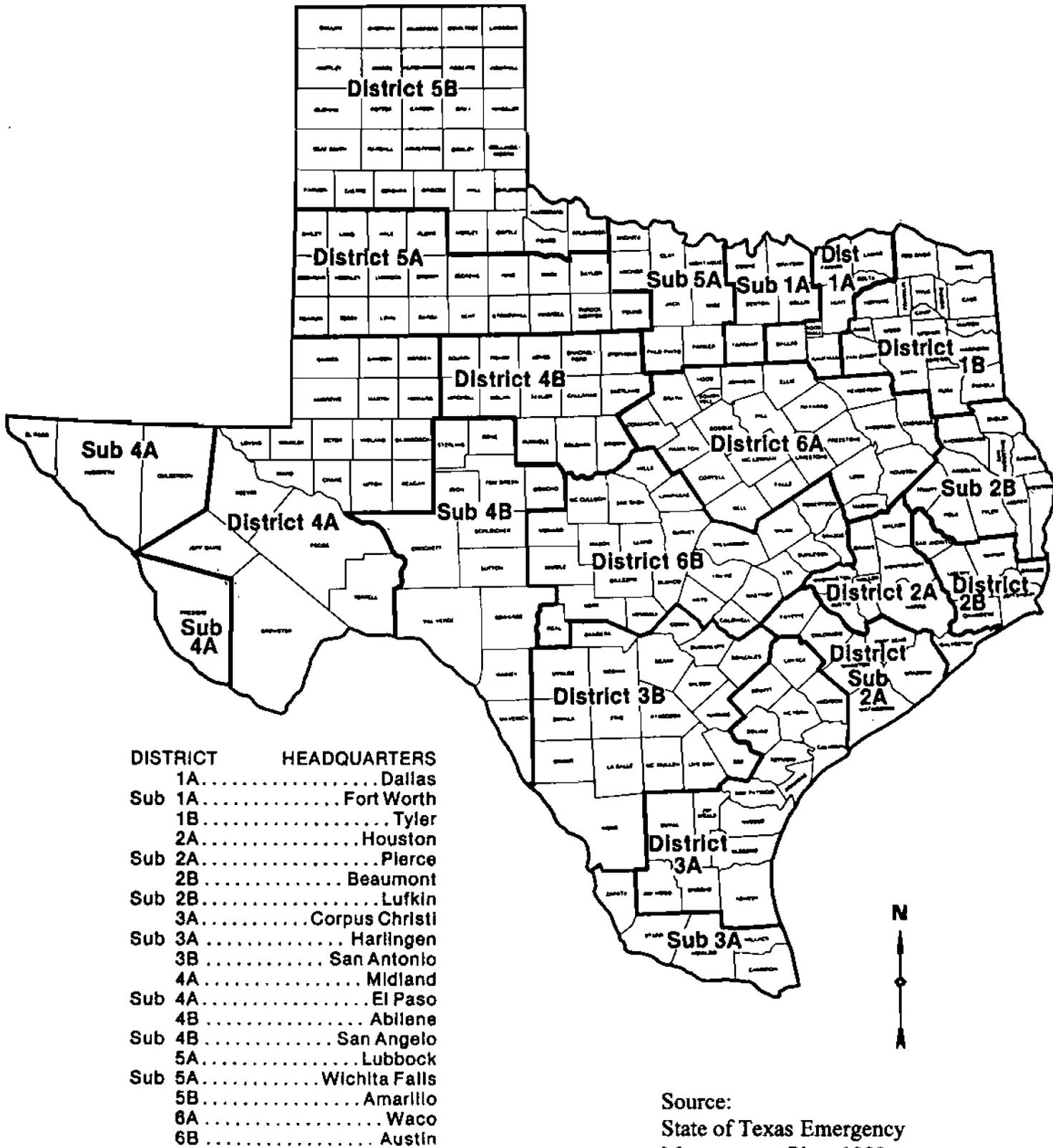
The Act authorized the Governor to establish an Emergency Management Council (the Council) by executive order. The Council is comprised of state agency heads and organized volunteer groups for the purpose of overseeing the emergency management activities of the state. The Act also created the Division of Emergency Management (the Division, or DEM) in the office of the Governor. The Director of the Department of Public Safety is the Director of the Division and Chair of the Council. Texas is divided

into six disaster districts (See Figure 4.4), established by the Director to correspond with existing highway patrol districts. Each disaster district has a committee made up of local council members and judges. These committees are chaired by the Commanding Officer of the Highway Patrol for each district. The utility for such a subdivision of the state is high since these boundaries are well established and the presence of law enforcement is a given in virtually all emergency situations.

The Division has a multitude of responsibilities in all phases of emergency management. Among them are determining the requirements for food, clothing and other necessities (especially in response and recovery) and procuring and positioning supplies, medicines, materials, and equipment (preparedness, response, and recovery). The Division adopts standards and requirements for local emergency management plans (mitigation and preparedness) and reviews local emergency plans (mitigation and preparedness). It is also responsible for providing mobile support units (response and recovery); conducting training programs, public information programs, and assisting local entities to do the same (mitigation and preparedness); surveying public and private entities for resources (preparedness); and establishing and maintaining registers of persons with training and skills as well as mobile and construction equipment and temporary housing (preparedness). Finally, the Division is centrally responsible for preparation, for the Governor, of executive orders and regulations (primarily response and recovery) and cooperation with all entities, federal, state, and local (all phases).

Figure 4.4

TEXAS DISASTER DISTRICT BOUNDARIES



DEM 9 (Rev. 10/88)

Source:  
State of Texas Emergency  
Management Plan, 1992

### The State Emergency Management Plan

The State's responsibilities and actions for mitigation of, preparation for, response to, and recovery from disaster situations are delineated in the State Emergency Management Plan (EMP). The plan, as maintained by the Division of Emergency Management, contains specific details on a variety of issues. One of these is the identification of areas that are particularly vulnerable to disasters. The Texas Natural Resource Conservation Commission and other state agencies, in conjunction with the Division, keep land use and construction of structures and other facilities under continuous study, concentrating on means of reducing or avoiding the dangers and consequences of a catastrophe. These efforts are also to identify areas that are particularly susceptible to severe land shifting, subsidence, flooding, or other catastrophes.

The Emergency Management Plan makes recommendations for zoning, building restrictions, and other land-use controls such as safety measures for securing mobile homes or other non-permanent or semi-permanent structures. It gives authorization and establishes procedures for the erection or other construction of temporary works, designed to protect against or mitigate danger, damage, or loss from a disaster. The State EMP spells out the organization of manpower and channels of assistance available and allows for the preparation and distribution to the appropriate state and local officials of state catalogs of federal, state, and private assistance programs. It provides for the coordination of federal, state, and local emergency management activities and plans. The Plan makes provisions for specific assistance to local officials in designing local plans.

In preparing and revising the State Emergency Management Plan, the Division is to seek the advice and assistance of leaders from local government, business, labor, industry, agriculture, civic organizations and communities. The plan may be incorporated into regulations or executive orders that have the force and effect of law. Communication is a key in all phases of emergency management and the Division, through the State EMP, is to ascertain what means exist for rapid and efficient communication in times of disaster as well as for planning and preparedness activities.

Organizationally, the Division is divided into five sections. The day-to-day operations are managed by the state coordinator who is responsible for keeping the Governor and the Director informed. The operations section coordinates statewide response to overdue aircraft and crashes, severe weather, incidents with hazardous materials and transportation accidents. This section provides support functions during activation of EMPs. The plans section is divided into the state plans unit and the local planning support unit. There is a technological hazards section that among other things focuses on the two nuclear power plants in Texas. The training section administers an educational and practical program to community officials. Finally, the recovery and support services bureau assists in large disasters where localities may be eligible for state or federal assistance. It also oversees grant requirements and manages all necessary personnel and support functions.

### Local Emergency Management Plans

Local political subdivisions are expected to have or participate in a local emergency management plan. If it is deemed unnecessary to have a local plan of its own then the entity can participate in an inter-jurisdictional plan. In 1971, the Texas Legislature enacted the Inter-local Cooperation Act which allows local entities to enter into agreements for the sharing of resources and cooperation on a variety of issues. This Act paves the way for inter-jurisdictional emergency management efforts and in many cases emergency management efforts are enhanced by cooperation and sharing, especially in less-populated areas.<sup>8</sup>

Regardless of its nature, each local entity must be covered by a local EMP. Mayors and County Judges are to serve as emergency management directors for each political subdivision. These local political leaders serve as the Governor's agents and can exercise similar powers on the appropriate local scale. They can, and in the larger areas do, appoint Emergency Management Coordinators (ECs). Emergency Coordinators are trained to handle catastrophic situations and are in charge when disaster strikes.<sup>9</sup> The state's emergency management plan is predicated on the implementation of local plans, therefore, it is important to the Division that they know someone is there at the local level

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<sup>8</sup> An example of an inter-local agreement is a North Texas Strike Force born in the wake of the Oklahoma City bombing. Sixteen counties in North Texas have agreed to join forces. The force provides technical expertise and advanced emergency response services and equipment to the smaller communities covered under the agreement. Of the sixteen counties only Tarrant and Dallas Counties have previously had access to these types of advanced resources. The force is based in Richardson, Texas and claims a three hour response time to an affected area by using alpha-numeric pagers. Grants from the private Meadows Foundation and from the Division of Emergency Management were used to start this force, which crosses disaster district boundaries. (Ball, 1996)

<sup>9</sup> Another key aspect of the local emergency management coordinator's job is documentation. The coordinator will use cameras, for instance, to get an accurate assessment of the disaster situation. They will also record people's work time, overtime and material costs, to name a few just a few things.

who is responsible for making sure things happen. Coordinators stress partnerships and communication as keys to success, but they don't underestimate the need for commitment from the local political leaders in protecting the public and being prepared.

The Governor, through the DEM, determines which municipalities need an emergency management plan of their own. This decision is dependent upon perceived vulnerability and capability of response in relation to population size and concentration. It is important to note that a county emergency management plan does not apply in a municipality that has its own plan. For instance, the City of New Braunfels is not subject to Comal County's plan but inter-local agreements serve to integrate emergency management activities. This is the case in most high population areas since Texas' largest cities have their own plans and their jurisdictional boundaries intertwine with county and other city lines.

Local emergency management plans must provide for wage, price, and rent controls and other economic stabilization methods. In addition, the local EMPs must provide for curfews, blockades, limitations on utility use, rules governing entrance to and exit from the affected area and other security measures. The plan must include descriptions of responsibilities and channels of assistance and must be distributed to all appropriate officials. The Division is expected to take an integral part in the development and revision of local and inter-jurisdictional emergency management plans. The services of professional and technical personnel capable of providing expert assistance is employed to make field reviews of areas, circumstances, and conditions to which particular plans apply. The local entities are also encouraged to seek advice from local

government, business, labor, industry, agriculture, civic and volunteer organizations and community leaders.

### **Lay of the Land: Findings from Research Question 1**

The remainder of this chapter is devoted to the findings from inquiry into the first research question: What is the status of pre-disaster emergency management in Comal County, Texas? Here the results of document analysis and structured interviews with the jurisdictions' Emergency Coordinators<sup>10</sup> are presented for New Braunfels and Comal County according to the operationalization detailed in chapter three.

1a) <u>What is the jurisdiction's disaster history?</u>
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Significant rain events were cited by the Emergency Coordinators as the most common hazard affecting the jurisdictions. Specific incidents included the June 1997 flooding on the Guadalupe River upstream from Canyon Lake which caused widespread property damage and the 1972 flood in New Braunfels which killed seventeen people and injured several more. Also mentioned were frequent high wind events, including a possible tornado touchdown in 1989 on the north side of Canyon Lake, and the 1997 ice storm which brought most activity in the region to a halt. Finally, there was a train derailment when the bridge on the Cibolo Creek (south of Bracken on the border with Bexar County) gave away. The cars were carrying gravel and there was no hazardous release.

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<sup>10</sup> The full transcripts of the interviews with the Emergency Coordinators for New Braunfels and Comal County are found in Appendix F and Appendix G, respectively.

In terms of changes with regard to emergency management as a result, Milton Willman, Comal County Fire Marshall/Emergency Coordinator, cites increased awareness by Commissioners Court. For instance, he has been able to obtain hazardous materials detectors and other disaster-related equipment. He has also seen debris clearing begun on creeks in the county.<sup>11</sup> Phil Baker, New Braunfels Fire Chief/Emergency Coordinator, mentioned that there is an agreement with the county and the Guadalupe-Blanco River Authority (GBRA) to install early warning devices on the Guadalupe River but admitted that “you’ll probably find that not a whole lot has changed since the 1972 New Braunfels flood.” Carol Edgett, the Assistant Coordinator for Emergency Management in New Braunfels, added that after the 1972 flood a dam was placed on Bleeder Creek on a private ranch to help hold back some of the water.

When asked about the hazards with which the county is concerned Mr. Willman started with floods and other weather-related, limited mobility type incidents. He also mentioned that there is “a higher probability now that something is going to happen (hazardous materials incident) based on the number of vehicles” and the railroad traveling through the county. He attributes much of the increase to the North American Free Trade Agreement. Mr. Baker and Mrs. Edgett echoed his sentiments citing specifically the non-domestic nature of the hazardous chemicals traveling through New Braunfels on Interstate 35. They also mentioned the typical natural events.

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<sup>11</sup> Comal County Sheriff’s Department Patrol Lieutenant mentioned that the inmate work program has debris clearing as one of its tasks at little or no additional cost to the taxpayer.

1b) What has been shown by assessment and analysis of hazards, vulnerability, and risk?

The Emergency Coordinators for both jurisdictions said that there is little or no assessment and analysis of hazards, vulnerability, and risk going on. Specifically, in New Braunfels, Carol Edgett said “we’ve kind of, on an annual basis, taken a look at what the hazards are and what we can try to do to mitigate some potential problems.” No specific methodology is used for analyzing the various hazards or assessing the vulnerability and risk.

For Comal County, Mr. Willman stated that at this time he relies on the private sector to do environmental impact statements on new construction, especially on service stations and the like. There are many environmental regulations related to the Edwards Underground Aquifer that are overseen by the Texas Natural Resource Conservation Commission. These environmental impact statements do not translate well into emergency-related hazard, vulnerability and risk analysis. Specifically, Willman said that there is no vulnerability and risk assessment done by the county and added that “they’re (citizens) sort of on their own in a county like this.” He did say that in as much as the major concern in the county is related to the floodplain that people need to get information from the land developers.

What information related to hazards that is gathered is not shared with the public in any systematic way by either jurisdiction. Both mentioned the availability of the plans. Nor is there any hazard, vulnerability and risk related information incorporated in the

jurisdictions' master planning or policy making processes. New Braunfels in particular is in the process of developing their comprehensive plan at the time of this project. There is no mention whatever in the Draft Issues, Goals, and Objectives with regard to emergency-related hazards, vulnerability and risk.

1c) What is the status of the jurisdiction's plans, planning processes and structural arrangements?

The current New Braunfels Emergency Management Plan was produced in September of 1994.<sup>12</sup> There is no record of changes in the three years of its existence. As suspected, the plan follows the format recommended by the Division of Emergency Management -- a basic plan supported by functional annexes and appendices. A total of twenty one copies of the plan were distributed. Seventeen copies were given to departments within the city government. The four external copies went to the Texas Army National Guard, the American Red Cross, McKenna Memorial Hospital and the Comal County Mental Health Clinic. Comal County is not on the distribution list.

Neither jurisdiction believes that local control of an emergency situation is different depending upon the type of hazard because of the different authorities that can become involved. Both expect that first response by law enforcement, fire and emergency medical services will gain control of the scene. Structure of the initial event is going to be established at the scene. Even after a local disaster declaration is made and the emergency

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<sup>12</sup> The Comal County Emergency Management Plan could not be obtained for analysis despite numerous requests and assurances. There is not a copy available through the county offices for public access. Arrangements were made to have a copy put on floppy disc for analysis. The final response to this researcher by the Comal County Emergency Coordinator was "if you've got the New Braunfels plan, ours is pretty much like theirs."

operations center is opened local authority will be maintained. Marshall Willman believes there are seldom problems in the response. After the first response everybody will sit down, take their time, look through the plan and determine “where do we need to go from here.” Carol Edgett maintains that the only difference that depends on the nature of the event lies in who will be called to help respond and recover. “You’re only going to call those that are needed to handle the situation.” Local control will be maintained regardless of the incident type.

Neither jurisdiction has been able to access emergency-related planning grants available from the state Division of Emergency Management and the Federal Emergency Management Agency. Carol Edgett from New Braunfels stated that those grants are hard to come by, now you have to have an actual occurrence before actual grant moneys are available. Milton Willman said that the county has made some applications in the past six years which have been denied because the county provides adequate funding for planning efforts. Currently, the county has an application pending for hazardous materials training for the emergency medical services.

The next series of questions related to evaluation of the emergency operations plan, the detection of problems or deficiencies and resulting revisions to the plan. New Braunfels does an annual exercise (one full-scale and three functional exercises in a four year plan) to evaluate its plan. Evaluation relies heavily on the criteria list and the compliance check provided by the DEM. In 1997 the Ku Klux Klan staged a rally in New Braunfels and the plan was activated on the basis of civil disturbance. The city used this

event as an actual occurrence exercise where a host of mutual aid entities came in to assist with the situation.

Comal County has not had a full-scale exercise in years according to Marshall Willman but they have done table-tops. In order to meet the requirement for full-scale exercises the county participated in the New Braunfels exercise two years ago and used it as their credit. The county relies heavily on the on-going planning that occurs within the Emergency Services Association and the Local Emergency Planning Committee (LEPC) mandated by the SARA Title III Community-Right-To-Know-Act. Mr. Willman mentioned quarterly combined training of fire and EMS in the county although it is not specifically geared to the emergency management plan. One of the Fire Chiefs is setting up a full-scale drill related to hazardous material for late 1998. Neither jurisdiction mentioned deficiencies having been detected nor revisions having been made as a result of plan evaluation. Neither jurisdiction has participated in a multi-jurisdictional disaster simulation exercise in recent history.

Hazard mitigation efforts are limited in both jurisdictions. Besides the county debris and sediment clearing program and the GBRA led effort to install early warning devices on the Guadalupe River there seem to be no tangible hazard mitigation efforts occurring. Carol Edgett stated that there are not a lot of mitigation efforts because of funding, that can be done at this time, and other than rivers the city of New Braunfels does not have a large potential for hazards. No specific mitigation objectives were stated. The annex on hazard mitigation is a non-specific framework for establishing a hazard

mitigation team and carrying out local mitigation measures. It has no specific objectives, materials or activities listed.

When asked about the presence of evacuation procedures and maps for evacuation purposes Carol Edgett said “old, very old” specifically about the maps. The growth of the city, including significant sub-division development has created a need for updated maps. Adding to the problem, in their estimation, is the construction on Interstate 35 which will have an impact on the city and its ability to maneuver for the next two to five years. Traffic “locks down” in many spots both inside the city limits and points exiting the city on the main roads. The current annex for evacuation references the Crisis Relocation Plan of 1984. Mrs. Edgett believes the evacuation procedures are reflective of what they do but added that evacuation is one areas of the plan that they are looking to update.

The status of the county evacuation procedures and materials is undetermined. Mr. Willman mentioned that residents at high risk for flooding resign themselves to the fact that they are high risk, and that if the county can't get to them because of floods, for instance, they are on their own. He says that they have made plans of their own. He is confident in the ability of the fire department and emergency medical services to cover the county for smaller scale rescue and recovery. The county would rely on the National Guard for transportation out of the area in the event of a large-scale disaster. In addition the school district has a fleet of buses that would be used. He sees limits on this resource, especially since the drivers are dispersed throughout the county making them hard to locate and because buses are not very safe in inclement weather.

With regard to evacuation shelters, the county has more potential sites today than ever before according to Willman. This is due to the population expansion and the corresponding increase in the number of schools. For both jurisdictions schools and churches are the primary shelter sites. The American Red Cross chapter in San Antonio is the coordinating entity for shelters for both Comal County and New Braunfels. The chapter maintains a presence at least five half-days a week in New Braunfels at the County Courthouse Annex. Marshall Willman mentioned that he has worked with the Red Cross on developing shelters “on the run” as a way of utilizing available local resources.

New Braunfels’ shelter annex assumes the possibility of up to 2,000 evacuees in a large-scale event such as a hazardous materials spill. Of this number approximately fifty percent or more are expected to make their own arrangements with friends and family. For the remainder the plan calls on volunteer agencies such as the Red Cross, Salvation Army, and United Way, and church-based relief organizations. The city has identified one protective shelter (meets standard for tornado shelter) and twelve reception and care facilities (mainly schools, churches, civic and government buildings). Both jurisdictions are potential sites for receiving evacuees from other areas of the state in the case of attack in the San Antonio or Austin metro areas or from natural disasters, especially hurricanes in the Gulf of Mexico.

Both jurisdictions maintain an on-going list of resources available to them. These include material, human, and facility resources. Much of the assets are through existing mutual aid agreements. No comment was forthcoming about the adequacy of the

available resources. Both jurisdictions are happy with their mutual aid and reciprocal, inter-jurisdictional agreements. Judgment in this line of questioning came from the relationships and resources available within the respective fire departments.

Chief Baker answered resoundingly that the emergency operations center is not adequate for the city of New Braunfels. They had used space in the police department for years and he stated that they were not happy with the emergency operations presence there. The police department has moved into a new facility (March, 1998) and the chief is trying to have as much input into what happens to the old building as possible in hopes that they can place a permanent facility within it to set up the maps and communications capabilities, etc. If the EOC had to be activated in the near term it would be a tough scenario according to Baker. Both Baker and Edgett added that Carol has her box under her desk with forms and stuff in it and they can set up almost any place; tables and chairs are basically all they need.

Marshall Willman stated that the county has been using a combined EOC with the city of New Braunfels but that they have an alternate EOC at the Guadalupe Valley Telephone Cooperative building in western Comal County (on FM 3159) although it is not weather proof. It has the advantage of having technical resources on hand, communications and equipment. In addition the new county jail addition will have a new dispatch center and training center that will double as the Sheriff's EOC.

1d) What efforts have been made by the jurisdiction to establish necessary relationships and develop community involvement?

For Comal County, Marshall Willman rates the Commissioners Court and County Judge as active in local emergency management efforts. In addition to these important elected officials he also rated the road department, the current Sheriff and his department, and the Red Cross as active. He said that high risk residents are active in the sense that they will let him know what is going on. The media is not active but have been more interested in weather-related incidents of late. The fire departments and emergency medical services are very active.

New Braunfels elected officials (mayor and city council) were rated as active in emergency management efforts by Chief Baker and Carol Edgett. The media, like for Comal County are interested when it becomes news. The fire department (EMS is part of fire in New Braunfels) and law enforcement are active. All of the public utilities, both city operated and private, such as Southwestern Bell Telephone, are active. The Red Cross and McKenna Hospital are very active in emergency management efforts according to Baker and Edgett.

Joe Moore, Safety Coordinator for McKenna Hospital stated that he is generally satisfied with the “disaster linkage” with New Braunfels. He is especially pleased with Carol Edgett. The hospital did not have a current copy of the New Braunfels Emergency Operations Plan on hand when first contacted but obtained one for the meeting. He recalled participating in a table-top exercise with New Braunfels but no full-scale

exercises. The hospital has a disaster plan which meets the criteria for their accreditation. The number one concern expressed by Mr. Moore relates to hazardous materials, both internal and external readiness. He is not at all confident in the New Braunfels plan for handling such situations, especially as it relies upon resources in San Antonio.

Chief Baker and Carol Edgett expect that leading community industries such as the Wal-Mart Distribution Center and Dean Word Construction would be involved in response and recovery efforts, as would the major grocery store chains and building materials suppliers, but they are not so much in the pre-disaster phases.

With regard to high risk residents the coordinators did not mention any citizens who are high risk by virtue of the location of their homes. They did, however, mention the involvement of the hospital, Mental Health and Mental Retardation and some of the nursing homes. Baker said that "some of those are involved and I'm sure many of them would be involved if we invited them specifically." Edgett mentioned that the involvement of entities like these was limited to the receiving end of public awareness outreach efforts that she conducts. They are not part of the exercises and of operations.

The Chamber of Commerce, conservation groups, land developers, farmers and ranchers, political party leaders, merchants, banks, insurance companies and homeowners associations were other entities mentioned in the literature that a jurisdiction should consider involving in emergency management efforts. None of these was rated as active or involved in the process in either New Braunfels or Comal County. There is no great "initiator" of emergency management efforts in either jurisdiction.

There does not seem to be any unresolved jurisdictional problems. Mutual aid and reciprocal, inter-local agreements are in place to prevent that. Carol Edgett stated that she thought there used to be jurisdictional issues with Comal County related to funding that have been resolved over time. She added that they have a very good working relationship with Milton Willman and the county and each would assist the other in the event of an emergency. Willman echoed that sentiment and told of an instance when they used New Braunfels' shelter resources last winter during an ice storm. Both jurisdictions see no trouble whatever with the fact that Comal County is at the geographic top of their disaster district and their close neighbor to the north, San Marcos is in another disaster district. In fact, Marshall Willman believes that situation gives them additional flexibility because it expands his resource list.

In terms of the form that public education and awareness have taken Carol Edgett admitted that it has not been a big program in New Braunfels but they have been working on it. She has done speaking engagements at civic and community organizations. Marshall Willman relies on word of mouth, his own and the fire and EMS personnel. He also recognizes the role that the outfitters, in particular, on the Guadalupe River play in disseminating information. Also, Comal County and New Braunfels jointly operated a booth at the County Fair in 1997 where they disseminated emergency related information. She expressed amazement at how much information they "pushed" through that booth. They have used no "piggy backing" techniques. Edgett reminded that it takes funding (from grants) to do such things. At the county-wide household hazards drop-off in April,

1998 brochures were passed out with information about household hazardous materials (reduction in use, disposal, alternative, etc.).

All three coordinators are involved in disaster-related developmental activities of one sort or another. Each attends the Texas Emergency Management Conference on an annual basis. They have affiliations with the Emergency Management Association. They attend many of the training programs put on by DEM, especially those involving hazardous materials. Both jurisdiction's coordinators are making efforts to involve others in development activities; fire and EMS personnel, political leaders, and community organizations but lament the DEM training schedule and recent cancellations. There does not seem to be a concerted effort to establish local, internal education and training efforts.

1e) How does the jurisdiction respond to matters of opinion?

The sole organizing principle in this line of questioning is the fact that matters of opinion are presented for the jurisdictions' consideration. In light of that, the descriptive flow of the discussion may seem a bit disjointed. The initial question relates to whether or not an appropriate balance has been struck in emphasis with regard to natural versus man-made, technical hazards. Chief Baker believes there is an appropriate balance, adding that "if we're heavy anywhere it would probably be in flooding." Marshall Willman has the same belief for Comal County. He expressed that there may be a little bit more emphasis "on the natural (hazards) because those things you really don't have a whole lot of control over and they are so much more unknown."

When asked about the phase of emergency management to which they give the most attention or on which they place the greatest importance Carol Edgett said the preparedness phase, “trying to be prepared for the event.” She then deferred to Chief Baker with regard to what phase the political leadership is most focused on. He stated that he wasn’t sure they think about it much.<sup>13</sup> Edgett added that she didn’t think that was unusual based on what she has learned through her affiliation with the South Central Emergency Management Association. “It’s pretty much out of sight out of mind until you have a crisis.” Marshall Willman talked almost exclusively about preparedness and response. It is very clear that local government officials in these jurisdictions, elected and appointed, assign emergency management a lower priority than other issues.

Mitigation is a complex concept to discuss. The structured interviews with the Emergency Coordinators did not shed enough light on the subject or get deep enough to comment here. This is especially true with regard to the complexity of mitigation for a local jurisdictions. The need for involvement of multiple departments and levels of government. The lack of capacity and willingness by local government to address mitigation issues. Also the questions of cost and of balancing public responsibility and individual freedom when tackling mitigation questions.

The emergence phenomenon was seen by both jurisdictions as something to be controlled. They both mentioned that a positive use can be made of the volunteer force that will emerge but it must be organized and identified. It is not clear from the discussions if the magnitude of emergence and its potential effects on response and recovery are appreciated.

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<sup>13</sup> The reader may find Chief Baker’s discussion of this matter interesting.

As mentioned in the development of the conceptual framework and earlier in this chapter, these lines of questioning have many permeations. They can go on for a long time in many directions. Many of the lines could support a project like this in themselves. The key thing here is that their use, along with other descriptive information, provides a “lay of the land” for Comal County and New Braunfels which will give a context for the pursuit of research question two. The results of that inquiry is presented in the ensuing chapter.

## CHAPTER FIVE

### RESULTS

#### Introduction

In this chapter the results of the empirical inquiry are presented. First, a brief analysis of the rate of response is provided, including a break down by the participant groups. That is followed by descriptive analysis of the survey results using frequency and percentage distributions for the respondents as a whole and by participant groups. Finally, inferential analysis of the results is presented to test hypothetical relationships about the survey response data. The parametric test, Pearson's product moment coefficient was used to test the relationship between responses in sections 1 and 2 where the issues and items were the same. The chi-square test for independence was used to show differences in response by group for all sections of the survey.

#### Rate of Response

As detailed in the third chapter, the targeted (judgmental) population for the survey was  $N = 94$ . The total number of actual respondents was forty three.<sup>1</sup> Of the 43 respondents 25 were most closely associated with Comal County and 18 with New

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<sup>1</sup> The City Manager for New Braunfels refused to allow New Braunfels officials (both elected and appointed) to respond to the survey. An offer, by the researcher, to meet for the purpose of further explanation of the project and its potential benefits to the jurisdiction was declined. The message from Mike Shands, New Braunfels City Manager was "basically, the problem with the survey is that there are questions there that would be inappropriate for elected officials to answer, especially the one's where you're asking for opinions about the personnel. So that's one of the reasons and the overall survey itself strikes me as inappropriate for people that have control of the program ultimately to be answering those types of questions (13 March, 1998)." This action immediately removed 18 targeted participants from the total (leaving 76 possible respondents).

Braunfels. When considered in their groups, just over half of the targeted community organizations participated (22 of the 39), while nearly half of the public officials (18 of the 39) targeted as participants completed a survey. The remaining 3 respondents were elected officials out of the total of 16 which were targeted for possible participation. For the purpose of analysis these 3 respondents were combined with non-elected public officials to create two comparison groups of nearly equal size (community organizations/public officials). Table 5.1 is a representation of the respondents by jurisdiction and type upon which analysis was done, as well as the corresponding sub-groups.

Table 5.1 Respondents by Jurisdiction, Type, and Sub-Group (N = 43)

COMAL COUNTY (CC)		NEW BRAUNFELS (NB)	
25		18	
COMMUNITY ORGANIZATIONS (CO)		PUBLIC OFFICIALS (PO)	
22		21	
C.C.C.O.	C.C.P.O.	N.B.C.O.	N.B.P.O.
13	12	9	9

The actual number of participants in the survey then is  $N = 43$ . This total is not a representative sample of the originally projected ninety four individuals. They are, however, the motivated responders; those who paid “willing attention”<sup>2</sup> in the absence of

<sup>2</sup>Fox and Miller, 1996: 137.

coercion. No generalization can be made to that larger population of targeted individuals nor to any other larger population derived from the communities under study.

In the next four sections the frequencies of response to the individual questionnaire items are depicted in charts. Each chart represents one sub-section (category) of the questionnaire (conceptual framework). There are a total of fourteen subsections; four parts in section 1 -- awareness of preparedness issues, four in section 2 - concern for preparedness issues, and three each in sections 3 and 4 -- attitudes towards issues of mitigation. The results shown are for all respondents.

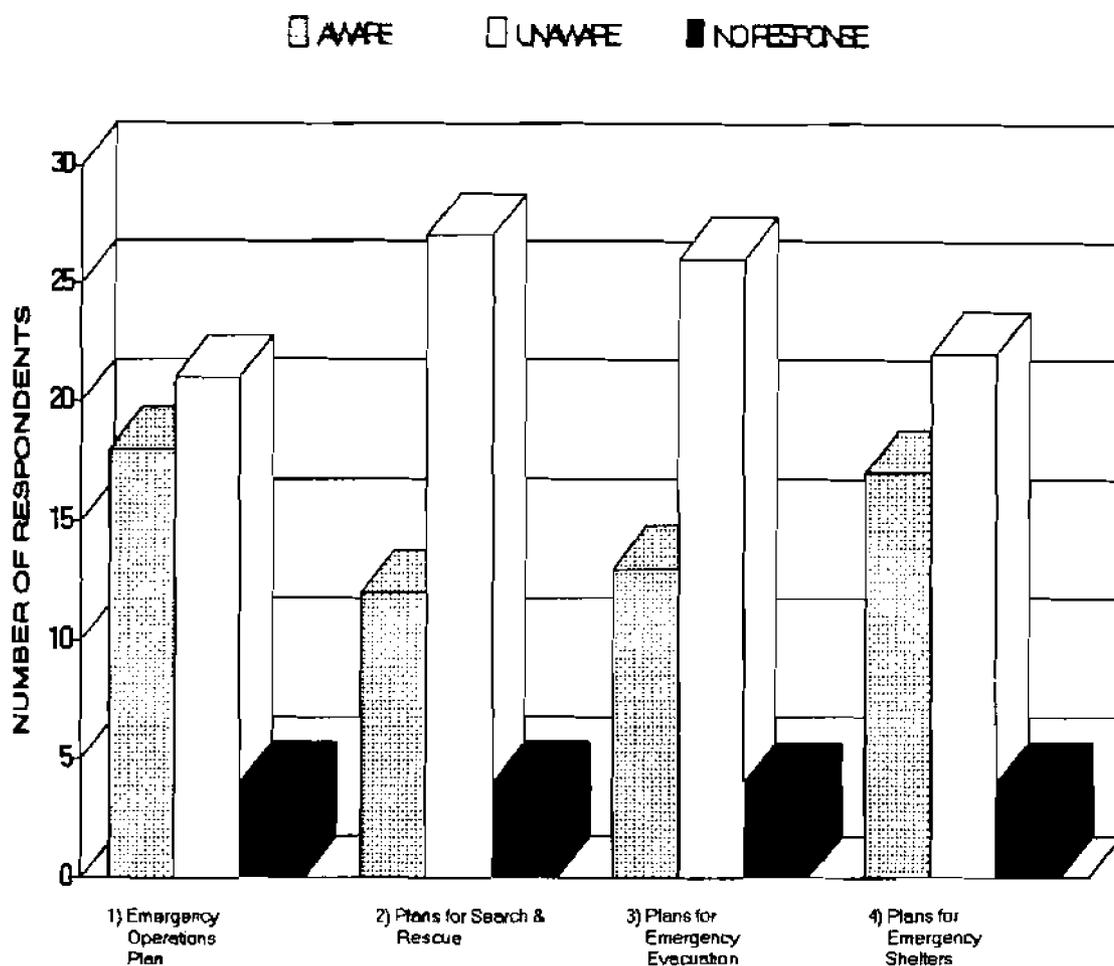
Following the depiction of response frequencies, in each section, is a discussion of the response percentages for the whole, as well as for the eight sub-groupings shown in Table 5.1. Percentages are displayed for awareness in section one. In section two the percentages of those responding very concerned are shown. For section three, responses of favor and strongly favor are combined. Likewise, section four contains the combined response of agree and strongly agree. For each section a table is provided.

### **Frequency and Percentage Distributions**

#### **Section 1: Awareness of Preparedness Issues**

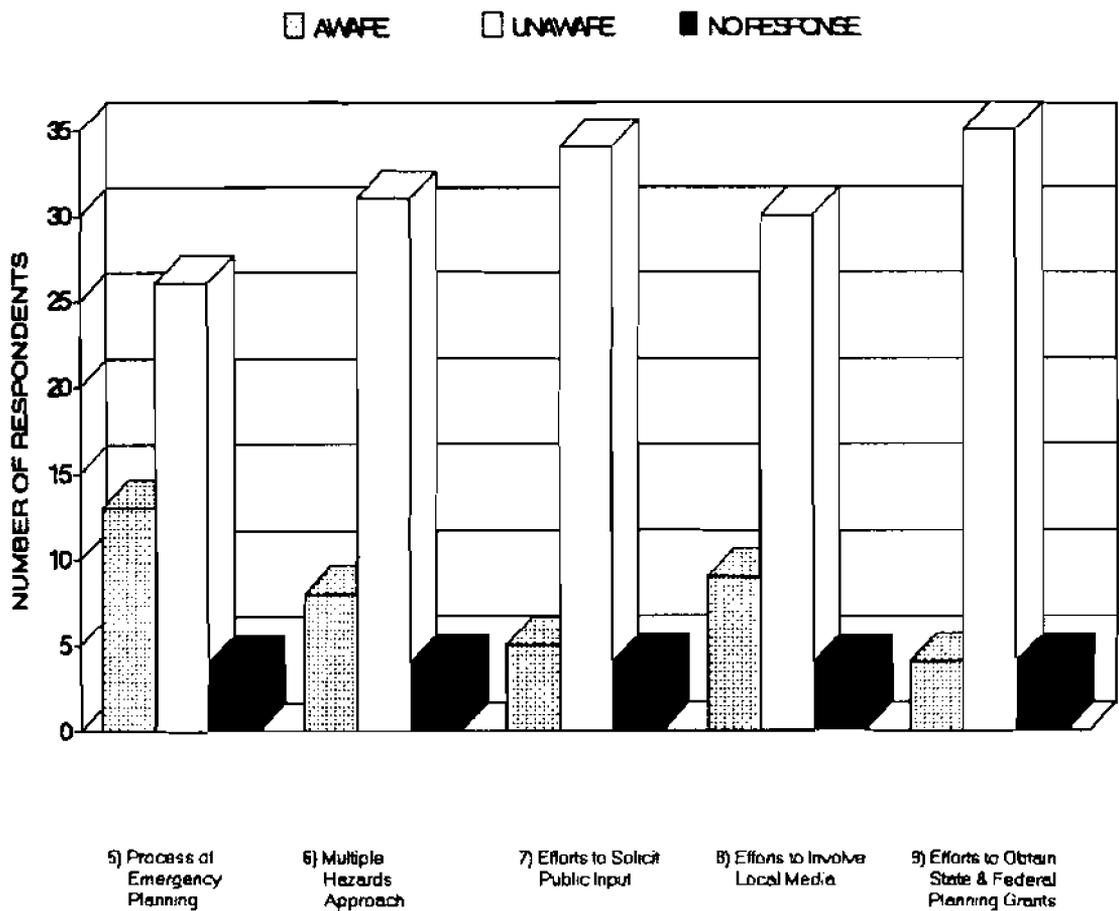
The conceptual categories for section one are plans, planning, coordination and mechanisms, and outreach, training and exercise. Respondents were asked if they were aware of the issue or item identified, specific to the jurisdiction with which they are most closely identified.

Figure 5.1 Section 1-A: Preparedness Plans -- Frequency (N = 43)



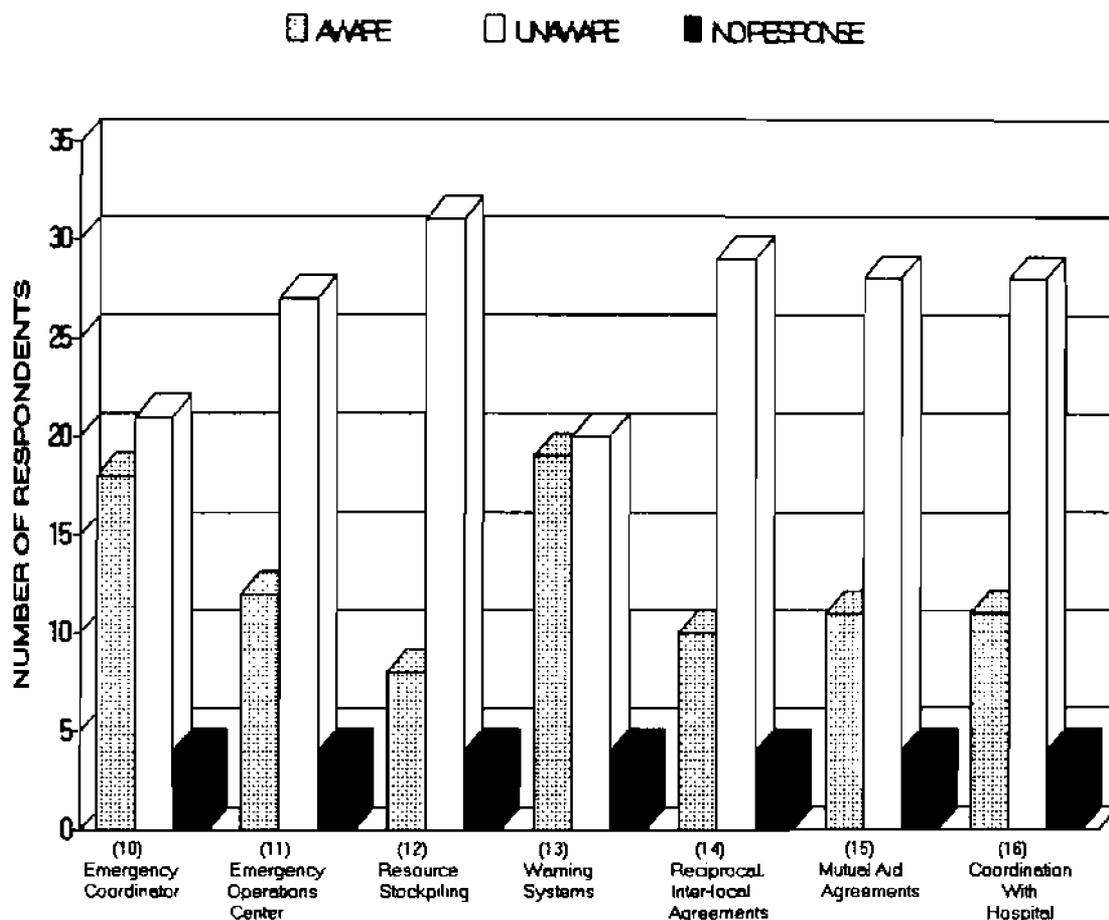
Sub-section 1-A includes four types of preparedness plans. Figure 5.1 shows that for all types, less than half of the respondents had direct knowledge. They were most aware of their jurisdiction's emergency operation (or basic) plan and its plans for establishing emergency shelters. A large number of respondents were unaware of both plans for search and rescue and for emergency evacuation.

**Figure 5.2** Section 1-B: Preparedness Planning -- Frequency (N = 43)



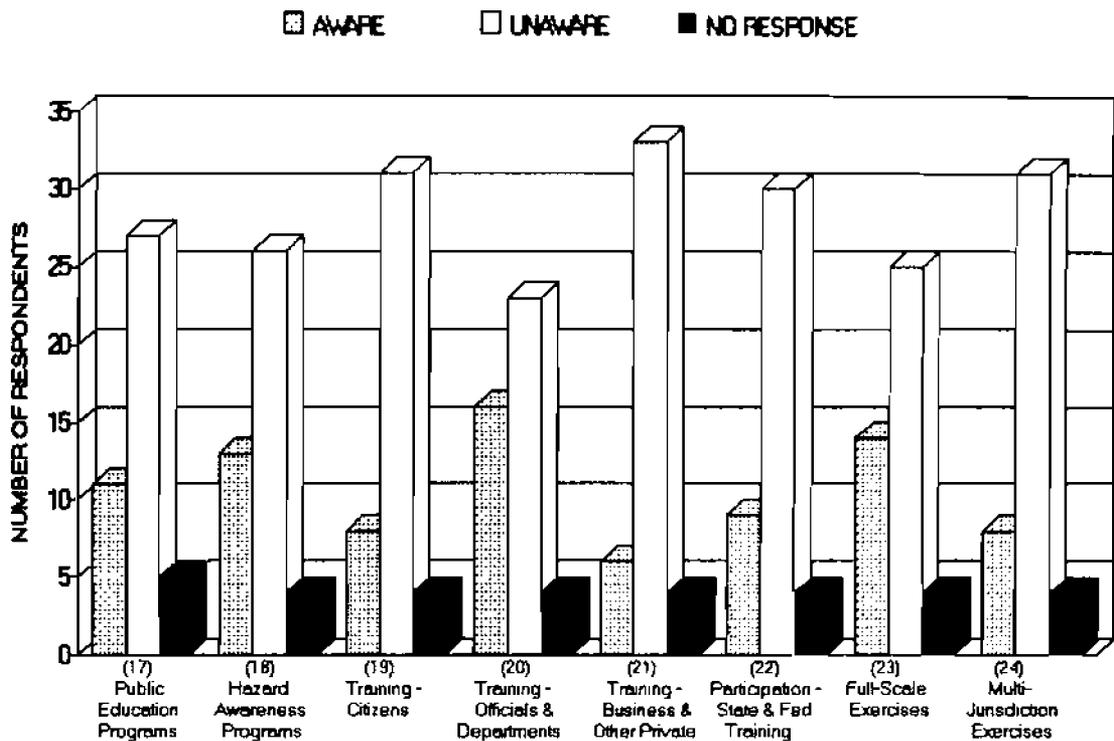
Issues related to the jurisdictions' preparedness planning made up sub-section 1-B (Figure 5.2). Respondents had limited knowledge of these issues. For instance, very few respondents knew of efforts by their jurisdiction to solicit public input into the planning process or efforts to obtain state and federal grants for preparedness planning. The greatest number of respondents were aware of the process for emergency planning but this entailed only one third of them.

**Figure 5.3** Section 1-C: Preparedness Coordination & Mechanisms -- Frequency (N = 43)



Sub-section 1-C involves the coordination and mechanisms of the preparedness phase. The results are shown in Figure 5.3. For the most part, awareness of these items was greater than that found in the previous category. The greatest levels of awareness were for the jurisdictions' warning systems and for the emergency coordinator. The least known item in the coordination and mechanisms category was resource stockpiling efforts.

**Figure 5.4** Section 1-D: Preparedness Outreach, Training & Exercise -- Frequency  
(N = 43)



The final category of this section is outreach, training, and exercise (Sub-section 1-D). Here too, Figure 5.4 shows generally low levels of awareness of the eight issues and items presented to the participants. The greatest number of respondents were aware of training efforts to enhance the emergency preparedness of the jurisdictions' officials and departments. Very few respondents were aware of similar efforts directed at citizens and at businesses and other private organizations. Less than one third were aware of emergency-related public education programs and hazard awareness programs. Finally, while nearly four in ten respondents were aware of their jurisdiction's full-scale disaster simulation exercises only half of that number were aware of their participation in multi-jurisdictional exercises.

Table 5.2 Section 1: Awareness of Preparedness Issues - Percentage Response

Preparedness Issues	Aware % (n=43)	CC % (n=25)	NB % (n=18)	CO % (n=22)	PO % (n=21)
<u>Plans</u>					
Emergency Operations Plans	46	60	21	27	71
Plans for search and rescue	31	44	7	14	53
Plans for emergency evacuation	33	48	7	27	41
Plans for emergency shelters	44	56	21	36	53
<u>Planning</u>					
Process of emergency planning	33	36	29	27	41
Multiple hazards approach	21	24	14	18	24
Efforts to solicit public input	13	16	7	9	18
Efforts to involve the local media	23	28	14	18	29
State/federal planning grants	10	12	7	9	12
<u>Coordination &amp; Mechanisms</u>					
Emergency Coordinator	46	56	29	32	65
Emergency Operations Center	31	40	14	18	47
Resource stockpiling efforts	21	32	0	9	35
Emergency warning systems	49	56	36	45	53
Reciprocal, inter-local agreements	26	32	14	14	41
Mutual aid agreements	28	40	7	9	53
Coordination with hospital/medical	28	36	14	23	35
<u>Outreach, Training, Exercise</u>					
Public education programs	29	38	14	19	41
Hazard awareness programs	33	44	14	23	47
Training, citizens	21	32	0	9	35
Training, officials and departments	41	48	29	23	65
Training, business/ private organizations	15	20	7	9	24
Participation in state/federal training	23	24	21	14	35
Full-scale disaster simulation exercises	36	48	14	9	71
Multi-jurisdictional disaster simulations	21	24	14	5	41

CC = Most closely associated with Comal County

NB = Most closely associated with New Braunfels

CO = Community Organization grouping

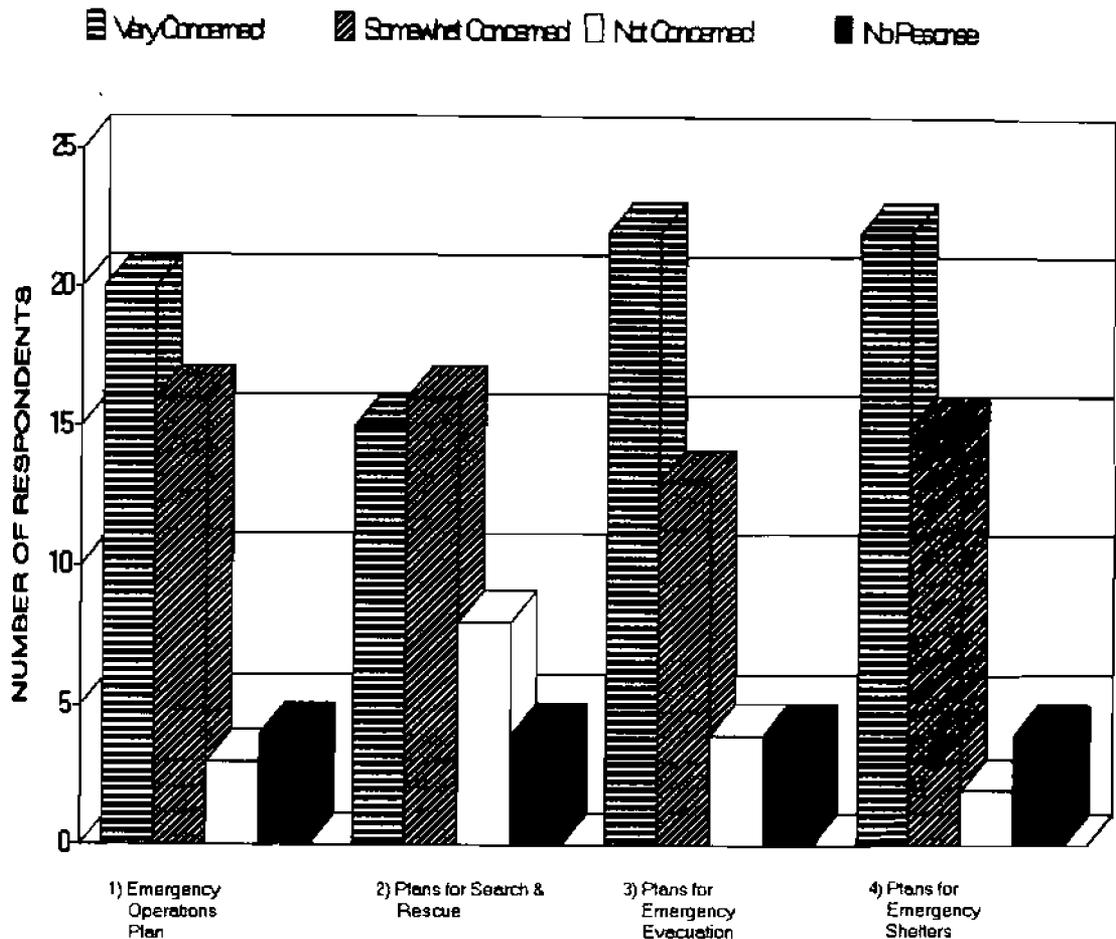
PO = Public Official grouping

Table 5.2 displays the percentages of respondents who were aware of the issue or item presented for the population as a whole and for the four main sub-groupings. One of the twenty four issues of preparedness presented had nearly half of the respondents aware of it. That was emergency warning systems. Four additional issues and items, the emergency operations plan, plans for establishing emergency shelters, the emergency coordinator, and efforts to train the jurisdictions' officials and departments had between forty and fifty percent of the respondents aware of them. At the low end, seven issues had awareness percentages of between ten and twenty one percent on the whole. The high and low response percentages are highlighted for each grouping.

### Section 2: Concern for Preparedness Issues

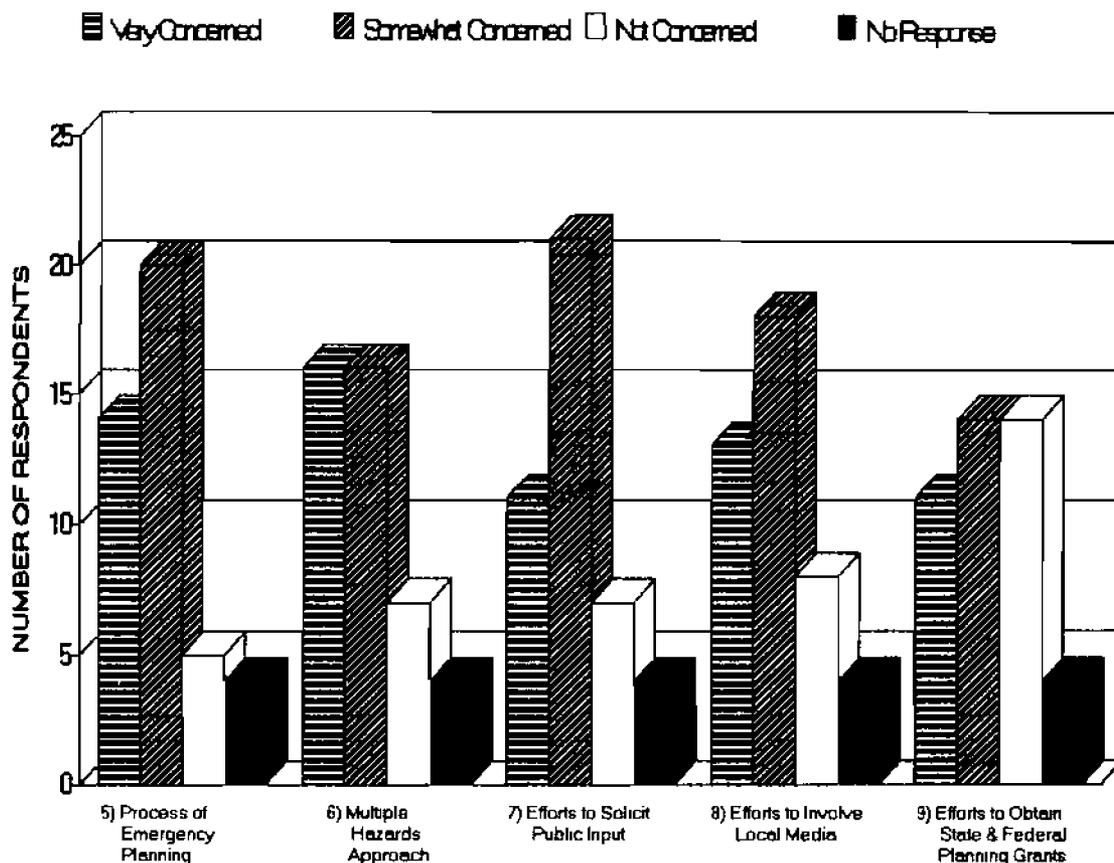
The next four figures are representations of the response frequencies for Section 2 dealing with participants' concern for issues of disaster preparedness. The conceptual categories and the twenty four issues and items are the same as in Section 1 and are in the same order. For this part of the survey participants were asked to rate their concern for the issue or item. They were asked to use the word concern to mean they are involved with, interested in, or they apply importance to the issue or item.

Figure 5.5 Section 2-A: Preparedness Plans -- Frequency (N = 43)



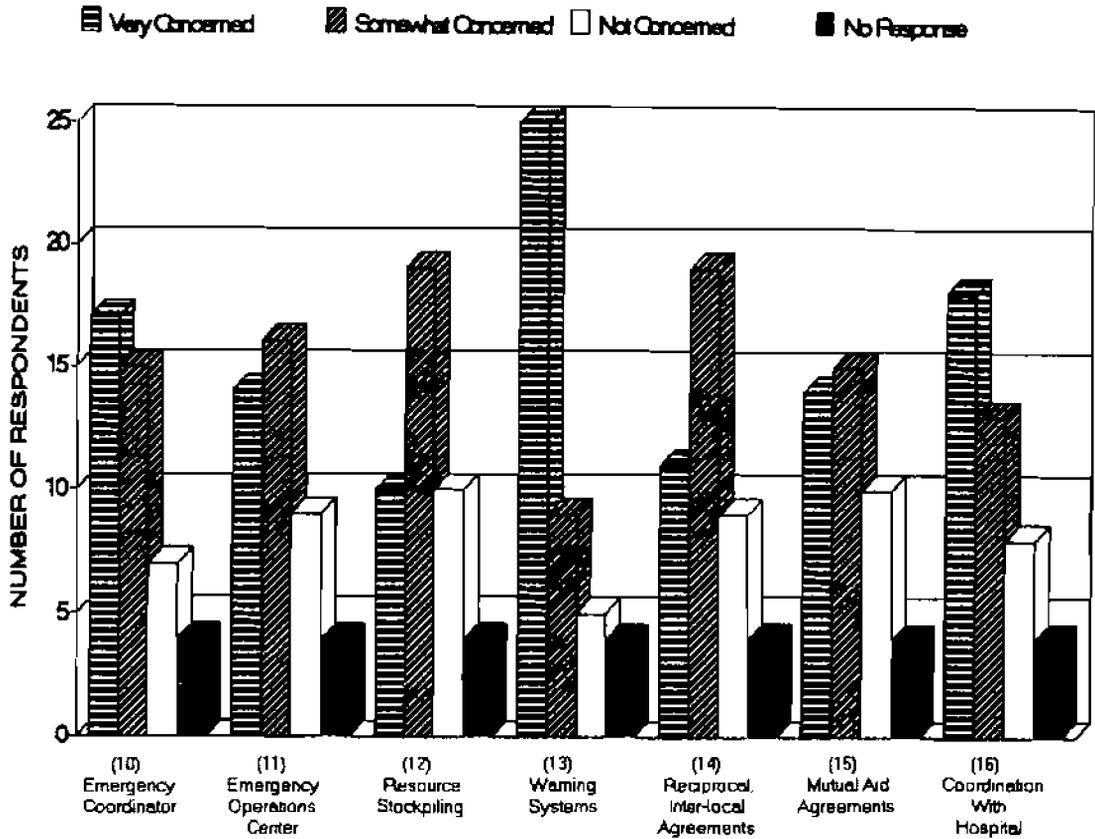
For sub-section 2-A, Figure 5.5 shows the respondents have a good deal of concern for each of the four types of preparedness plans identified. Especially evident is the involvement with , interest in, and importance applied to the emergency operations plans, plans for emergency evacuation, and plans for establishing emergency shelters by the survey participants. In each case a majority responded that they were very concerned.

**Figure 5.6** Section 2-B: Preparedness Planning -- Frequency (N = 43)



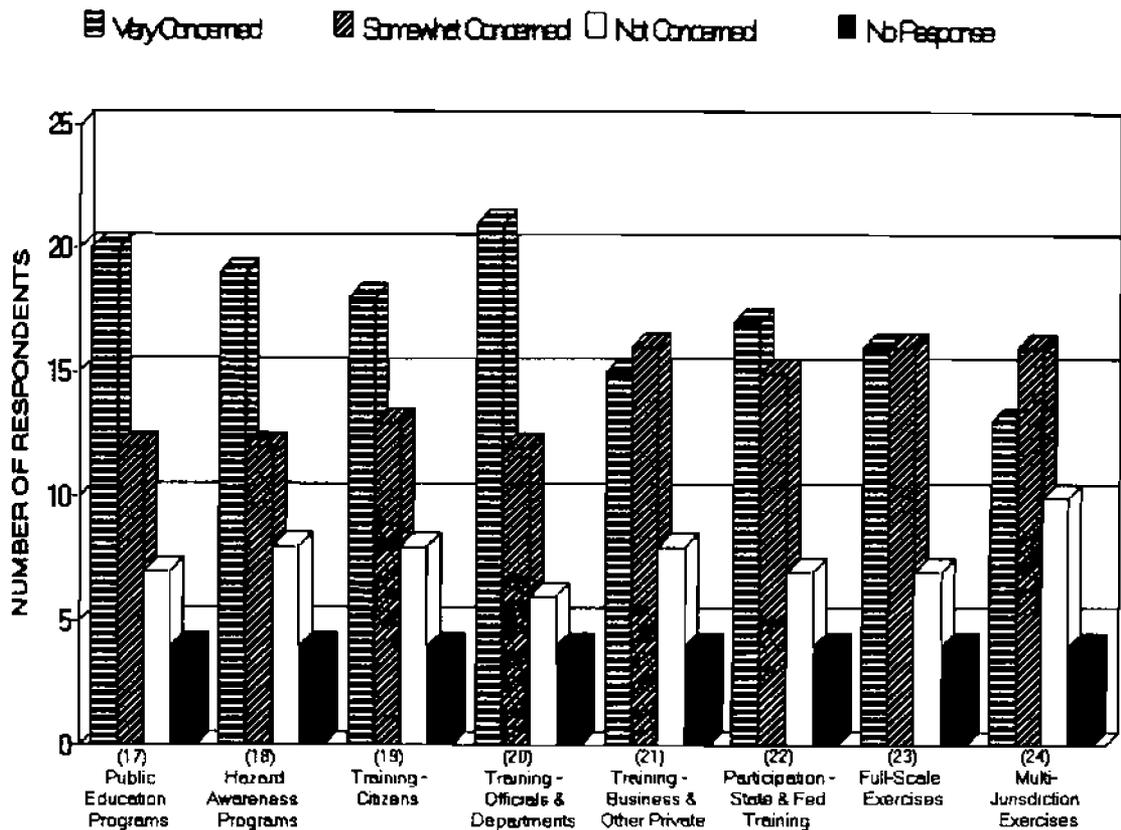
The results for issues of preparedness planning (sub-section 2-B) are displayed in Figure 5.6. Here the trend is toward moderated levels of concern, across the board. Participants responded that they were somewhat concerned about each of the five issues identified as much or more than any other response. In this conceptual category the strongest level of concern was for the jurisdictions' multiple hazards approach to preparedness planning. Alternatively, efforts by the jurisdictions to obtain state and federal planning grants garnered the least amount of concern.

**Figure 5.7** Section 2-C: Preparedness Coordination & Mechanisms -- Frequency  
(N = 43)



The results for sub-section 2-C, preparedness coordination and mechanisms are represented by Figure 5.7. What immediately jumps out at the reader is the strong level of concern for emergency warning systems. Also notable is the fact that majorities of the participants responded very concerned when asked about the jurisdictions' emergency coordinator and its coordination with local hospital and medical units. In general all of the issues and items within this conceptual category garnered at least moderate levels of ratings of involvement, interest, and importance from the respondents.

**Figure 5.8** Section 2-D: Preparedness Outreach, Training & Exercise -- Frequency  
(N = 43)



The final category in Section 2 is preparedness outreach, training, and exercise, the results of which are displayed in Figure 5.8. As in the previous sub-sections, respondents were involved with, interested in, and applied some degree of importance to the eight issues and items in sub-section 2-D. The greatest degree of concern was given to emergency-related public education programs, hazard awareness programs, and training efforts to enhance the emergency preparedness of citizens and jurisdictional officials and departments.

Table 5.3 Section 2: Concern for Preparedness Issues - Percentage Response

Preparedness Issues	Very Concerned % (n=43)	CC % (n=25)	NB % (n=18)	CO % (n=22)	PO % (n=21)
<u>Plans</u>					
Emergency Operations Plans	51	68	21	45	59
Plans for search and rescue	38	56	7	32	47
Plans for emergency evacuation	56	68	7	64	47
Plans for emergency shelters	56	68	21	64	47
<u>Planning</u>					
Process of emergency planning	36	52	29	27	47
Multiple hazards approach	41	60	14	32	53
Efforts to solicit public input	28	36	7	32	24
Efforts to involve the local media	33	44	14	27	41
State/federal planning grants	28	36	7	27	29
<u>Coordination &amp; Mechanisms</u>					
Emergency Coordinator	44	56	29	32	59
Emergency Operations Center	36	48	14	32	41
Resource stockpiling efforts	26	36	0	18	35
Emergency warning systems	64	76	36	73	53
Reciprocal, inter-local agreements	28	44	14	18	41
Mutual aid agreements	36	56	7	23	53
Coordination with hospital/medical	46	60	14	45	47
<u>Outreach, Training, Exercise</u>					
Public education programs	51	60	14	59	41
Hazard awareness programs	49	64	14	45	53
Training, citizens	46	56	0	45	47
Training, officials and departments	54	68	29	55	53
Training, business/ private organizations	38	48	7	36	41
Participation in state/federal training	44	68	21	32	59
Full-scale disaster simulation exercises	41	56	14	32	53
Multi-jurisdictional disaster simulations	33	52	14	18	53

CC = Most closely associated with Comal County

NB = Most closely associated with New Braunfels

CO = Community Organization grouping

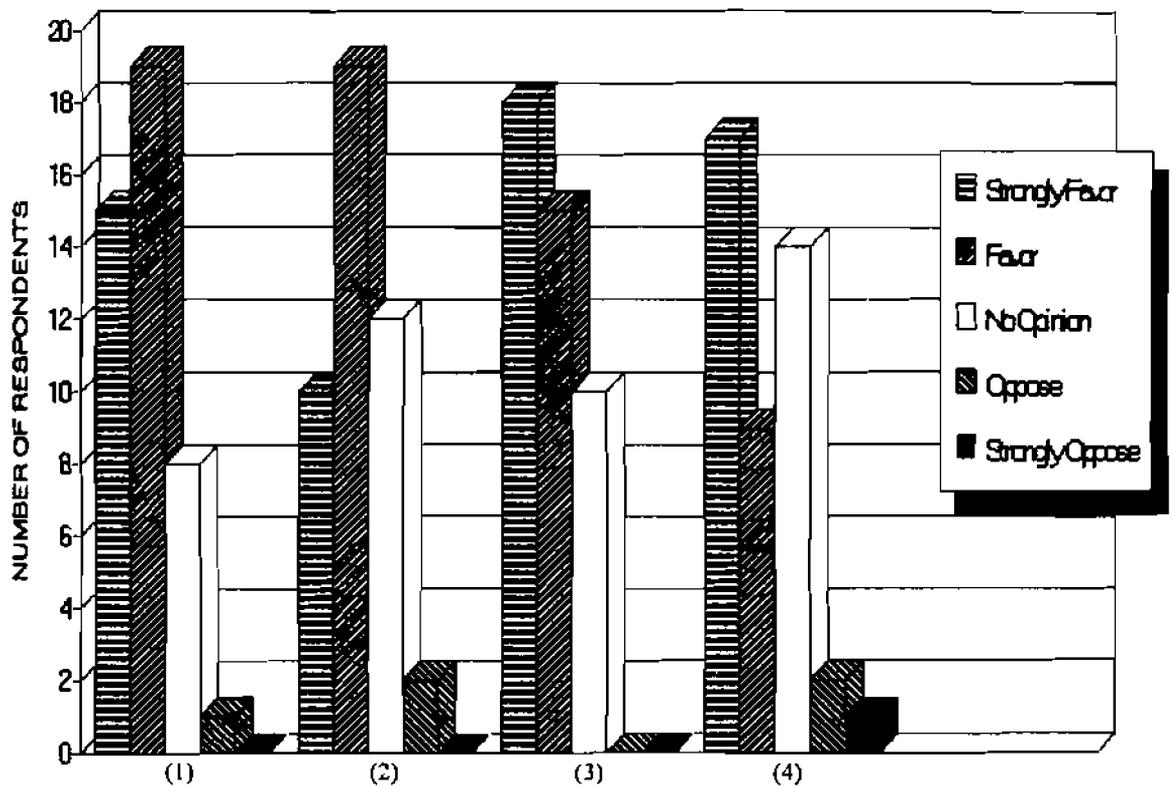
PO = Public Official grouping

Table 5.3 displays the percentages of participants that responded they were very concerned about the preparedness issues and items identified to them. The high and low response percentages for all respondents and for the four main sub-groupings are highlighted. More than six in ten responded very concerned when asked about emergency warning systems. At the other end of the spectrum, approximately one quarter answered the same for emergency-related resource stockpiling efforts. Notably, thirteen of twenty four issues and items identified garnered responses of very concerned by forty percent (or greater) of the participants.

### Section 3: Attitudes Toward Mitigation Issues

In the third section there are three conceptual categories dealing with participant attitudes toward issues of disaster mitigation. They are mitigation policies, activities and functions, and tools. In total, there were fourteen issues and items for the participants to rate on a scale from strongly favor to strongly oppose.

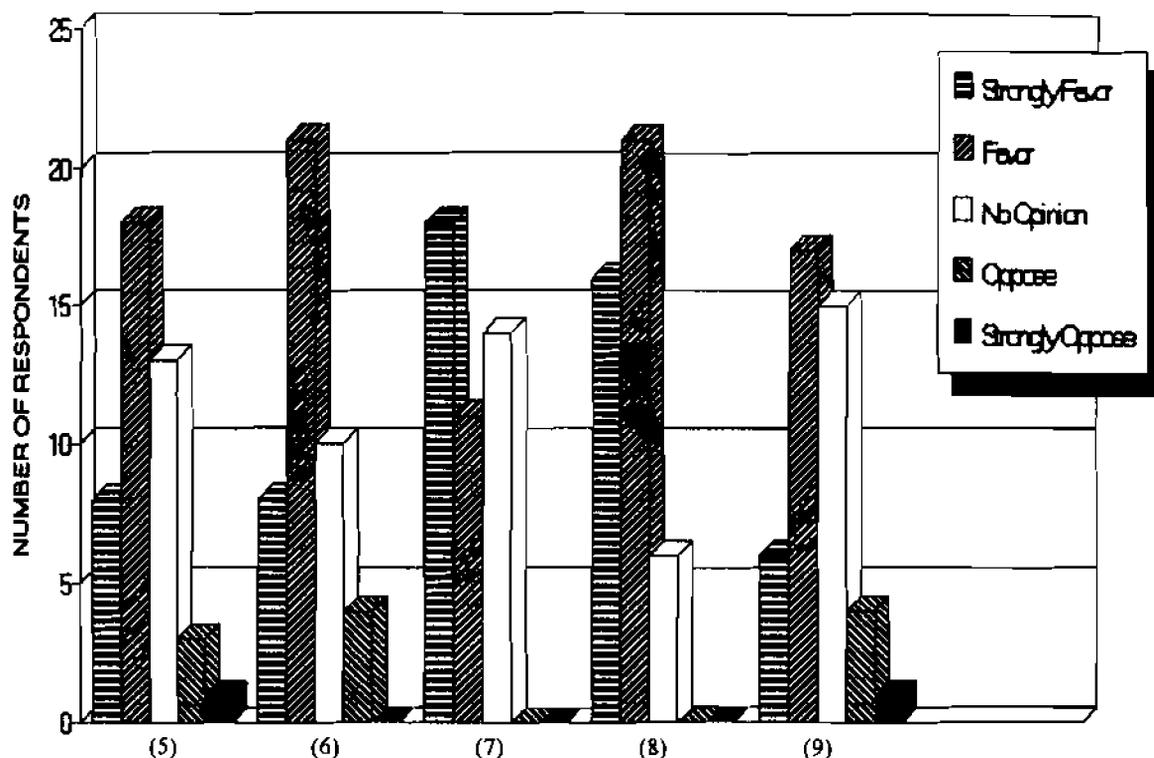
**Figure 5.9** Section 3-A: Mitigation Policies -- Frequency (N = 43)



- 1) Local government utilization of land use zoning to reduce citizen exposure to hazards.
- 2) Local government utilization of zero-growth policies on high hazard zones to reduce citizen exposure to hazards.
- 3) Local government use of building codes, statutes, and regulations to enhance the hazard resistance of new structures.
- 4) The institution of state-wide building codes to enhance the hazard resistance of new structures.

Figure 5.9 displays the results of sub-section 3-A involving mitigation policies. In all four, a majority of participants responded that they either favor or strongly favor the policy identified. The two questions regarding the use of building codes, statutes, and regulations to enhance the hazard resistance of new structures received the most responses of strongly favor. The respondents favoring the use of these measures by local government outnumbered those favoring their state-wide implementation. The latter item also received the most opposition and responses of no opinion.

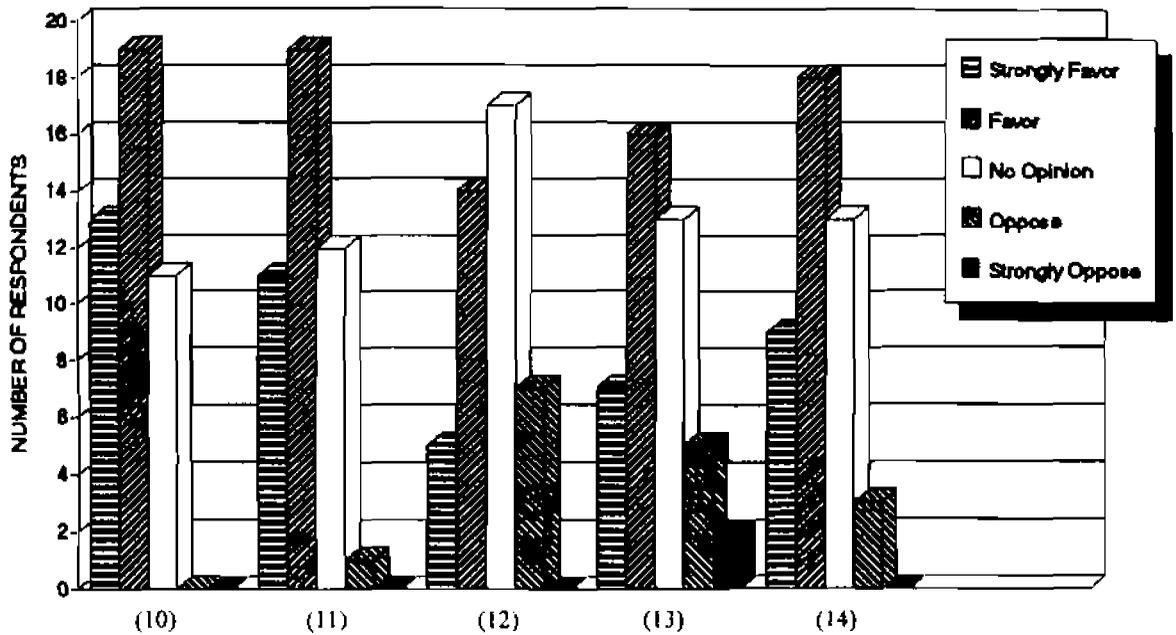
Figure 5.10 Section 3-B: Mitigation Activities & Functions -- Frequency (N = 43)



- 5) Local government commissioning geophysical studies to identify high hazard zones.  
 6) Local government retrofitting public buildings to enhance their hazard resistance.  
 7) Local government strengthening structures that are identified for use as evacuation shelters.  
 8) Local government implementation of programs to clear debris and sediment from floodways.  
 9) Local government use of condemnation and purchase of property to reduce citizen exposure to hazards.

Sub-section 3-B deals with mitigation-oriented activities and functions. Figure 5.10 shows that of the five issues, the largest response of strongly favor was for local government strengthening structures that are identified for use as evacuation shelters. However, the largest number of combined favorable responses was given to local government implementation of programs to clear debris and sediment from floodways. Some opposition was voiced to commissioning geophysical studies, retrofitting public buildings, and to the use of condemnation and purchase of property. The pattern of response for each of these issues was diverse and scattered.

Figure 5.11 Section 3-C: Mitigation Tools -- Frequency (N = 43)



10) Local government implementation of public education campaigns to enhance community awareness of hazard mitigation issues. 11) Local government offering mitigation-oriented technical assistance to encourage hazard resistance actions by private individuals and businesses. 12) Local government offering mitigation-oriented loans to encourage hazard resistance actions by private individuals and businesses. 13) Local government offering mitigation-oriented grants to encourage hazard resistance actions by private individuals and businesses. 14) Local government offering mitigation-oriented tax deductions/credits to encourage hazard resistance actions by private individuals and businesses.

The tools of mitigation make up sub-section 3-C displayed in Figure 5.11. The first item in this category deals with enhancing community awareness of hazard mitigation issues while the other four are tools directed at encouraging hazard resistance actions by private individuals and businesses. The implementation, by local government, of public education campaigns to enhance awareness was the only issue universally favored by respondents that expressed an opinion. Of the four methods for encouraging hazard resistance actions the strongest support was for technical assistance. Next was tax deductions and/or credits, followed by grants and then loans. Mitigation-oriented grants had the strongest opposition of the four methods to encourage action.

Table 5.4 Section 3: Attitudes Toward Mitigation Issues - Percentage Response

Mitigation Issues	Favor % (n=43)	CC % (n=25)	NB % (n=18)	CO % (n=22)	PO % (n=21)
<b><u>Policies</u></b>					
Land use zoning to reduce exposure	79	92	61	91	67
Zero growth policies to reduce exposure	67	76	56	82	52
Building codes, statutes, regulations	77	96	50	91	62
State-wide building codes	60	80	33	73	48
<b><u>Activities/Functions</u></b>					
Commission geophysical studies	60	80	33	64	57
Retrofitting public buildings	67	92	33	77	57
Strengthen evacuation shelters	67	88	39	77	57
Debris and sediment clearing programs	86	100	67	100	71
Condemnation and purchase of property	53	64	39	64	43
<b><u>Tools</u></b>					
Public education campaigns (mitigation)	74	96	44	95	52
Mitigation-oriented technical assistance	70	92	39	86	52
Mitigation-oriented loans	44	60	22	50	38
Mitigation-oriented grants	53	76	22	59	48
Mitigation-oriented tax deductions/credits	63	76	44	77	48

Favor = "Favor" or "Strongly Favor"

CC = Most closely associated with Comal County

NB = Most closely associated with New Braunfels

CO = Community Organization grouping

PO = Public Official grouping

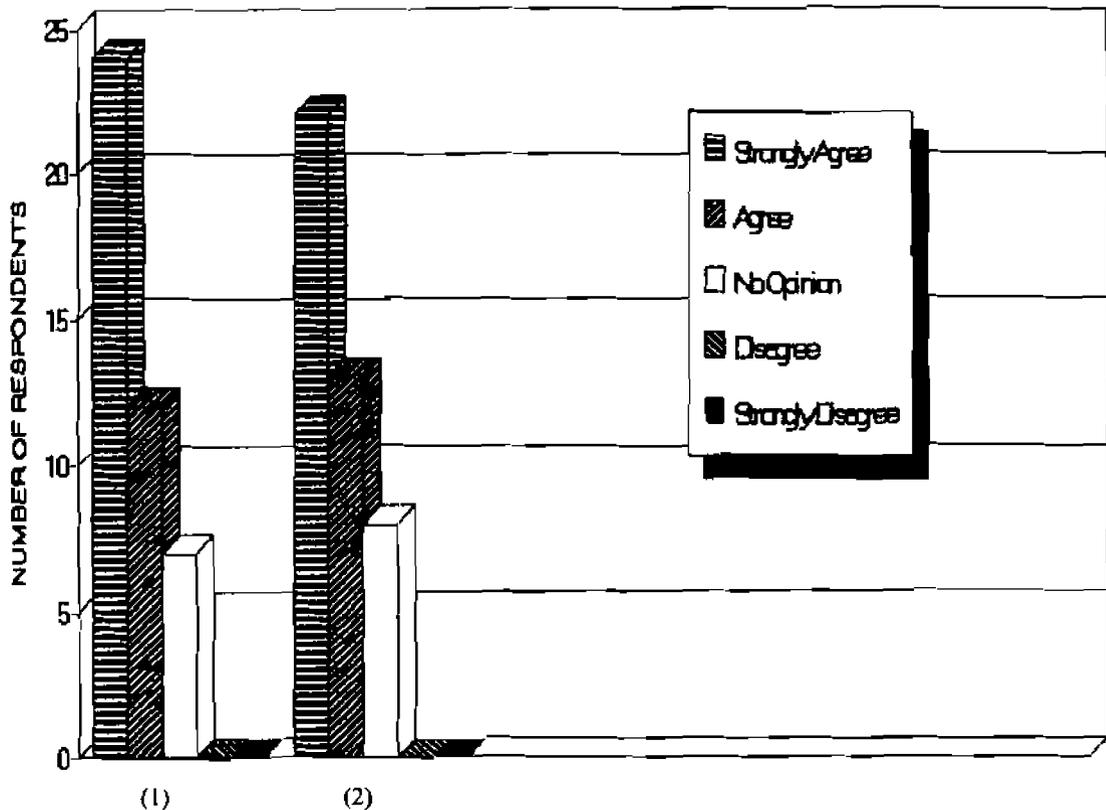
Table 5.4 displays the percentages of participants that responded that they either favored or strongly favored the mitigation issues identified to them. The high and low response percentages are highlighted for all respondents and for the four main sub-groupings. Nearly nine out of ten respondents favored the idea of programs to clear debris and sediment from floodways. The lowest level of support was for mitigation-oriented loans designed to encourage hazard mitigation actions by private individuals and

businesses with forty four percent in favor. That was the only issue of the fourteen identified where less than half of the respondents favored the issue. In fact, for eleven of the fourteen issues, sixty percent or more of the participants responded that they favored or strongly favored the mitigation policy, activity, function, or tool.

#### Section 4: Attitudes Toward Mitigation Issues

In the final section there are three conceptual categories in which thirteen mitigation issues are placed. Participant attitudes were asked about mitigation policies, activities and functions, and concepts. Here the participants were asked to consider thirteen statements and answer on a scale from strongly agree to strongly disagree.

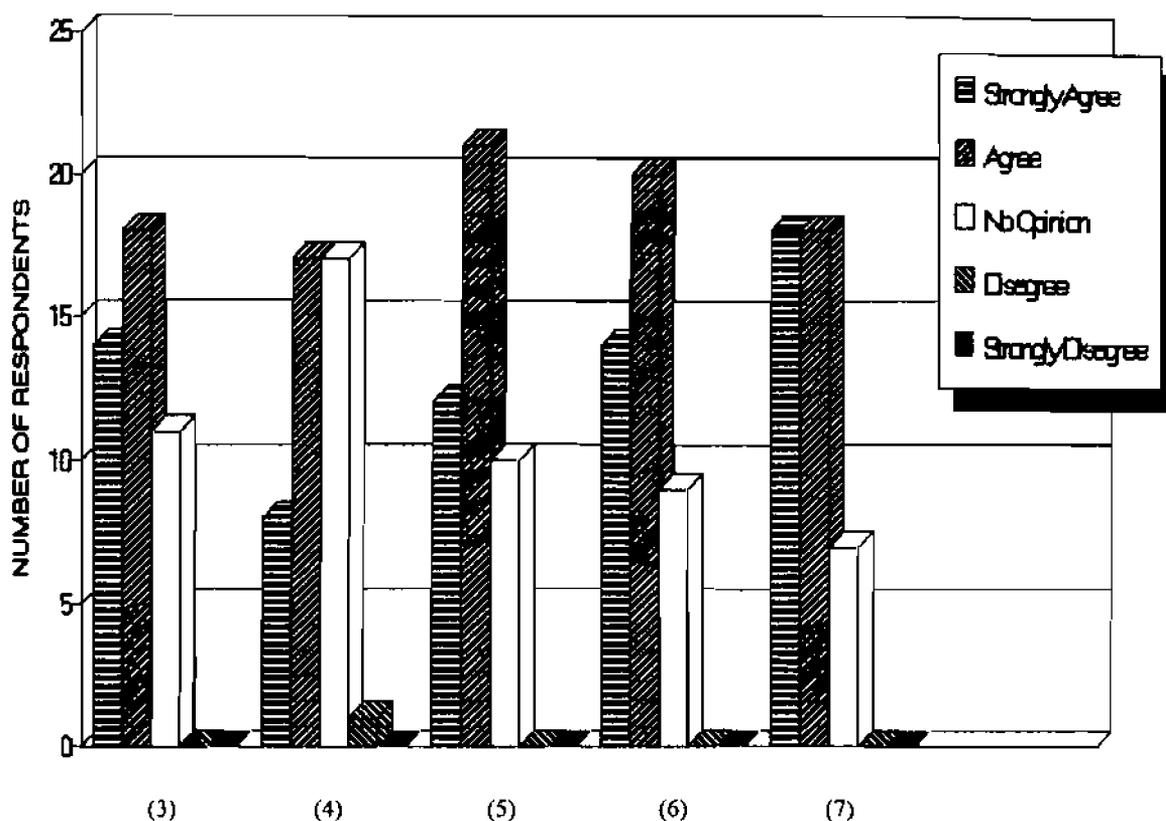
Figure 5.12 Section 4-A: Mitigation Policies -- Frequency (N = 43)



- 1) It should be mandatory that property purchasers and users be notified of land's hazard proneness.  
 2) Sub-division development applications should include hazard impact and hazard mitigation statements.

In sub-section 4-A there were two statements of mitigation policy. The results are shown in Figure 5.12. When asked if it should be mandatory that property purchasers and users be notified of land's hazard proneness those respondents which expressed an opinion were entirely in agreement. Two times as many strongly agreed than simply agreed with this type of notification. The idea that sub-division development applications should include hazard impact and hazard mitigation statements was similarly supported, only slightly less resounding. There was no disagreement expressed on either point.

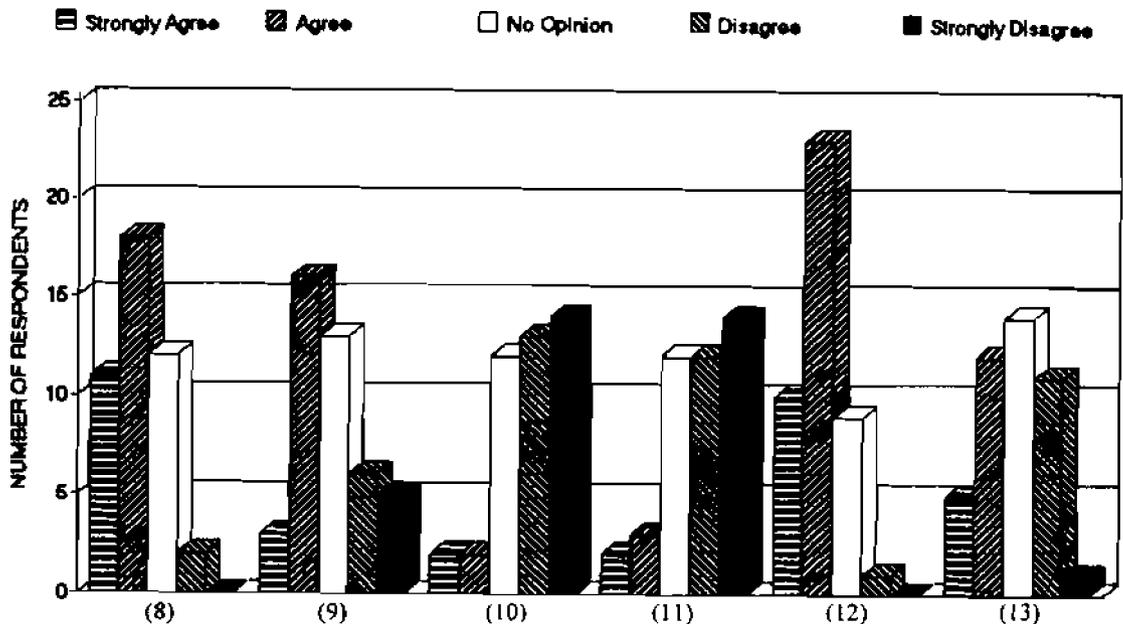
**Figure 5.13** Section 4-B: Mitigation Activities & Functions -- Frequency (N = 43)



- 3) Hazard and risk analysis are essential functions of local government.  
 4) Hazard and risk analysis, by local government, should occur annually.  
 5) The vulnerability profile that results from hazard and risk analysis should be reported in a public forum.  
 6) Hazardous materials monitoring and surveillance programs are essential functions of local government.  
 7) It is essential that business and industry report hazardous materials inventories to local government.

The responses for the five mitigation activities and functions of sub-section 4-B are displayed in Figure 5.13. Four out of five statements were universally agreed upon like those in sub-section 4-A but less strongly. The strongest agreement among the five issues was with the idea that it is essential that business and industry report hazardous materials inventories to local government. The idea that local government hazard and risk analysis should occur annually had the most mix of responses including four out of ten respondents expressing no opinion and one disagreeing.

Figure 5.14 Section 4-C: Mitigation Concepts -- Frequency (N = 43)



8) Private individuals & business bear primary responsibility for mitigating hazards. 9) Local government should share the cost of mitigating hazards with individuals and businesses. 10) When considering building codes, regulations, and zoning, economic considerations are more important than public safety and health concerns. 11) When considering building codes, regulations, and zoning, individual choice is more important than public safety and health concerns. 12) Local government mitigation efforts should take into consideration both man-made and natural hazards. 13) Local government should pay more attention to mitigating effects of hazards than to preparing the response to hazard onset.

The mitigation concepts (sub-section 4-C) had the most diversity of response of all the conceptual categories. Figure 5.14 shows two statements in particular with which participants strongly disagreed. In both, respondents were asked when considering building codes, regulations, and zoning whether economic considerations (number 10) or individual choice (number 11) were more important than public safety and health concerns.<sup>3</sup> Most respondents agreed that private individuals and businesses bear primary responsibility for mitigating hazards but there was no clear consensus on whether local

<sup>3</sup> It can be assumed that a similar agreeable response would have resulted if the statements were made reversing the key points.

government should share the cost of mitigating hazards with individuals and businesses.

All but one of the respondents that expressed an opinion agreed (or strongly agreed) that local government mitigation efforts should take into consideration both man-made and natural hazards. Finally, agreement/disagreement varied with regard to whether local government should pay more attention to mitigating the effects of hazards than to preparing the response to hazard onset.

Table 5.5 Section 4: Attitudes Toward Mitigation Issues - Percentage Response

Mitigation Issues	Agree % (n=43)	CC % (n=25)	NB % (n=18)	CO % (n=22)	PO % (n=21)
<u>Policies</u>					
Notification of land's hazard proneness	84	96	67	95	71
Hazard impact and mitigation statements	81	96	61	95	67
<u>Activities/Functions</u>					
Hazard and risk analysis - essential	74	88	56	86	62
Hazard and risk analysis - annually	58	80	28	59	57
Vulnerability profile, reported in public	77	88	61	86	67
Haz. materials monitoring and surveillance	79	88	67	91	67
Hazardous materials reporting - essential	84	96	67	95	71
<u>Concepts</u>					
Private sector, primary responsibility	67	80	50	77	57
Local government should share cost	44	56	28	50	38
Economics more important safety/health	9	16	0	9	10
Individual choice more imp. safety/health	12	16	6	14	10
Both man-made & natural hazards	77	88	61	86	67
More attention mitigation than preparedness	40	48	28	45	33

Agree = "Agree" or "Strongly Agree"

CC = Most closely associated with Comal County

NB = Most closely associated with New Braunfels

CO = Community Organization grouping

PO = Public Official grouping

Table 5.4 displays the percentages of participants that responded they either agree or strongly agree with the mitigation issue identified to them. The high and low response percentages are highlighted for all respondents and for the four main groupings. More than eight in ten respondents agreed that it should be mandatory that property purchasers and users be notified of land's hazard proneness. The same percentage agreed that it is essential that business and industry report hazardous materials inventories to local government. The lowest percentages of agreeable responses were associated with the statements comparing the importance of economics and individual choice with that of public safety and health.

## **Relationships**

### **Correlation: Awareness with Concern**

What follows is the inferential analysis of hypotheses about relationships in the survey response data. The first relationship in question is between participant responses in sections 1 and 2. Recall that in these sections the issues and items of preparedness are the same but respondents were asked if they were aware in section 1 and their level of concern in section 2. Pearson's product moment coefficient, Pearson's  $r$ , was used to test the correlation between the participants' awareness and their interest and involvement in and the importance they apply to the issues.

Taken as a whole, there is a strong positive correlation between participants' awareness and their level of concern for the preparedness issues,  $r = 0.76$ ,  $p < 0.01$  ( $n = 24$ ,  $df = 22$ ).<sup>4</sup> Partial correlation tests were done for the two sets of groupings. For Comal County participants,  $r = 0.65$ ,  $p < 0.01$ . For New Braunfels,  $r = 0.38$ ,  $p < 0.10$ . This was the correlation with the least strength. Participants from community organizations had  $r = 0.74$ ,  $p < 0.01$ . Finally, for public officials,  $r = 0.79$ ,  $p < 0.01$ , the strongest correlation.

### Difference by respondent grouping

The next set of hypothetical relationships were tested with the chi-square test for independence. For each issue or item in each section of the survey chi-square tests were performed to determine if there was a significant difference in response depending upon grouping. For simplicity the hypotheses are categorized as follows:

- 1a) Awareness of preparedness issues depends upon the jurisdiction of the respondent.
- 1b) Awareness of preparedness issues depends upon the type of respondent.
- 2a) Concern for preparedness issues depends upon the jurisdiction of the respondent.
- 2b) Concern for preparedness issues depends upon the type of respondent.
- 3a) and 4a) Attitudes toward mitigation issues depend upon the jurisdiction of the respondent.

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<sup>4</sup> The twenty four individual arguments for each set (awareness and concern) were the mean responses of the participants.

3b) and 4b) Attitudes toward mitigation issues depends upon the type of respondent.

Two-by-two and two-by-three tables were used to analyze these hypothetical relationships. Appendix H contains all one hundred and fifty chi-square tests. When using two-by-two tables the chi-square statistic is not recommended when any expected frequency is less than five.<sup>5</sup> For tables with more rows and columns chi-square is not recommended when more than twenty percent of the expected frequencies are less than five.<sup>6</sup> The ensuing presentation of the results contains examples of both situations. First, those results that are significant at  $p < 0.05$  with expected frequencies that don't preclude the use of chi-square are presented. Following the significant results are those found to be significant at  $p < 0.05$  but that do not meet the expected frequency requirement. These are included because they are interesting and suggest the hypothetical relationship. Each would need to be tested with a Fisher's exact test to be accepted as conclusive.

#### Awareness

There is a significant relationship between a respondent's jurisdiction and their awareness of the emergency operations plan (Section 1-1), chi-square = 5.37,  $df = 1$ ,  $p = 0.02$ . Comal County respondents were more likely to be aware of their jurisdiction's emergency operations plan than New Braunfels respondents. The type of respondent is also significant for this question, chi-square = 7.24,  $df = 1$ ,  $p = 0.007$ . Public officials

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<sup>5</sup> DiLeonardi and Curtis, 1988: 69.

<sup>6</sup> Moore and McCabe, 1993: 607.

were more likely to be aware of their jurisdiction's emergency operations plan than respondents from community organizations.

There is a significant relationship between the type of respondent and their awareness of the plans for search and rescue (Section 1-2), chi-square = 6.95,  $df = 1$ ,  $p = 0.008$ . Public officials were more likely to be aware of their jurisdiction's plans for search and rescue than respondents from community organizations.

There is a significant relationship between the respondent's jurisdiction and their awareness of plans for establishing emergency shelters (Section 1-4), chi-square = 4.36,  $df = 1$ ,  $p = 0.037$ . Comal County respondents were more likely to be aware of their jurisdiction's plans for establishing emergency shelters than New Braunfels respondents.

There is a significant relationship between the type of respondent and their awareness of the jurisdiction's emergency coordinator (Section 1-10), chi-square = 4.17,  $df = 1$ ,  $p = 0.041$ . Public officials were more likely to be aware of their jurisdiction's emergency coordinator than respondents from community organizations.

There is a significant relationship between the type of respondent and their awareness of the jurisdiction's training efforts to enhance the emergency preparedness of its officials and departments (Section 1-20), chi-square = 6.98,  $df = 1$ ,  $p = 0.008$ . Public officials were more likely to be aware of their jurisdiction's training efforts to enhance the emergency preparedness of its officials and departments than respondents from community organizations.

There is a significant relationship between a respondent's jurisdiction and their awareness of full-scale disaster simulation exercises to assess emergency planning

(Section 1-23), chi-square = 4.43,  $df = 1$ ,  $p = 0.035$ . Comal County respondents were more likely to be aware of their jurisdiction's full-scale disaster simulation exercises than New Braunfels respondents. The type of respondent is also significant for this question, chi-square = 15.76,  $df = 1$ ,  $p = 0.000$ . Public officials were more likely to be aware of their jurisdiction's full-scale disaster simulation exercises than respondents from community organizations.

### Concern

There is a significant relationship between a respondent's jurisdiction and their concern for plans for search and rescue (Section 2-2), chi-square = 9.41,  $df = 1$ ,  $p = 0.009$ . Comal County respondents had greater concern for their jurisdiction's full-scale disaster simulation exercises than New Braunfels respondents.

There is a significant relationship between a respondent's jurisdiction and their concern for emergency-related mutual aid agreements (Section 2-15), chi-square = 0.001,  $df = 1$ ,  $p = 0.001$ . Comal County respondents had greater concern for their emergency-related mutual aid agreements than New Braunfels respondents.

### Attitudes

There is a significant relationship between a respondent's jurisdiction and their attitude toward local government implementation of programs to clear debris and sediment from floodways (Section 3-8), chi-square = 5.11,  $df = 1$ ,  $p = 0.024$ . Comal County respondents were more likely to strongly favor local government implementation

of programs to clear debris and sediment from floodways than New Braunfels respondents. The type of respondent is also significant for this question, chi-square = 5.55,  $df = 1$ ,  $p = 0.018$ . Respondents from community organizations were more likely to strongly favor local government implementation of programs to clear debris and sediment from floodways than were public officials.

There is a significant relationship between a respondent's jurisdiction and their attitude toward the issue of economic considerations vis-à-vis public safety and health concerns (Section 4-10), chi-square = 4.49,  $df = 1$ ,  $p = 0.034$ . Comal County respondents were more likely (than New Braunfels respondents) to strongly disagree to the statement that economic considerations are more important than public safety and health concerns when considering building codes, statutes, and regulations.

#### Candidates for Fisher's exact test

The following results are interesting but cannot be considered significant based on the expected frequency shortcoming.

- Comal County respondents more aware of plans for search and rescue.
- Comal County respondents more aware of plans for emergency evacuation.
- Comal County respondents more aware of emergency-related resource stockpiling efforts.
- Public officials more aware of emergency-related resource stockpiling efforts.
- Comal County respondents more aware of emergency-related mutual aid agreements.
- Public officials more aware of emergency-related resource stockpiling efforts.
- Comal County respondents more aware of training efforts to enhance the emergency preparedness of its citizens.
- Public officials more aware of training efforts to enhance the emergency preparedness of its citizens.
- Public officials more aware of participation in multi-jurisdictional disaster simulation exercises.
- Comal County respondents greater concern for emergency operations plan.

- Comal County respondents greater concern for the process of emergency planning.
- Comal County respondents greater concern for the multiple hazards approach to emergency planning.
- Comal County respondents greater concern for efforts to solicit public input into the emergency planning process.
- Comal County respondents greater concern for emergency warning systems.
- Comal County respondents greater concern for emergency-related reciprocal, inter-local agreements.
- Comal County respondents greater concern for hazard awareness programs.
- Comal County respondents greater concern for training efforts to enhance the emergency preparedness of its officials and departments.
- Comal County respondents greater concern for participation in training programs provided by state and federal emergency management agencies.
- Comal County respondents greater concern for full-scale disaster simulation exercises.
- Comal County respondents greater concern for participation in multi-jurisdictional disaster simulation exercises.
- Comal County more strongly favors local government utilization of land use zoning to reduce citizen exposure to hazards.
- Comal County more strongly favors local government utilization of zero growth policies to reduce citizen exposure to hazards.
- Comal County more strongly favors the use of tax deductions/credits to encourage hazard resistance actions by individuals and businesses.
- Public officials more strongly disagree that local government should share the cost of mitigating hazards with private individuals and businesses.

## CHAPTER SIX

### SUMMARY AND CONCLUSIONS

#### **Summary**

An emphasis on the pre-disaster phases of emergency management by local government can reduce loss of life, injury, property damage and general mayhem. Through mitigation efforts a locality can endeavor to prevent the on-set of natural and man-made hazards as well as to alleviate the extent of their destruction. In conjunction with their mitigation efforts, a community can partake in preparedness activities aiming to lessen the vulnerability of its citizens and its social and built systems. The operative word in both of these statements is “can.” While most, if not all, communities undertake pre-disaster emergency management in some fashion there are a multitude of issues inherent in these phases that make them particularly complex. As a result of the complexity, it comes as no surprise that both the quantity and quality of a locality’s efforts will vary greatly.

It is not enough to assume that normally functioning law enforcement, fire and emergency medical service systems will cope with a disaster situation. On the contrary, these operations are generally overwhelmed by disasters or mass emergencies if not a part a concerted, community-wide effort to mitigate and prepare for disaster.

This project was formulated from a public administration viewpoint<sup>1</sup> to explore a local jurisdiction’s pre-disaster emergency management status and to describe its

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<sup>1</sup> Public administration is concerned with relationships (inter-jurisdictional, inter-sectoral, inter-organizational, inter-governmental) and with issues of policy development and implementation.

understandings and beliefs about issues inherent to the pre-disaster phases. In so-doing, it was necessary to develop suitable frameworks to guide the inquiry where they did not previously exist. Taken together, these conceptual frameworks are meant as a point of departure; tools to be used and improved upon while providing beneficial information and analysis to the user and the subject communities.

In developing the first research question a number of issues and items identified in the literature as important to emergency management efforts were compiled.<sup>2</sup> These issues and items were arranged into five lines of questioning to organize the exploration. The resulting information provides a depiction of the community's pre-disaster emergency management "lay of the land." An interested party can stop there or continue by exploring any of the numerous issues and questions that arise. The five lines of questioning are as follows:

1. What is the jurisdiction's disaster history?
2. What has been shown by the jurisdiction's assessment and analysis of hazards, vulnerability and risk?
3. What is the status of the jurisdiction's plans, planning processes and structural arrangements?
4. What efforts have been made by the jurisdiction to establish necessary relationships and develop community involvement?
5. How does the jurisdiction respond to matters of opinion?

The second research question has a descriptive purpose. Through it the attitudes of individuals in the community towards issues and items of mitigation and preparedness

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<sup>2</sup>This compilation is far from exhaustive. Legitimate issues and items were excluded simply to reduce the size of the project. This fact only enhances the flexibility of the framework and its suitability for use by anyone, anywhere. The magnitude can easily be reduced or enlarged depending upon the user.

are depicted. The individuals chosen for participation are those who, by the nature of their position in the community, might be expected to have a part in emergency management. Awareness of and concern for issues of preparedness (24) and attitudes toward issues of mitigation (27) are derived by survey method. The scope of investigation can be expanded or reduced by adding or deleting participants and or issues. The conceptual categories for the second research question follow:

**Preparedness:**

- Plans
- Planning
- Coordination and Mechanisms
- Outreach, Training and Exercise

**Mitigation:**

- Policies
- Activities and Functions
- Tools
- Concepts

**Conclusions**

The subjects for this project were Comal County, Texas and its largest city, New Braunfels, Texas. The conclusions presented here are based on information gathered between January and March, 1998 and cannot be generalized beyond the judgmental sample or the place, time and circumstances under which the research was conducted. With regard to the lay of the land, it is entirely possible that reasonable people would come up with different results than those presented here. As previously mentioned, public administration is concerned with relationships and with policy development and implementation. Competing interests and differences of opinion must be handled in a

pragmatic way so that the business of government can be accomplished. Information, gathered and presented in a systematic way, is an important factor in the process of governance. The following tables provide a rough sketch of the survey results.

Table 6.1 Awareness of Preparedness Issues

<u>PREPAREDNESS ISSUES</u>	<u>AWARE</u>
<b>PLANS</b>	
<b>Emergency Operations Plans</b>	...nearly half
<b>Plans for search and rescue</b>	...one third
<b>Plans for emergency evacuation</b>	...one third
<b>Plans for emergency shelters</b>	...four in ten
<b>PLANNING</b>	
<b>Process of emergency planning</b>	...one third
<b>Multiple hazards approach</b>	...two in ten
<b>Efforts to solicit public input</b>	...one in ten
<b>Efforts to involve local media</b>	...two in ten
<b>Efforts to obtain planning grants</b>	...one in ten
<b>COORDINATION AND MECHANISMS</b>	
<b>Emergency Coordinator</b>	...nearly half
<b>Emergency Operations Center</b>	...one third
<b>Resource stockpiling efforts</b>	...two in ten
<b>Emergency warning systems</b>	...one half
<b>Reciprocal, inter-local agreements</b>	...one quarter
<b>Mutual aid agreements</b>	...three in ten
<b>Coordination with hospital and medical units</b>	...three in ten
<b>OUTREACH, TRAINING &amp; EXERCISE</b>	
<b>Public education programs</b>	...three in ten
<b>Hazard awareness programs</b>	...one third
<b>Training for citizens</b>	...two in ten
<b>Training for officials and departments</b>	...four in ten
<b>Training for businesses and private organizations</b>	...one in seven
<b>Participation in state and federal training</b>	...one quarter
<b>Full-scale disaster simulation exercises</b>	...one third
<b>Multi-jurisdictional disaster simulation exercises</b>	...two in ten

Table 6.2 Concern for Preparedness Issues

<u>PREPAREDNESS ISSUES</u>	<u>VERY CONCERNED</u>
<b>PLANS</b>	
<b>Emergency Operations Plans</b>	...half
Plans for <b>search and rescue</b>	...four in ten
Plans for <b>emergency evacuation</b>	...over half
Plans for <b>emergency shelters</b>	...over half
<b>PLANNING</b>	
Process of <b>emergency planning</b>	...one third
<b>Multiple hazards approach</b>	...four in ten
Efforts to solicit <b>public input</b>	...three in ten
Efforts to involve <b>local media</b>	...one third
Efforts to obtain <b>planning grants</b>	...three in ten
<b>COORDINATION AND MECHANISMS</b>	
<b>Emergency Coordinator</b>	...nearly half
<b>Emergency Operations Center</b>	...one third
<b>Resource stockpiling efforts</b>	...one quarter
<b>Emergency warning systems</b>	...two thirds
<b>Reciprocal, inter-local agreements</b>	...one quarter
<b>Mutual aid agreements</b>	...one third
<b>Coordination with hospital and medical units</b>	...nearly half
<b>OUTREACH, TRAINING &amp; EXERCISE</b>	
<b>Public education programs</b>	...half
<b>Hazard awareness programs</b>	...half
<b>Training for citizens</b>	...nearly half
<b>Training for officials and departments</b>	...over half
<b>Training for businesses and private organizations</b>	...four in ten
Participation in <b>state and federal training</b>	...four in ten
<b>Full-scale disaster simulation exercises</b>	...four in ten
<b>Multi-jurisdictional disaster simulation exercises</b>	...one third

Table 6.3 Attitudes Toward Mitigation Issues

<u>MITIGATION ISSUES</u>	<u>FAVOR &amp; STRONGLY FAVOR</u>
<b>POLICIES</b>	
<b>Land use zoning</b> to reduce exposure	...eight in ten
<b>Zero growth policies</b> to reduce exposure	...two thirds
<b>Codes, statutes, regulations</b> to reduce exposure	...eight in ten
<b>State-wide building codes</b>	...six in ten
<b>ACTIVITIES AND FUNCTIONS</b>	
Commissioning <b>geophysical studies</b>	...six in ten
<b>Retrofitting public buildings</b>	...two thirds
<b>Strengthening potential evacuation shelters</b>	...two thirds
<b>Debris and sediment clearing</b> programs	...nearly nine in ten
<b>Condemnation or purchase of property</b>	...over half
<b>TOOLS</b>	
Mitigation-oriented <b>public education</b>	...three quarters
Mitigation-oriented <b>technical assistance</b>	...seven in ten
Mitigation-oriented <b>loans</b>	...four in ten
Mitigation-oriented <b>grants</b>	...over half
Mitigation-oriented <b>tax deductions and credits</b>	...six in ten

Table 6.4 Attitudes Toward Mitigation Issues

<u>MITIGATION ISSUES</u>	<u>AGREE AND STRONGLY AGREE</u>
<b>POLICIES</b>	
<b>Mandatory notification of land's hazard proneness</b>	...eight in ten
<b>Hazard impact and mitigation statements</b>	...eight in ten
<b>ACTIVITIES AND FUNCTIONS</b>	
<b>Hazard and risk analysis is essential</b>	...three quarters
<b>Hazard and risk analysis should occur annually</b>	...six in ten
<b>Vulnerability profile reported in public forum</b>	...eight in ten
<b>Hazardous materials monitoring essential</b>	...eight in ten
<b>Hazardous materials reporting essential</b>	...eight in ten
<b>CONCEPTS</b>	
<b>Private sector primarily responsible for mitigation</b>	...two thirds
<b>Local government should share cost of mitigation</b>	...four in ten
<b>Economics more important than public safety and health</b>	...one in ten
<b>Individual choice more important than public safety and health</b>	...one in ten
<b>Mitigation efforts consider both natural and man-made hazards</b>	...eight in ten
<b>Pay more attention to mitigation than preparedness</b>	...four in ten

General Conclusions

First and most obvious is the fact that a project of this magnitude would be greatly enhanced if commissioned or officially sanctioned by the government leadership. The level of cooperation would be enhanced resulting in a greater availability of information, written and verbal. In addition, the survey samples would be larger and more meaningful.

Many of the concepts are particularly complex. Even if the participant is knowledgeable of emergency management there is a danger that different languages are being spoken or that the parties are not considering the issues at the same depth. Examples would be when speaking about the emergence phenomenon or about mitigation

responsibilities. In any event, great care should be taken to assure that common understandings are achieved or that the results are discounted when presented.

The use of seasoned interviewers would help with the complexity issue. In addition, seasoned interviewers would be more effective directing structured interviews along the lines of questioning and keeping focus. Focused interviews result in more effective retrieval of information for presentation and for follow up.

The lines of questioning in the first research question reveal as many questions as they answer. Those revealed are deeper and more complex. Often they are the result of conflicting information provided by different sources. This is a healthy by-product of inquiry. It is through examining and discussing the issues and items of pre-disaster emergency management that shortcomings are uncovered and dealt with. The alternative leads to results that could have been prevented.

Another product, perhaps the primary product, of this research is the set of conceptual frameworks for exploring a local jurisdiction's pre-disaster emergency management status and describing its understandings and beliefs about issues inherent to the pre-disaster phases. While the specific results of this study cannot be generalized the tools of the research can be. In lieu of any other method for assessing pre-disaster emergency management at the local level in this manner the frameworks used here were highly effective throughout the life of the project. They provided organization in information gathering and in presenting the results of the inquiry.

## APPENDIX A

### STRUCTURED INTERVIEW QUESTIONS

- 1 Have there been any hazard onsets, disasters or major emergencies in your jurisdiction in recent history?
- 2 Have things changed with regard to emergency management as a result?
- 3 Can you tell me about any hazard, vulnerability and risk assessment that is conducted? For instance methodologies, frequency, results.
- 4 How is the information used? For instance, for master planning or other policy making.
- 5 Is the information shared with the public in any formal manner?
- 6 What are the hazards about which this jurisdiction is concerned?
- 7 Do you believe that an appropriate balance in emphasis has been struck with regard to natural versus man-made technical hazards?
- 8 Is local control of an emergency situation different depending upon the type of hazard (natural v. man-made) because of different authorities, expertise?
- 9 Have you ever accessed any planning grants from DEM or FEMA?
- 10 How has the Emergency Operations Plan and its components been evaluated? For instance exercises.
- 11 Have deficiencies or problems been detected, identified? For instance, with the EOP itself, the emergency management system, personnel, equipment, etc.
- 12 Have revisions to the EOP been made as a result of plan evaluation?
- 13 Would you consider the plan itself or the process of planning, developing relationships, training, and exercising as more important?
- 14 What phase (mitigation, preparedness, response, recovery) do give the most attention or place the greatest importance? How about the elected leadership?
- 15 Would you agree with the contention that local government, especially elected officials, assign emergency management a lower priority than other issues?
- 16 What hazard mitigation objectives have been pursued, such as prevention, avoidance, or strengthening?
- 17 What mitigation measures have been used or proposed to those ends?
- 18 Do you see mitigation as particularly complex? (Because many of the activities are the responsibility of a number of different government departments) (Because lack of capacity or willingness by political leaders to take action on policies)
- 19 Who should bear the cost of mitigating hazards? How is a balance to be retained between public responsibility and individual freedom?
- 20 Does the jurisdiction have evacuation procedures and maps? Are they current?
- 21 Are schools the primary form of temporary shelter?
- 22 Please tell me whether each of the following is active or not active in local emergency management efforts:
  - city council/commissioners' court
  - mayor/judge
  - media
  - fire

## Appendix A Structured Interview Questions

planning department  
public works  
transportation or road department  
law enforcement  
red cross  
chamber of commerce  
conservation groups  
high risk residents  
leading industries  
construction firms  
land developers  
farmers/ ranchers  
political party leaders  
merchants  
banks  
insurance companies  
homeowner's associations  
hospitals  
long-term care facilities

- 23 Which of these groups or persons would it be important to have on your side?
- 24 Which of these groups are you in contact with? How regularly?
- 25 Is there any great initiator, driver?
- 26 Have you found that policy makers often make non-decisions with regard to emergency management. For instance, because it is more politically acceptable gamble that a hazard will not happen than incur long-term costs of mitigation and preparedness measures (even if greater costs later). Strong tendency to discount the future costs of natural disaster. ("Not on my watch")
- 27 What effect has increased national media attention to emergencies had on local efforts?
- 28 Are there adequate monitoring and surveillance programs for radiological hazards and hazardous materials?
- 29 How about notification procedures?
- 30 Is hospital "disaster linkage" adequate?
- 31 Has there been an evaluation of resources (human and material) available for emergency management?
- 32 Are there adequate resources on standby?
- 33 Are you confident in the current Emergency Operations Center's status?
- 34 Do you believe there are adequate relationships with vital community organizations?
- 35 Are you satisfied with existing inter-jurisdictional assistance and mutual-aid agreements?
- 36 Are there any unresolved jurisdictional issues?
- 37 Are there adequate warning systems in place? For instance, specific about the danger, what to do, who is being warned, issued by all possible sources, and based on previous education?
- 38 Do you find that people pay attention to warning systems?

- 39 Have any incentives that will enhance citizen compliance with warnings been identified and incorporated?
- 40 What form have public education and awareness taken? For instance, brochures, calendars, maps, media?
- 41 Have piggybacking techniques been used? For instance, using hunting and fishing licenses, boat and RV registrations, telephone books.
- 42 What are the most important messages to get across to the public?
- 43 What disaster-related developmental activities have you and other essential officials been involved in?
- 44 How much public debate and discussion occurs with regard to emergency management?
- 45 How often are exercises undertaken?
- 46 Has the jurisdiction ever participated in a multi-jurisdictional simulated emergency operation exercise?
- 47 Do you see the emergence phenomenon as good or bad?
- 48 Should emergence be prevented or handled in another way?
- 49 In your jurisdiction, is there a need for a distinct Emergency Coordinator job with its own title or is joint responsibility feasible?
- 50 Are there any provisions for reconstruction priorities in the wake of a disaster?

## APPENDIX B

### POTENTIAL SURVEY PARTICIPANTS BY GROUP AND SUB-GROUP

#### COMMUNITY ORGANIZATIONS

##### Hospital (1)

1 - McKenna Memorial Hospital Executive Director/CEO

##### Long-term care (6)

1 - Hill Country Mental Retardation Services Director  
2 - River Gardens Inc., (ICF-MR) Owner/Operator  
3 - Colonial Manor Care Center (Nursing Home) Director  
4 - Eden Home Inc., (Nursing Home) Director  
5 - Kirkwood Manor (Nursing Home) Director  
6 - The Arboretum of New Braunfels (Nursing Home) Director

##### Mental Health provider (1)

1 - Hill Country Mental Health Services Director

##### Media (2)

1 - New Braunfels Herald Zeitung (Newspaper) Publisher/Editor  
2 - KGNB/KNBT (AM/FM Radio station) General Manager

##### Schools (28)

1 - Comal Independent School District (CISD) Dir. Transportation & Safety  
2 - CISD: Goodwin Primary Principal  
3 - CISD: Rahe Primary Principal  
4 - CISD: Bill Brown Elementary Principal  
5 - CISD: Comal Elementary Principal  
6 - CISD: Frazier Elementary Principal  
7 - CISD: Mountain Valley Elementary Principal  
8 - CISD: Canyon Intermediate Principal  
9 - CISD: Mountain Valley Intermediate Principal  
10 - CISD: Arlon Seay Intermediate Principal  
11 - CISD: Canyon Middle Principal  
12 - CISD: Smithson Valley Middle Principal  
13 - CISD: Spring Branch Middle Principal  
14 - CISD: Comal Leadership Principal  
15 - CISD: Canyon High Principal  
16 - CISD: Smithson Valley High Principal  
17 - CISD: Bulverde Elementary Principal  
18 - New Braunfels Ind. School District (NBISD) Dir. Transportation & Safety  
19 - NBISD: New Braunfels High Principal  
20 - NBISD: New Braunfels Middle Principal

21 - NBISD: Oakrun School	Principal
22 - NBISD: Carl Schurz Elementary	Principal
23 - NBISD: Memorial Elementary	Principal
24 - NBISD: Seele Elementary	Principal
25 - NBISD: Lamar Primary	Principal
26 - NBISD: Lone Star Primary	Principal
27 - NBISD: Memorial Primary	Principal
28 - NBISD: Ombudsman Alternative	Principal

## American Red Cross (1)

1 - New Braunfels Office	Director
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## ELECTED OFFICIALS

## County Commissioner's Court (5)

1 - Comal County	Judge
2 - Comal County Pct. # 1	Commissioner
3 - Comal County Pct. # 2	Commissioner
4 - Comal County Pct. # 3	Commissioner
5 - Comal County Pct. # 4	Commissioner

## County Constables (4)

1 - Comal County Pct. # 1	Constable
2 - Comal County Pct. # 2	Constable
3 - Comal County Pct. # 3	Constable
4 - Comal County Pct. # 4	Constable

## City Council (7)

1 - New Braunfels	Mayor
2 - New Braunfels District # 1	Council Member
3 - New Braunfels District # 2	Council Member
4 - New Braunfels District # 3	Council Member
5 - New Braunfels District # 4	Council Member
6 - New Braunfels District # 5	Council Member
7 - New Braunfels District # 6	Council Member

## Appendix B Potential Survey Participants by Group and Sub-Group

### PUBLIC OFFICIALS

#### Emergency Coordinators (3)

1 - Comal County	Emergency Coordinator <sup>1</sup>
2 - New Braunfels	Emergency Coordinator <sup>2</sup>
3 - New Braunfels	Assistant Coordinator <sup>3</sup>

#### Law Enforcement (17)

1 - Comal County Sheriff's Department	Sheriff <sup>4</sup>
2 - Comal County Sheriff's Department	Chief Deputy
3 - Comal County Sheriff's Department	Patrol Lieutenant
4 - Comal County Sheriff's Department	Patrol Sergeant
5 - Comal County Sheriff's Department	Patrol Sergeant
6 - Comal County Sheriff's Department	Patrol Sergeant
7 - New Braunfels Police Department	Chief
8 - New Braunfels Police Department	Patrol Lieutenant
9 - New Braunfels Police Department	Patrol Supervisor
10 - New Braunfels Police Department	Patrol Supervisor
11 - New Braunfels Police Department	Patrol Supervisor
12 - New Braunfels Police Department	Patrol Supervisor
13 - New Braunfels Police Department	Patrol Supervisor
14 - New Braunfels Police Department	Patrol Supervisor
15 - New Braunfels Police Department	Patrol Supervisor
16 - New Braunfels Police Department	Patrol Supervisor
17 - New Braunfels Police Department	Patrol Supervisor

#### Fire/Emergency Medical Services<sup>5</sup> (9)

1 - Bracken Volunteer Fire Dept. (Comal County)	Fire Chief
2 - Bulverde Area Fire Department (Comal County)	Fire Chief
3 - Canyon Lake Vol. Fire Dept. (Comal County)	Fire Chief
4 - Spring Branch Vol. Fire Dept. (Comal County)	Fire Chief
5 - Bulverde/Spring Branch EMS (Comal County)	Administrator
6 - Canyon Lake EMS (Comal County)	Administrator
7 - New Braunfels Fire Station # 1	Battalion Chief
8 - New Braunfels Fire Station # 2	Battalion Chief
9 - New Braunfels Fire Station # 3	Battalion Chief

<sup>1</sup> The Comal County Fire Marshall is designated Emergency Coordinator by the County Judge.

<sup>2</sup> The New Braunfels Fire Chief is designated Emergency Coordinator by the Mayor.

<sup>3</sup> This position is devoted exclusively to emergency management.

<sup>4</sup> The Sheriff is an elected official but better classified here.

<sup>5</sup> New Braunfels Emergency Medical Services is part of the Fire Department Structure.

**County Officials (4)**

1 - Comal County Environmental Enforcement	Enforcement Officer
2 - Comal County Road Department	Engineer <sup>6</sup>
3 - Comal County Extension Service	Director
4 - Comal County Public Health Department	Director

**City Officials (6)**

1 - New Braunfels Engineering and Streets	City Engineer
2 - New Braunfels Planning Department <sup>7</sup>	Planning Director
3 - New Braunfels City Manager	City Manager
4 - New Braunfels Parks Department	Director
5 - New Braunfels Main Street Project	Director
6 - New Braunfels Airport	Manager

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<sup>6</sup> This position is also in charge of the environmental health department.

<sup>7</sup> Also in charge of code enforcement and health inspection.

## APPENDIX C

### QUESTIONNAIRE WITH RESPONSE FREQUENCIES

Note: Actual survey was 8 pages in landscape format. Absolute values and N-values added for presentation.

Key: Section 1: N = Number of respondents.  
Y = Yes responses.  
N = No responses.  
# = Item number.

Section 2: N = Number of respondents.  
V = Very concerned responses.  
SW = Somewhat concerned responses.  
N = Not concerned responses.  
# = Item number.

Section 3: N = Number of respondents.  
SF = Strongly favor responses.  
F = Favor responses.  
NO = No opinion responses.  
O = Oppose responses.  
SO = Strongly oppose responses.  
# = Item number.

Section 4: N = Number of respondents.  
SA = Strongly agree responses.  
A = Agree responses.  
NO = No opinion responses.  
D = Disagree responses.  
SD = Strongly disagree responses.  
# = Item number.

#### QUESTIONNAIRE: ISSUES OF PRE-DISASTER EMERGENCY MANAGEMENT

Hello, my name is Jeffrey Phillips. I am a graduate student at Southwest Texas State University. As part of my research I am conducting a survey about issues of pre-disaster emergency management in the city of New Braunfels and Comal County.

You were selected as an essential participant because the work with which you are involved places you in an important position with regard to emergency management.

Before starting, it is important to explain the following concepts for the purpose of clarity:

- **HAZARDS** are best classified as natural (e.g., tornadoes, ice storms, hurricanes, wild fire, flood, earthquake, etc.) and man-made (e.g., oil spills, chemical releases, contamination, riot, terrorist acts, military action, and others).
- **DISASTERS** are large-scale events associated with the impact of a hazard, which lead to increased mortality, illness and/or injury, and destroyed or disrupted livelihoods. Disaster events affect the people of an area in such a way that they and/or outsiders perceive it as being exceptional and requiring external assistance for recovery.
- **EMERGENCY MANAGEMENT** is the effort to prevent, plan for, respond to, and recover from disasters in a coordinated way.
- **PREPAREDNESS** consists of planning, training, exercising, and other activities and tools employed in advance of disaster.
- **MITIGATION** consists of actions taken to prevent or alleviate the impact of a hazard event.

SECTION I: ANSWER FOR THE JURISDICTION WITH WHICH YOU ARE INVOLVED.

In this section please indicate if you are aware of the item or issue identified by answering 'yes' or 'no'. By answering 'yes', you are saying that you have direct knowledge of and are informed of current developments with regard to the item or issue.

ARE YOU AWARE OF NEW BRAUNFELS'/COMAL COUNTY'S.....	N	Y	N	#
---	---	---	---	---

A. PLANS

..... <u>Emergency Operations Plan</u> ?	43	18	21	1
.....plans for <u>search and rescue</u> ?	43	12	27	2
.....plans for <u>emergency evacuation</u> ?	43	13	26	3
.....plans for establishing <u>emergency shelters</u> ?	43	17	22	4

B. PLANNING

..... <u>process of emergency planning</u> ?	43	13	26	5
..... <u>multiple hazards approach</u> to emergency planning?	43	8	31	6
.....efforts to solicit <u>public input</u> into the emergency planning process?	43	5	34	7
.....efforts to <u>involve the local media</u> in emergency planning?	43	9	30	8
.....efforts to obtain emergency-related <u>state and federal emergency planning grants</u> ?	43	4	35	9

C. COORDINATION & MECHANISMS

..... <u>Emergency Coordinator</u> ?	43	18	21	10
..... <u>Emergency Operations Center</u> ?	43	12	27	11
.....emergency-related <u>resource stockpiling efforts</u> ?	43	8	31	12
..... <u>emergency warning systems</u> ?	43	19	20	13
.....emergency-related <u>reciprocal, inter-local agreements</u> ?	43	10	29	14
.....emergency-related <u>mutual aid agreements</u> ?	43	11	28	15
.....efforts to <u>coordinate emergency planning with local hospital and medical units</u> ?	43	11	28	16

D. OUTREACH, TRAINING & EXERCISE

.....emergency-related <u>public education programs</u> ?	43	11	27	17
..... <u>hazard awareness programs</u> ?	43	13	26	18
..... <u>training efforts to enhance the emergency preparedness of citizens</u> ?	43	8	31	19
..... <u>training efforts to enhance the emergency preparedness of its officials and departments</u> ?	43	16	23	20
..... <u>training efforts to enhance the emergency preparedness of business and other private organizations</u> ?	43	6	33	21
..... <u>participation in training programs</u> provided by state and federal emergency management agencies?	43	9	30	22
..... <u>full-scale disaster simulation exercises</u> to assess emergency planning?	43	14	25	23
.....participation in <u>multi-jurisdictional disaster simulation exercises</u> ?	43	8	31	24

## Appendix C Questionnaire with Response Frequencies

### SECTION 2: ANSWER FOR THE JURISDICTION WITH WHICH YOU ARE INVOLVED.

In this section please rate your concern with the item or issue identified by answering 'very concerned', 'somewhat concerned', or 'not concerned'. Here 'concern' means involvement with, interest in, or importance applied to.

ARE YOU VERY CONCERNED, SOMEWHAT CONCERNED, OR NOT CONCERNED WITH NEW BRAUNFELS'/ COMAL COUNTY'S.....	N	V	SW	N	#
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#### A. PLANS

..... <u>Emergency Operations Plan</u> ?	43	20	16	3	1
.....plans for <u>search and rescue</u> ?	43	15	16	8	2
.....plans for <u>emergency evacuation</u> ?	43	22	13	4	3
.....plans for establishing <u>emergency shelters</u> ?	43	22	15	2	4

#### B. PLANNING

..... <u>process of emergency planning</u> ?	43	14	20	5	5
..... <u>multiple hazards approach</u> to emergency planning?	43	16	16	7	6
.....efforts to solicit <u>public input</u> into the emergency planning process?	43	11	21	7	7
.....efforts to <u>involve the local media</u> in emergency planning?	43	13	18	8	8
.....efforts to obtain emergency-related <u>state and federal emergency planning grants</u> ?	43	11	14	14	9

#### C. COORDINATION & MECHANISMS

..... <u>Emergency Coordinator</u> ?	43	17	15	7	10
..... <u>Emergency Operations Center</u> ?	43	14	16	9	11
.....emergency-related <u>resource stockpiling</u> efforts?	43	10	19	10	12
.....emergency <u>warning systems</u> ?	43	25	9	5	13
.....emergency-related <u>reciprocal, inter-local agreements</u> ?	43	11	19	9	14
.....emergency-related <u>mutual aid agreements</u> ?	43	14	15	10	15
.....efforts to <u>coordinate emergency planning with local hospital and medical units</u> ?	43	18	13	8	16

#### D. OUTREACH, TRAINING & EXERCISE

.....emergency-related <u>public education programs</u> ?	43	20	12	7	17
..... <u>hazard awareness programs</u> ?	43	19	12	8	18
..... <u>training efforts</u> to enhance the emergency preparedness of <u>citizens</u> ?	43	18	13	8	19
..... <u>training efforts</u> to enhance the emergency preparedness of its <u>officials and departments</u> ?	43	21	12	6	20
..... <u>training efforts</u> to enhance the emergency preparedness of <u>business and other private organizations</u> ?	43	15	16	8	21

ARE YOU VERY CONCERNED, SOMEWHAT CONCERNED, OR NOT CONCERNED WITH NEW BRAUNFELS'/ COMAL COUNTY'S.....	N	V	SW	N	#
..... <u>participation in training programs</u> provided by state and federal emergency management agencies?	43	17	15	7	22
..... <u>full-scale disaster simulation exercises</u> to assess emergency planning?	43	16	16	7	23
..... <u>participation in multi-jurisdictional disaster simulation exercises</u> ?	43	13	16	10	24

SECTION 3:

DO YOU STRONGLY FAVOR, FAVOR, HAVE NO OPINION ABOUT, OPPOSE, OR STRONGLY OPPOSE.....	N	SF	F	NO	O	SO	#
--	---	----	---	----	---	----	---

A. POLICIES

.....local government utilization of <u>land use zoning</u> to reduce citizen exposure to hazards.	43	15	19	8	1	0	1
.....local government utilization of <u>zero-growth policies</u> on high hazard zones to reduce citizen exposure to hazards.	43	10	19	12	2	0	2
.....local government use of <u>building codes, statutes, and regulations</u> to enhance the hazard resistance of new structures.	43	18	15	10	0	0	3
.....the institution of <u>state-wide building codes</u> to enhance the hazard resistance of new structures.	43	17	9	14	2	1	4

B. ACTIVITIES/FUNCTIONS

.....local government commissioning <u>geophysical studies</u> to identify high hazard zones.	43	8	18	13	3	1	5
.....local government <u>retrofitting public buildings</u> to enhance their hazard resistance.	43	8	21	10	4	0	6
.....local government <u>strengthening structures</u> that are identified for use as <u>evacuation shelters</u> .	43	18	11	14	0	0	7
.....local government implementation of <u>programs to clear debris and sediment</u> from floodways.	43	16	21	6	0	0	8
.....local government use of <u>condemnation and purchase of property</u> to reduce citizen exposure to hazards.	43	6	17	15	4	1	9

C. TOOLS

.....local government implementation of <u>public education campaigns</u> to enhance community awareness of <u>hazard mitigation issues</u> .	43	13	19	11	0	0	10
.....local government offering <u>mitigation-oriented technical assistance</u> to encourage hazard resistance actions by private individuals/ businesses.	43	11	19	12	1	0	11

## Appendix C Questionnaire with Response Frequencies

DO YOU STRONGLY FAVOR, FAVOR, HAVE NO OPINION ABOUT, OPPOSE, OR STRONGLY OPPOSE....	N	SF	F	NO	O	SO	#
.....local government offering <u>mitigation-oriented loans</u> to encourage hazard resistance actions by private individuals/ businesses.	43	5	14	17	7	0	12
.....local government offering <u>mitigation-oriented grants</u> to encourage hazard resistance actions by private individuals/ businesses.	43	7	16	13	5	2	13
.....local government <u>mitigation-oriented tax deductions/credits</u> to encourage hazard resistance actions by private individuals/ businesses.	43	9	18	13	3	0	14

### SECTION 4:

DO YOU STRONGLY AGREE, AGREE, HAVE NO OPINION ABOUT, DISAGREE, OR STRONGLY DISAGREE THAT.....	N	SA	A	NO	D	SD	#
<b>A. POLICIES</b>							
.....it should be mandatory that property purchasers and users be notified of land's hazard proneness.	43	24	12	7	0	0	1
.....sub-division development applications should include hazard impact and hazard mitigation statements.	43	22	13	8	0	0	2
<b>B. ACTIVITIES/FUNCTIONS</b>							
.....hazard and risk analysis are essential functions of local government.	43	14	18	11	0	0	3
.....hazard and risk analysis, by local government, should occur annually.	43	8	17	17	1	0	4
.....the vulnerability profile that results from hazard and risk analysis should be reported in a public forum.	43	12	21	10	0	0	5
.....hazardous materials monitoring and surveillance programs are essential functions of local government.	43	14	20	9	0	0	6
.....it is essential that business and industry report hazardous materials inventories to local government.	43	18	18	7	0	0	7
<b>C. CONCEPTS</b>							
.....private individuals and businesses bear primary responsibility for mitigating hazards.	43	11	18	12	2	0	8
.....local government should share the cost of mitigating hazards with private individuals and businesses.	43	3	16	13	6	5	9
.....when considering building codes, regulations, and zoning, economic considerations are more important than public safety & health concerns.	43	2	2	12	13	14	10
.....when considering building codes, zoning, and regulations, individual choice is more important than public safety and health concerns.	43	2	3	12	12	14	11
.....local government mitigation efforts should take into consideration both man-made and natural hazards.	43	10	23	9	1	0	12
.....local government should pay more attention to mitigating the effects of hazards than to preparing the response to hazard onset.	43	5	12	14	11	1	13

## APPENDIX D

### DEVELOPING THE QUESTIONNAIRE

As a result of pre-testing and the call for feedback and suggestions, two substantial changes were made to the initial draft questionnaire. The first related to length. The draft version was eight pages long with thirty seven questions on mitigation and twenty four on preparedness. Each of the preparedness questions was asked three ways; "are you interested, are you aware, and is it important to you." The total number of questions was one hundred and nine. In pre-testing, the average time to complete a face-to-face survey was forty minutes. Fitting all of the questions on eight pages made the questionnaire very dense. It was not in a format that could be used for participant-directed response. The final version of the questionnaire has twenty seven mitigation-oriented questions and twenty four questions on preparedness, each asked in two ways. The new total number of questions is seventy five, thirty four fewer than on the draft version. Pre-testing the current version lead to an average of ten to fifteen minutes completion time. A desirable by-product of shortening the device is that, while still on eight pages, it looks far less forboding. It is substantially less dense and there is plenty of room for participants to use it, with very large boxes in which to place check marks.

The second change came as a result of suggestions from a few academics in the field of emergency management. While the length problem was recognizable through pre-testing the next suggestion would never have come to mind. It was suggested that the preparedness issues be placed ahead of the mitigation issues. While a seemingly minor change it had a dramatic effect. The questionnaire was more participant friendly because lay-persons could easily understand the preparedness issues even if they are not directly involved in emergency management. This had the effect of peaking interest in the first section making it easier to complete and more likely that the participant would continue. All thirty three participant-directed and all ten face-to-face surveys were completed fully.

## APPENDIX E SURVEY SCORE SHEET

RESPONDENT: \_\_\_\_\_

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Y = 1  
N = 0

### SECTION 2

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V.C. = 2  
S.C. = 1  
N.C. = 0

### SECTION 3

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S.F. = 2  
F = 1  
N.O. = 0  
O = -1  
S.O. = -2

### SECTION 4

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S.A. = 2  
A = 1  
N.O. = 0  
D = -1  
S.D. = -2

## APPENDIX F

### NEW BRAUNFELS STRUCTURED INTERVIEW TRANSCRIPT

P = Philip Baker, New Braunfels Fire Chief/Emergency Coordinator  
C = Carol Edgett, Assistant Coordinator Emergency Management  
J = Jeff Phillips, Graduate Student -- Southwest Texas State University

Tuesday, 27 January, 1998 Office of the Fire Chief

J: Have there been any hazard onsets, disasters or major emergencies in your jurisdiction in recent history?

P: Probably the biggest things we've had have been a couple of flood or near flood incidents. When was it Carol, a couple of years ago when we had the Guadalupe flood on memorial day?

C: It was two years ago, it flooded on the Guadalupe and we had some campers that were down there. They lost their camping gear and there were a couple of cars that were washed away.

J: Was this west of town

P: No, it was north, or northwest, toward Canyon Lake. In fact, the circumstances were very similar to the '72 flood, I don't know if you know about that?

J: My research hasn't gone that far back.

P: Well, in 1972, they had a significant rain event that was fairly long-lived. It was like a week's worth of rain I think over a period of time over the watershed between here and the lake. Then one night, or one day, it rained really hard for a long time and the ground was already saturated. The watershed was then draining into the Guadalupe and the Dry Comal, Alligator creek and all the watershed areas. There were some back-up areas that were blocked.

J: Debris?

P: Yes, and so the water built up and then broke loose and a large body of water then came down the Dry Comal into the Comal River. At the same time all the rain between the Lake and here had been falling. The Guadalupe had been rising and at that point was at flood stage. Then, when all that water from the Dry Comal came down into the Comal it all came together around Landa Park. The water in the Guadalupe had actually pushed, caused the Comal to back up and then the water rose. How many people were killed in that?

Appendix F New Braunfels Structured Interview Transcript

C: I think we lost 17, 17 were killed. There were several injuries. Bleeders' creek out here was where the major concentration of the rainfall was. What it was, was a massive concentration of rainfall below the dam. It started coming down which caused all the problems because the creeks had never been kept clean.

J: So, is that what it would take? Because I guess in June, 1997 the city really didn't get any damage from the flooding in western Comal County. So it would take water on this side of the dam?

C: No, it depends on where it rains and the concentration.

P: On Memorial Day a couple of years ago, the rainfall was, well, we hadn't had a significant amount of rain to saturate the ground. We had a significant rain event right over that watershed and the area and the Guadalupe actually rose 10 or 12 feet or something like that just in a matter of hours. It was at night and at that time we had no early warning devices or anything. Since then we have an agreement with the county and GBRA and some other folks to install some early warning devices on the Guadalupe. Then we had nothing and all of a sudden the water was up. People were just unaware. We weren't aware of it. We weren't ready for it. It just happened, quickly, so, that could have been devastating. Luckily only a few pieces of equipment and stuff were washed away. There were a few people that were actually in the water but we didn't have to rescue anyone. It could have been very devastating that was probably the last time

C: We were very fortunate in June (1997) not experiencing the flooding. It was just a little bit over here and a little bit in Spring Branch and even out FM 1863. There was some there but we were very fortunate that we didn't have to deal with it. I have some documented information on the 1972 flood that I think you will find very interesting. It gives details on how many lives were lost and what actually caused the flooding.

P: You'll probably find that not a whole lot has changed since then.

J: That is the next question. Have things changed as a result of past events? You said there are some early warning systems coming in?

P: The early warning systems that we have paid for just this year, I think are going to be installed or have been installed. I'm not sure where it is right now. We were supposed to meet after the first of the year with the county and GBRA to find out what that process is. My understanding was that they will be locating those and installing those alarm devices.

J: Marshall Willman mentioned something about that the last time I spoke with him, but he didn't go into any details, who is coordinating that?

P: GBRA are the coordinators.

J: They're the authority for the river?

P: Yes, more or less.

C: Also, after the '72 flood what they did for mitigation was Bleeder Creek dam that was placed down here on the Borchers ranch to help hold back some of that water from that area that every thing drains. There are all these little inlets that drain into that one area in the creek and then it comes all down, and they built a dam out there to help stop some of that.

J: Is there any kind of systematic debris cleaning effort that is done for these dry creeks?

C: No, so much of it is outside the city so there's not much done inside the city other than just the regular cleaning of drains and stuff but not the creek beds.

P: And most of it, the greatest amount of it, is on private property so the county and the city, neither one, generally aren't going to go on private property to clean those things.

J: How about hazard, vulnerability and risk assessment, has that been done, is it done routinely.

C: We've kind of, on an annual basis, taken a look at what the hazards are and what we can try to do to mitigate some potential problems. There are not a lot of mitigation efforts, because of funding, that can be done at this time and other than the rivers we don't have a large potential for things like that. Now, we have the new construction coming through on I-35. We have that problem coming up and we also have the increased rail traffic coming through town. The rail traffic is supposed to double in the next five years.

P: So far we have not had any problems.

C: We do try to identify what our hazards are and try and project how we might address those. There is a lot of it that you just can't do any mitigation because we can't pick up the railroad and move it. We can't re-direct I-35 around the town to keep all that out of here either.

J: With your annual check that you do, how do you use that information, as far as policy making, or is it incorporated into the master plan at all, or any other way?

C: Not really. We've tried to use that information to review our plan and see how our plan will relate to these hazards and if the hazard has changed how we're going to address that.

J: Is the information shared with the public in any formal or informal manner?

## Appendix F New Braunfels Structured Interview Transcript

C: I've done a few little speaking engagements at civic organizations. There has not been a mass media event for emergency management but we try and keep our fire and police informed of the things that we're doing and take their roles into consideration of what we're doing but we try and just review the plan and keep it up. Now, the plan is available to any one any time. They can have access to it to review it.

J: We've talked about the possibility of flooding and about the I-35 and the rail. Would you say that's about the extent of the hazards that the jurisdiction is concerned about or are there any other natural events?

C: There are other natural events.

P: Tornadoes.

C: Tornadoes. Our ice storm that we had last January. We had severe ice that shut everything down. We were fortunate that we didn't have a severe ice storm that was causing a lot of downed power lines and people being without power and utilities. But hail storms and high winds are other hazards that we have around here because we have so many trees.

P: We have not suffered a tornado. We've had some high wind events that people thought were tornadoes or whatever, but as far as we could tell they weren't cyclonic. They were straight line winds, just heavy winds. We do have some hazardous materials kind of problems but not to the extent that the big cities have. We have some really minor hazardous materials.

C: Nothing that would incorporate evacuation and actually emergency management coming into play.

P: Probably the biggest thing we might have would be a chlorine leak from one of the industries around but other than that we have very few major hazardous materials types of things.

J: Do you believe there is an appropriate balance between the natural versus man-made hazards that are faced?

P: Probably. Yes, I'd say that it is fairly balanced. I don't think we're heavy in, if we're heavy anywhere it would probably be in flooding. That's probably the biggest hazard that we've got, I would imagine.

J: Since you haven't had any major events you may not know but, is local control of an emergency situation going to be different depending upon the type of hazard? Whether it's a natural event or a man-made event because of the different authorities involved, the EPA for example:

P: Probably not because in emergency management its kind of like, you start off with the small thing and you build on that. So we have a pretty good, because the fire department and police department are the primary first responders. Almost all emergencies, any emergency that happens that's where the structure of command or whatever is going to be built from. Now once you get to a certain extent, a certain point in the size of an incident and you open up the EOC then of course the overall command of the incident city-wide then falls on the Mayor and the City Council and City Manager. Because most events center around one specific area, like a major hazardous materials spill on a railroad or even a flood event, because it's going to be concentrated in a general area you're probably going to have command of the event take place at the site. Then, overall information, material supply kind of thing, all that done at the EOC, and public awareness and those kinds of things, but I think we have a pretty good handle on it.

C: The only difference I would say is when you activate the EOC depending upon the type of hazard you have and whether it is a hazardous materials spill or flooding would depend on what entities you would call to respond to the EOC. You're only going to call those that are needed to handle the situation and they would be different in both cases.

J: Has the city ever accessed any planning grants from either DEM or FEMA that are available?

C: For planning? I think the last grant they got was to build the building over here but those grants are hard to come by. Now, you have to have an actual occurrence before actual grant moneys are actually available.

J: They tend to follow disasters?

C: Yes, post-mitigation.

P: Once you have an incident then you plan for the next one. "We'll give you a little money to help you plan for the next one."

C: Unless there is an extreme, dire need and a history of a lot of problems.

J: In terms of the Emergency Operations Plan, how is it evaluated? For instance, there is something called MORT in the literature. There are a few different evaluation techniques but one of the major ones is through exercises, for evaluation purposes.

C: We do our annual exercise. We're required to have one full-scale. I was going to say actual occurrence. That was what we had this last time because we used the KKK rally as an actual occurrence. We had so many mutual-aid entities come in and assist with that because it was a civil disturbance. We do one full-scale and three functional exercises in the four year plan, and we're required to exercise every year at least once. We can have table-tops through the year if we want. That's one way to evaluate the plan. When we update our annexes you also have certain criteria from the state. They have a criteria list

## Appendix F New Braunfels Structured Interview Transcript

that you have to follow and you have to address all their requests for handling these things with the state. Once you get your annex updated it's sent in to your Regional Liaison Officer (RLO). Then it is sent into DEM in Austin and they review your plan and they either approve it or deny it. If they say it is not in compliance, they'll generally tell you what area you're not in compliance with and what issues you're not addressing in your annex. Then it comes back to you and you have to bring it up to date, and correct those problems.

P: A good example of that is, they require that you have a mass casualty part of your plan. Well, our mass casualty portion of our plan has always been pretty much, you know, EMS will respond and they'll take care of the problem. Well, last year Texas Department of Health said that they had to have a copy of your mass casualty part of your emergency plan. When we sent them ours they said, "errrrt, we've got to have much more than this, we've got to have..."

C: They wanted the actual SOPs and how you go down.

P: So Carol and I one afternoon sat in here and brainstormed a mass casualty plan, wrote it up and sent it in. I don't know why, I don't know if we were first, but we got rave reviews on this thing. It was really kind of strange but as things change or new things come up we update the plan or we'll revise it or add to it, whatever.

C: Now you understand that this plan here is just the basic guidelines of how the emergency management operation will work. Standard operating procedures and the detailed information is not in here. You don't want to lock your entities, like, what we did for TDH is something that's within the fire department to handle the EMS criteria. This (Basic Plan) addresses EMS in there but it does not have all the step-by-step procedures you would go through in handling a mass casualty event.

J: Those are available?

C: Those are separate entities. The police have there own. NBU has there own working plan of what their part of the plan is and what they do to handle their part of the situation.

J: You call those SOPs?

C: Yes, they're basically standard operating procedures.

P: We try to tell them, or to get them to understand that their SOPs for emergency management are really what their daily operation is with some expansion for the major emergencies. SOPs are something that you should operate with all the time.

C: You should be comfortable with them so that you don't have to go back and read your plan. "Well, in this instance we're supposed to do this but on a daily basis we do that." It should come as a second nature for you to just respond that way. You don't want to put

something in you plan that you can't do. A task that you don't have the resources or the manpower.

J: Of the four accepted phases of emergency management, what phase do you give the most attention or place the greatest importance on?

C: We've primarily, the preparedness, trying to be prepared for the event. We've tried to visualize and go ahead and follow the event on through for the response and the recovery portion, but our major is on the preparedness, being able to respond to that event.

J: What would you say the political leadership in town is most focused on?

C: That's yours.

P: I'm not sure they think much about it. My experience for the most part has been "oh no, not again." "Here you are again, do we have to spend another three hours once a year doing this." For the most part they don't think about it. Now, obviously, if there is an emergency and we're unable to respond or were unable to tell them how to respond that's going to be on us. I mean we're going to be responsible for any failures that happen and that's pretty much the way that we've had to operate. I think until a jurisdiction has a major problem, the elected officials, primarily, and a lot of the professionals too, (city management and the other departments) don't think about it and are not concerned about it. It's a one time thing that is overshadowed by daily minor emergencies and they're really not concerned about it until it happens. Then, of course, we have to coach them or deal with them at the time so I would say probably a very low priority. Low, low priority.

C: I don't think that's unusual. I'm the secretary for the South Central Emergency Management Association. In talking to other people in other jurisdictions it's pretty much out of sight out of mind until you have a crisis. They expect you to respond and they expect you to take care of the situation on hand. And if you don't then it gets really, really tense.

P: Oh yes.

C: And its not only related to how they feel, its funding and all the other criteria that goes to make emergency management work.

J: So it's the places such as the Mississippi river floodplain and San Francisco and the hurricane zones, where the political leaders pay the most attention?

P: Yes, the gulf coast, Houston, Beaumont, Baytown, the areas around the ship channels and things like that where they have major emergencies every day you know.

J: Two oil spills in a week and a half.

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P: Yes those kinds of things and so they really...

C: So it's an annual occurrence to have problems. Then they put it to the forefront. They say, okay. Like us, we haven't had a major since '72 so we're on the back burner. We still have to be prepared but we just kind of operate in the back scenes and try and stay up with that.

P: I guarantee you that the folks around Jarrell are going to have one of the most, best up to date. I mean for the next 5 to 10 years they will concentrate greatly on emergency management and early warning and those kinds of things. If they don't have another event it slides down like that, and I think that's kind of natural, because people don't want to think about disaster, you know.

C: It's just like your heating system going out in your home. It's a crisis, we have to take care of it now but once you get it fixed you think you're going to be okay for another 10 or 20 years.

J: This is kind of a philosophical question. As far as who should bear the cost of mitigating hazards, whether it be the public responsibility or whether it is truly a matter of individual choice. Talking about the creeks being on private property and such, but the philosophical question of who should bear the costs of mitigation, do you have any comments on that?

P: I think it should be borne by everybody who is involved or could be involved. Certainly people who own property that has major drainage areas through them need to be aware that what happens on their property effects people downstream and upstream. They should be responsible enough to take care of those problems. Keep the drains clear or whatever. On the other hand, I doubt if many property owners are going to spend the money to put in a dam, a retention dam or something like that. That happened out on Bleeders creek although I'll bet the Borchers provided something other than just the place to do it. I'm not sure who did, either the county or the state?

C: I don't remember.

P: In the area of train accidents I think the railroad has got to be responsible enough to try to mitigate those things as much as possible. There's no way in the world that you can prevent every accident but certainly they are aware that the possibility exists and try to take care of them. Maintain the tracks, maintain their equipment and things like that to the best of their ability. The same thing goes for the highway. Any road hazards that create problems, of course the Texas Department of Transportation should take care of those types of things. I think it's got to be both public and private. So many of the hazards that we have are privately created. The industries and things that have the hazardous materials as part of their normal operation have got to have containment for their fuel, pools and ways to contain spills and things like that. So I think it's got to be both. For the most part

I think it is. I doubt if the public is going to put a whole lot of money into companies, to help a company who spills lead based paint or something like that. They may end up having to clean it up like in San Antonio but...

C: When we have a hazardous materials spill and we have to respond we are able to charge those charges for that response back to that vendor. That's their responsibility to pay for cleaning up that spill.

J: How about evacuation procedures and maps for evacuation purposes, are those present?

C: Old, very old,

J: Both the procedures and the maps? Do you have maps?

C: The evacuation procedures I think are pretty much what we would do. As far as the maps, our maps are old. The city has grown so fast and the evacuation is one that we are looking at updating because we do need updated maps. We have had so many subdivisions come in and we have to stop and think how we are going to route this traffic around the city. Not only do we have that problem but with the construction of I-35 coming in it's going to impact us even greater for the next two to five years until they get everything finished through there. We are already going to have trouble with EMS and fire getting across the interstate. Traffic locks down now. We've never had that problem until the past couple of years so I cannot imagine what it's going to be like when they do the construction.

P: The changing of the frontage roads to the one-way frontage roads created some real problems for the first few weeks. Now I think everyone is pretty much used to it but we still have a problem where we only have two or three real places to cross under the freeway.

C: At certain times of the day FM 725 and I-35, and Route 46 and I-35 back up. I mean its backed both ways and it just creeps along and it takes you forever to get through those intersections.

P: Walnut St. under I-35, going out 46, there at the school, traffic is just terrible going into school.

C: I can attest to that, I live in Oak Run and sometimes it takes me anywhere from 10-20 minutes to get off of that sub-division.

P: So, yes, we have some problems with evacuation routes, or are going to have some problems with them or keeping up with them.

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C: We don't have arteries that actually go through the city. New Braunfels is very limited on access and accessibility. Sequin St. comes through but that's about the only one that goes all the way through the city. Otherwise you have to go around the Loop (337). It has all these little turns and it is very difficult because you've got the bridges on both ends of Sequin and Landa (streets) and trying to get through those is going to be very difficult.

J: As a follow-up to that, did that come up at the master plan proceedings at all? I attended those and tried to bring it up at the sessions I attended but it didn't go very far.

C: I think it has been mentioned in the master plan but there's already funding available and the bridge over here by Sonic, that's getting ready to happen, the underpass is going to be four lanes.

P: And the one over here at Landa Park is also going to get widened in the next few years.

C: There has also been talk about trying to get a cross town expressway that may or may not happen. You know when you look at having to take property in order to get these expressways across town it's very difficult.

P: Yes, we cannot even widen Walnut St. I mean good grief, they've been planning that for you know 20 years and they can't get the property to widen Walnut.

C: So the talk right now is, because we are growing so fast and traffic is getting so heavy, of creating Walnut one way. What do you put as the alternate route. We don't have anything that goes all the way through, so it's going to be a challenge.

P: Yes, our evacuation is really kind of complicated and so we're not, we don't have a real good handle on that I guess.

J: Are the schools the primary form of temporary shelter in the plan?

C: Pretty much, schools and churches. We do have some buildings such as the civic center that could suffice, Wurst hall too. Some of those buildings. But schools and churches are going to be their primary shelters.

P: Schools and churches have for the most part the largest enough facilities for sleeping, bathroom facilities and cooking facilities that are really the three things you need for any long term sheltering. Now, for overnight or something we could probably come up with quite a number of those kinds of things.

C: They do look at square feet per individual. You have to have so many square feet per individual in order to qualify for sheltering. The shelter will only hold so many people and after that they have to go to another site.

J: There are already standing agreements with the schools and churches?

C: Through Red Cross.

P: Red Cross handles all of our sheltering activities, we have an agreement with them.

J: Can you tell me whether or not the following entities/individuals are active or not active?

J: The City Council? P: Yes.

J: Mayor? P: Yes

J: The media? P: Yes. Would you consider any television in the media since there is nothing local? C: They do respond when we have incidents, they're always calling and wanting to know what's going on.

J: Fire obviously since you are the Emergency Coordinator. How about the planning department? P: Yes.

J: Public works, NBU? P: Our public works, our engineering department, streets and drainage. NBU is electric and water and sewer, and ENTEX is gas. Of course the telephone is Southwestern Bell, so public utilities are spread out all over the place, but for the most part they're all active.

J: So transportation and road are all in that mix, law enforcement? P: Yes.

J: You mentioned Red Cross.

J: How about the Chamber of Commerce? P: No. C: We haven't really gotten the Chamber into emergency management. P: Many of the members of the Chamber are involved based on other associations, but not the Chamber itself.

J: Conservation groups? P: No.

J: How about high risk residents? P: We have the hospital, MHMR, some of the nursing homes. Some of those are involved and I'm sure many of them would be involved if we invited them specifically. For the most part we have concentrated on the larger ones, such as the hospital primarily.

C: What we've tried to do when we exercise we include those entities that we need for that exercise and those people that would be in the EOC. That's basically what we're testing is our EOC operations. We're trying to reach out and do public awareness with these others. I did a speaking engagement for one of the home health care agencies to let them know what emergency management does and some of the civic groups. As far as actually being involved in the exercises and the operation, no, it's more of a public awareness for those types of entities.

J: So maybe some of the nursing homes, MHMR. I was thinking River Gardens they have group homes around town, they haven't necessarily made themselves involved? C: No.

J: Leading industries? C: We do have some leading industries that will support us if we have an occurrence, such as the Wal-Mart Distribution Center. Some of those, Dean Word, they're very supportive but not active, they do not participate, but they are there if we need them and they can handle the resources and supplies.

J: So it would be more in the post-event stages? C: It would be more in the response and recovery phases. P: The lumber yards and suppliers around town, we've

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contacted many of them to make them aware because in case of an incident where we need something we may commandeer it from some place. Wherever it's available and they pretty much know that.

J: So you would say the same thing for construction firms especially the larger established ones, is Dean Word a construction firm? P: Yes they're a major one C: They're doing the highway from San Antonio out here in the Shertz/Cibalo area.

J: How about land developers? C: No.

J: Farmers, ranchers? P: Some. The Borchers ranch, Dean Word ranch are the main ones. C: There again it's more a public awareness and the support group.

J: Political party leaders? P: Not that we know of

J: Merchants? C: More of a support thing but I haven't really gotten into the downtown group. Although, I think they would be willing to assist. We have the Main Street Manager and I think as far as volunteers they would respond.

J: How about the banks? P: Not specifically. We do have members of the, like Texas Commerce, we've had folks from Texas Commerce. It's the only one I can think of that we've had representatives from for anything that we've done. I know quite a number of people who work at some of the local banks, you know the managers and people like that, who are all in the volunteer mode and would more than help if we needed them.

J: Insurance companies? C: Insurance companies have assisted as far as fire but not specifically emergency management. We do get some materials donated through State Farm for the school programs, fire prevention programs but that was more for the fire prevention area. Should we have an actual occurrence or something like that the insurance companies will be here, we're going to have to make a place for them, because it's going to be crucial.

J: Homeowner's associations? C: No.

J: The hospital? P: Very much involved.

J: On that note, would you say the linkage with their efforts is good? Are there any conflicts as far as the timing of their drills and their exercises and their training?

P: No, as a matter of fact we've taken part in their drills.

J: So you would say that there is good linkage?

P: Yes, very good.

C: We have a good working relationship with McKenna (Hospital). In fact, I have talked to them and their next drill I am going to sit in on the planning stages to kind of see what they're doing and how they do it.

J: For the industries, construction firms, the land developers and others is there adequate monitoring and surveillance programs, especially for radiological hazards and hazardous materials?

C: As far as radiological, probably the hospital is the only thing we've got that would be radiological. We do have some chemical hazards with some of the industries but they're required to report on their tier two reporting. That comes through fire and we have access to that now and I don't foresee any problems with any of the chemical agents.

J: Would you say then, also, that any notification procedures, are solid and are being followed for spills and...

C: Yes

J: Even for the smaller companies, like lead acid?

P: As far as we know we have not had any problems. They report yearly and we (the fire department) inspect all of the businesses. We have never had a problem with any of the reporting or anything like that. Any time they have a spill they call us.

J: Would you say that emergency management, especially the pre-disaster aspects, has changed, or has there been any effect by national and regional media attention to emergencies?

P: Not that I can tell.

C: The only thing I can say is that it has made the public more aware that there is a thing called emergency management. That we do have emergency management officials. That we will be there and that there are plans that will be implemented. As far as local media blitzes or anything like that, no they haven't been involved.

J: Going back to that list of groups or entities and individuals, which of these would it be important to have on your side, to have working for you or with you?

C: The private entities we would use for a lot of resources, equipment, food, HEB, Albertson's, all those would come into play if we had a disaster. A lot of those donate and are there for your assistance. Then Red Cross also steps in and if they actually have people that are displaced they can give them vouchers that they can go to these local businesses and purchase the things they need.

P: In case of any kind of major disaster we will need the construction companies to provide equipment, especially trucks and front end loaders and saws and those kinds of things that we have a very limited amount of. We're fortunate to have a TXDOT outfit here so we have access to the them if we need them. We have the Armory that will get involved if we have a major emergency. We go through the state and ask for them to be activated. They have a lot of equipment and tents and trucks and personnel and those kinds of things. All of the utilities become involved very quickly, early on in any major emergency. Of course the electric and gas people have to be out almost immediately the

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street crews and people like that barricading and helping with clean-up and those types of things. Telephone company obviously is going to have to provide communications because the first thing that goes out is radio, you lose your radio immediately because all your antennas get knocked down, you lose that kind of stuff immediately and it takes anywhere from 72-96 hours for that to come back up and become operational again. The hospitals and health care people get real involved if you've got major injuries. For the most part, all those people who are naturally involved in community activities become even more-so in a major disaster. So the whole list. Later on during the recovery portion is when your neighborhood folks and land developers and insurance companies and people like that start to come in.

C: Have you been made aware of how emergency management, when you determine you have a disaster, how it progresses throughout the different stages of contacting the DDC, because we can't go directly to the state and say we need help. We have to go through DPS. Have you been made aware of all that?

J: I have the plan, but please elaborate.

C: If we had a disaster, the state police are who we work through. They actually do a confirmation that, yes, we do have a disaster and it's up to us to determine if we can handle that disaster or if we need outside resources. The first thing that comes into effect is all our mutual-aid that we go to outlying entities we have mutual-aid agreements with. When it comes to the point where we are overtaxed and we can't handle it then we can ask for assistance from the state. We have to go through DPS. I would contact the local DPS here and then he would call his Captain in San Antonio. What is called our Disaster District Chairman (DDC) and notify him that yes they do have a problem and they need assistance. They call Austin, they call DEM and say they need help.

J: That captain, that DDC, he would be acting in his role for DEM?

C: Yes, but we cannot call the state directly.

P: We can't call the governor directly, or any other agency for that matter. The Mayor has to declare an emergency and once the Mayor has declared an emergency then we follow the chain of command. It doesn't take long to do it, a couple hours at the most to go through that process and then whatever we need becomes available.

C: Also, on your list you didn't mention volunteers. We have a lot of people in disaster times that will show up on your doorstep wanting to volunteer. You have to have a mechanism available to handle those people. They're a great resource but you need to be able to register those people, find out what they can do and how you can best utilize those volunteers.

J: That's what they call the emergence phenomenon or convergence. As far as a value judgment, some say good, some say bad, good in certain instances, bad in others, do you

have any thoughts on that? Have you experienced emergence or convergence? Maybe in 1972?

C: We haven't, in 1972 everybody was coming together. As far as the good and the bad, the emergency management conference two years ago we had the people from Lancaster, the Lancaster tornado. They were talking and they said that people were coming from everywhere to volunteer but you have to be prepared to handle those people. Actually have them fill out applications so that you can screen because you've got lots of "looky-lous" that come too. They want to just be there and observe all the gore that's going on. You have to be able to screen those people, determine what they can do for you and how you can best utilize their skills. Then it's just a process, but you have to have that mechanism in place to handle that so that you're just not overwhelmed with, oh, I've got all these people what am I going to do with them.

P: They've shown up on your doorstep and they all want to go to work. If you don't give them something to do or tell them what the process is they will go do something. They find something to do and generally it's not what you want.

J: It'll take you and other key people away from other things you need to be doing.

C: Yes, and you also need a mechanism in place in order to identify these people through picture ID or whatever. The ones that are going to work as volunteers, because the scene is going to be cordoned off and generally closed. Only certain people can get through. In Lancaster what they did is actually bus them to the site and they would get off and do their tour of duty and get on the bus and come back.

P: Early in the Oklahoma City bombing, all sorts of people were there and they got control of the scene finally. They got to the point where they were only allowing certain people in. Even then they had people who got in that weren't authorized. Especially the news people. They finally got to the point where everybody had to have a picture ID and produce it going in and coming out. Accountability was real tight and it got to the point where it was almost a criminal act to try to break through.

J: I'm sure that was heightened being that that was a crime scene

P: Oh yes, certainly. That is kind of the thing that you have to do. If you're aware of it and prepared for it then it's not so much of a problem. It'll be a problem no matter what because, for instance, if we had another flood event in that same Landa Park area, you're talking about a great area that you have to patrol to keep people out. That is pretty much where your National Guard will come in. Even so, that is a large area to try to keep secure for however long. Get people out, get them taken care of and then once the water goes down get them back in for the clean up. People are just going to be everywhere.

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C: A lot of people don't understand that one reason you evacuated the area is because it is hazardous. They still want to get back in to go to their residences to retrieve things. "Oh I forgot this." "I'm sorry until the scene is safe you cannot go in," so it's...

P: It's really important to try to control your volunteers. We have asked our Main Street Coordinator to be our volunteer coordinator. In the event that we have something like that she would be the one to take charge of it.

J: You feel that you would be prepared for it. Do you think the hospital would be prepared because hospitals are probably the primary site for convergence?

P: I don't know, I'm not sure what their plan is for volunteers.

C: People coming to find people is another area that needs to be addressed. Through your shelters people can be tracked that way. Through shelter registration for accountability of people. You're going to have people calling and you're going to have to set up a number that people can call for assistance in trying to locate,

P: Again we rely on Red Cross to.

C: Red Cross is very much in our plans.

J: Is there a Red Cross in New Braunfels?

C: We have a service center that operates from San Antonio, but there is a Red Cross office here and I think it is open like four hours a day.

J: So they would have a place to come set up a presence?

C: Yes.

J: Aside from the two of you, is there any other initiator or driver in the city that works on, especially, pre-disaster emergency management issues?

P: Not that I know of, the hospital has their plan, Milton Willman from the county and I guess we're it.

J: So nothing in the private sector or the political sphere.

P: Not that I know of, although MHMR...

C: They have their SOPs...

P: They're probably one of the public entities. They and the hospital are probably the most interested because they always show up and want to help.

J: Both MH and MR?

C: Mental Health and Mental Retardation.

J: Being that they are two different disciplines are you talking more the mental health folks or...

C: It's all in one, it's all one entity.

J: I have previously worked for them for six years and there is a separation and I know that mental health has a tremendous role but I was wondering who has the contact here. The MH section is over here off of Mill St. and the MR is over on North St.

C: They will provide counseling for us and the victims.

J: So you are talking about the MH more-so., let me wrap this up. Human and material resources, has there been an evaluation of what exists and is it adequate?

P: Carol's done, I don't think it's an exhaustive study, but...

C: It's just an on-going review, a constant review of, if we have this incident where would we go for these resources, if we have this other who would you call, how would you approach this.

J: You've mentioned so many of these throughout this interview...

P: I think she's got a handle on that. I think for the most part because the fire department utilizes a lot of things on a daily basis, you know we call people every day for things, for help. It's not something that, although we haven't done an exhaustive study I think we have a pretty good handle on it.

J: In terms of the Emergency Operations Center then, do you feel that it's adequate?

P: No. No, as a matter of fact our operations center, we've basically, well for a long time it was in the police department, and they were not happy with us being there. We were in their way, basically, and now they've moved into their new facility and we're trying to have as much input into what happens to that building as we can. We're hoping that we will have, be able to place a permanent facility within that building. Now, whether or not we're able, if the City Council takes that over and converts it into council chambers, makes meeting rooms out of it or whatever they do with it we're hoping that we will be able to have a permanent part of that facility available to us to be able to set it up with our

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maps and communications and all of those things and have them permanently there. When we activate it, it will just be a matter of opening up, moving out, plugging in, etc.

J: So at this time it is not where you want it to be, if you needed to activate it today or tomorrow it would be a tough scenario?

P: It would be a tough thing.

C: I have my box, under my desk with all my forms and stuff in it, so that if we had to activate it I'd take my box and that would be..

P: We can set up almost any place, right here, in the council chambers, wherever we needed to be. Tables and chairs are basically all we need. We don't have the maps, we don't have the communications, all that, we have to rely on other people, now that is something you didn't mention in there is communications. We have two local entities who have volunteered to assist us in communications. One is the local emergency communications club that is primarily CBs. When you don't have anything it's a whole lot better than nothing. Then a local Aries group, local ham operators so we have a good relationship with them. They are willing to set up communications, help us with communications, also the National Weather Service is another area that we haven't even talked about. We have all these things that could go on around here and our weather service is local, they have really helped us and we have a good relationship with them. In fact we go out there and they talk to us and we talk to them.

J: You've mentioned your mutual-aid agreements, are you satisfied with those?

C: Very much so..

P: Yes, that's kind of a work in progress. We're continuing to upgrade our mutual aid agreements with the different entities. We just finished two new mutual aid agreements, one with Sequin EMS and one with Canyon Lake EMS. We have mutual aid with all the fire departments around us but as they incorporate EMS into their system then we have to update our mutual aid to include EMS.

J: Backing up a bit, are there any unresolved inter-jurisdictional issues as far as boundaries and borders and properties...

C: I think that there used to be. I don't know if you know the history. Comal County and New Braunfels was all one. There were some differences and it split so that we have the city and we have the county. The county is not EMA funded but the city is, we receive federal funds. I think there were some jurisdictional problems in that but I think through the years those have been resolved. We do have, I think, a very good working relationship with Milton Willman (Comal fire Marshall). Should we need assistance, he's going to be willing to give assistance to us and I think vice-versa too.

P: The one thing that we have not done that I hope we will be able to do in the future is have a combined city-county drill. Be able to get together like that, we have not done that but, because we do have such good repore with those folks over there now I don't think that would be a problem.

J: So that's never been done or just not recently?

C: Not in recent history. P: Maybe eight years or so

J: That was another one of the big keys that people wrote about. That they are hard to set up, they are expensive, they take time. But they are invaluable as far as simulation and multi-jurisdictional relations etc., but that leads into another thing. You are at the top of this disaster district, and Hays County your neighbor to the north in another disaster district. Has there been anything that conflicts or causes problems in that sense because you've got your county differences and then you are in two different disaster districts on top of that.

C: No, we would have mutual aid from San Marcos.

P: No, as a matter of fact she went up and observed the Hays County disaster drill two years ago.

C: In fact, my child participated in their drill, she was a victim.

P: Again we have a good relationship with the people up there

J: Regardless of the, basically, generic boundary.

C: I'm active in the Travis County Emergency Management Association, the South Central Emergency Management Association. We have a good relationship with San Antonio, Sequin.

P: We operate well with everybody around us, without any difficulties at least so far.

C: The networking does work. Being active in the organizations where you meet and you understand what resources they have and you meet the individuals. They need help too. Should something happen in San Marcos we would respond.

J: We've talked about warning systems, anything else on that?

P: The only warning system we have is on the river. We don't have any other warning systems available to us. Early warning like sirens, horns any of that. We have not been able to sell that.

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J: There is a perceived need but not a perceived need by the political leaders?

C: It's extremely costly. P: It's big bucks and you might need it once every ten years or something like that.

C: And the technology is developing so fast that five years from now it might be out-dated, just like computers and that kind of thing.

J: The biggest example I saw was down in the Houston area where the industry paid for a substantial percentage.

C: There again they have annual events, they go through this..

J: Well, and that all came through the EPCRA so there was some law behind getting them to do that.

C: It was also beneficial to them.

P: Any time they have a major release or fire or spill.

J: How about public education and awareness as far as brochures, calendars, maps, materials to hand out, also public speaking engagements, media releases etcetera, has that been a big program?

C: It has not been a big program, we have been working on it. It's kind of hard to do this. I have had public speaking engagements. Comal County and New Braunfels jointly this year had a booth at the fair. We disseminated information at the fair and I was amazed at the amount of information we pushed through that little booth. It was phenomenal.

J: Have you used any piggy-backing techniques, such as with hunting and fishing licenses, telephone books, calendars from the fire department or any thing like that?

(Heads shaking no to all)

P: The city was thinking about a calendar of events and pictures.

J: Some of the higher hazard areas have used their telephone books. They have also mass-mailed laminated maps with evacuation procedures. There is a whole line of study with how to effectively use a map to convey information and have it available for instant use.

C: But there again it comes with funding, those little things called grants.

J: Is there a need for a distinct Emergency Coordinator job? It sounds like no.

P: You mean a full time job, probably not. I would say the way it works now probably is about as good as it's going to get. A lot of counties have volunteer emergency coordinators.

J: Carol, is it your principle role to work on emergency management within the fire department?

C: Yes.

J: Phil, you are designated by the mayor as the Emergency Coordinator?

P: Yes.

J: The last thing on that note is what personal and professional development activities have you undertaken, the associations and things, the conferences?

C: We go, and I just attended a terrorism conference in Austin, I go to most of the conferences.

P: She attends almost all of the trainings, hazardous materials and things, the Emergency Management Association, she's an officer in that and that's all of the other associations from around. There are classes, DEM classes.

C: I have my professional development certificate, I am a current EMT basic student.

J: Do you try to bring or offer the political leaders or other department heads to these things?

P: We've offered several times with no takers. They are just not interested. They don't have the time.

C: Unfortunately, we did have the hospital involved and we had them registered to go to classes but then the classes were canceled due to the range fires. That was two years ago. The hospital is very active. We had a terrorism, it's called domestic preparedness, and San Antonio was one of twenty cities in the US that had been selected to provide this train the trainer situation. It was for EMS, police, fire and hospital groups, doctors, nurses and all that and emergency management and I was able to finagle my way around and get some spots in that for us. Since we are outside San Antonio and outside Bexar County we were not really eligible for that but we did get in on that. We did get some training and the hospital even sent people to that domestic preparedness training.

## APPENDIX G

### COMAL COUNTY STRUCTURED INTERVIEW TRANSCRIPT

M = Milton Willman, Comal County Fire Marshall/Emergency Coordinator  
J = Jeff Phillips, Graduate Student -- Southwest Texas State University

Tuesday, 10 February, 1998 Office of the Fire Marshall

J: Have there been any hazard onsets, disasters or major emergencies in your jurisdiction in recent history?

M: Oh, yes. If we go back into distant history to 1972, flooding is one of your bigger priorities, concerns. The '72 flood in New Braunfels. We had on June the sixth about eight feet of water in some houses. On June the 22nd (1997) we had in some places more on the Cibolo Creek than we had up on the river. We had probably forty or fifty houses pretty inundated where people actually had to leave. We evacuated 60 - 62 people down below the Cibolo Creek area. About every 3 or 4 years we have a pretty good flash flood somewhere. almost every year we have low water crossings and stuff like that. We haven't had any quote tornadoes since like about '89, that I know of at least. We've had some high winds with possible touchdowns. The last one that I know of was like in '89 on the north side of the lake. we have enough hills that if one ever does hit it does not come back down in Comal County.

Other disasters. We've been real lucky on technicals. A couple of chlorine leaks at water systems and treatment plants and stuff, but very minor, small leaks. We really don't have those material problems yet. As traffic increases, Rt. 46 is a bizarre road because if you're driving a big huge truck full of ethyl-methyl ketones and you're going to a foundry in El Paso with it and you're coming from Houston, then you're going to get off in Seguin and drive through Comal County to get to Boerne to avoid San Antonio because there are no hazardous materials routes. They don't like Loop 1604 (around San Antonio) and they would just as soon stay on the freeway. They won't let them do that so they generally just cut around. In New Braunfels they are complying because they are on the Loop and then Rt. 46. Those are the additional hazards. The railroad. We had a derailment just after Christmas (1997), I guess. It was minor. It was all gravel cars. It was nothing really. The bridge gave away on the Cibolo Creek. There was no release or anything like that. The traffic on Rt. 46 and Rt. 281 and Interstate 35, especially with this NAFTA stuff has increased the probability. The possibility was always there but it's a higher probability now that something is going to happen, either here or in New Braunfels, based on the number of vehicles.

J: Have things changed with regard to emergency management as a result of the flood incidents and the increased probability of technical events?

M: A little higher awareness not just in the community but in the commissioner's court. They're sort of aware that there are a lot of resources available if they opt to take

advantage of them. The attitude prior to the flooding in June of '97 was, "well you're doing a fine job, everything's cool, that's great." Little or no funding. Little or no support in the budget times. Always have plenty of dollars for training but not a lot of other equipment related to emergency management. So the budgeting time being right then (that was right about when it happened) they were a little bit more receptive to some of the things I wanted to do. Gas detectors and things like that. Not just Fire Marshall investigation stuff but for environmental and disaster related stuff. It's been a renewed awareness. There are things that we can do out there before this stuff happens that will work. Like we're clearing brush on the creeks.

**J: Can you tell me about any hazard and vulnerability and risk assessment that has been conducted and any specific methodologies that have been used? Also the frequency with which these are conducted?**

**M:** At this time I rely on the private sector to do those. On any and all new construction especially service stations and things like that. Facilities, I don't really have that many facilities out in the county. New Braunfels has a number of them and through their inspection process and whatever, they target those things and take some steps to plan for it. Most of the time they are paying someone to do an environmental impact statement and it goes back to the history, what their plans are. They have to comply with Texas Natural Resource Conservation Commission (TNRCC) rules because of the Edwards Aquifer which states that they have to have some training and some awareness of what the potential hazards are. They have to have some materials to contain a minimal spill or something like that. Most of the time we leave it to the private sector.

If we have something that's a potential hazard we have on-going hazard mitigation things that the floodplain administrator (Tom Hornseth the County Road Engineer) and any and all new construction that's everything from residential to septic and swimming pools has to go through his screening process. You know where is it going to be built, where is the hundred year flood plain. As a matter of fact in Comal County they will go out and shoot them a line so they know where that mark is. Most of the time, almost every situation involving new homes, that mark was just about right.

**J: So in terms of vulnerability and risk assessment for residents, is that done in any routine manner?**

**M:** No. They're sort of on their own in a county like this. There is only one of me. I can't be everywhere and do everything. Most of the time, like I say, because of the vulnerability and the risk is in or around the floodplain, the developer has to tell them about the land. The builders, when they go to get the permits, have to do discovery of where they are at. Most of that is circumvented by the building codes and regulations process. Both the road department and the Flood Plain Administrator and the environmental health folks, they're pretty tough on that kind of stuff. If they get in somewhere and they see where the creek ran, they check it out. Most of those things are taken care of. I mean I get a referral, but unless they need me out there I don't go.

## Appendix G Comal County Structured Interview Transcript

J: Is the information that you do get as far as especially for the hazard stuff is it used in any special way. Is it shared with the public in any way. Is it contained in any type of master planning or policy?

M: It is mostly all covered by the plan. It kind of depends on the location, the severity of it. You know, what could be the impact of it. Public information up until the floods was pretty limited. The interest by the press was minimal. Now, like today I've gotten two pages already about the thunderstorm. They're becoming more and more interested. However, they're still really, not editorial, but they edit what information they are given. If you give them a page and a half press release, you know, one or two top sentences get in the paper. So it's an on-going deal.

J: Would you say, then, that floods are the primary hazard for the jurisdiction, as far as concern? You have also mentioned tornadic activity?

M: Comal County, flash floods is probably the first priority of what we try to deal with. There are a number of things that we plan for, resources we utilize and try keep lined up and to keep knowledge of so that we can deal with it. The fire departments, almost all of them have swift water rescue and some means of or method of evacuating folks from inundated areas. The new Sheriff has created and utilized some equipment that used to be used by the emergency rescue squad in some swift-water rescue and evacuation techniques. Most of the departments have fire trucks that can go in to five feet of water and not die.

So most of the planning we do revolves around some sort of weather related hazard. Most of the time flooding, ice storms, things like that. Snow, ice on the roads. Those are limited mobility type incidents. I think that's what we sort of gear for. The hazardous materials stuff, we've got a number of folks that are trained in hazardous materials, some into the advanced level. We've got some equipment, some Level A suits, lots of breathing apparatus, all of the fire departments have that. We're working on a program to involve most of the EMS personnel in some hazardous materials training. You know, they make a wreck somewhere, a truck turns over and he's laying in this gooey looking stuff and they pick him up and stick him in the ambulance and haul him down to the hospital they have contaminated themselves, that ambulance, the hospital, the whole nine yards. So their awareness is becoming pretty crucial to managing the whole scene. You know, with what resources we have available in the fire departments that patient could have been moved out of that location and decontaminated, then put in the ambulance and hauled off and everybody would be okay. if this stuff is some on-going carcinogen or some other bad, you know, "ethyl-methyl bad stuff" you just kind of have to walk them through it and give them some training.

J: Do you believe an appropriate balance has been struck with regard to natural versus technical hazards?

M: Yes. I think a little bit more on the natural because those things you really don't have a whole lot of control over and they are so much more unknown. The technical

probabilities, like say an aircraft crash or something like that, in addition to like a hazardous materials, a building collapse, those things really and truly, the response by the emergency services, law enforcement, emergency medicine, fire, rescue, those folks, most all of the time make pretty reasonable decisions on the response to them.

Where emergency management, and you have probably been hearing this, most of emergency management's biggest problems is in the recovery slash mitigation. As you recover, as you manage those resources and find out what you need and get them, then you need to start modifying that plan to start to take into account what you know now for the next time it happens. That's where emergency management is always sort of, I guess until the mid-eighties, actually until the nineties when the Berlin wall fell, until that, actually it was several years after that before they really got out of that nuclear war mind-set.

I can remember in the mid-seventies, everything we did was going to the radiological. Making sure, you know, we're going to have a nuclear this and a nuclear that and most everything was geared toward a nuclear holocaust. There is still a radiological annex, which is good because of the hazardous materials part of it. It's probably the most unknown. We have several radiological folks in the community, myself, one of my deputies and some other folks in New Braunfels and some of the other fire departments.

The emphasis now, with Mr. Witt in there, is on, "let's do something before it happens, let's see what we can do, not just make a plan and sit around waiting for it to happen and implement the plan, let's see what we can do. Can we restrict people from building along the beach in Santa Monica or San Clemente? Can we actually prevent them from living on these mountains or on these hills. Around these brush fires, you know and things like that. Can we assist them, you know monetarily, financially or through public information ads. Things like that. How to trim the grass and brush around their homes so they're not so vulnerable. It's a long entailed process. I see a lot of change coming pretty quickly.

The Emergency Management Association of Texas is probably one of the leaders because the president right now is from Amarillo. He's leading us away from "oh my heavens they are going to drop a bomb in San Antonio and we're all going to get nuked," into "wow, Comal County could probably use some additional legislative powers to require certain minimum building restrictions in particular areas." You know those kinds of things, which counties don't have. Counties less than 250,000 population are out of luck. We can now have a fire code, like a fire safety code which is just for commercial and public buildings, not residential because we're next to a county more than 250,000 but there are no specific building codes, building restrictions other than the floodplain and that stuff. You know we don't have earthquakes, we don't have mud slides but there is really no minimum restrictions on anything that they build. Residential, commercial, anything, it's just what they want, so in that respect, most emergency managers throughout the country that I talk to are looking at trying to give the government entities that they work for more knowledge, information and more power and more authority in implementing, enforcing, passing, ordinances and rules and stuff like that. Cities have all that and a lot of times they have it and don't use it and that irks me because I don't have it and I would use it.

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Most of the time, lately, the emergency management community is becoming more and more aware that we need to live in the real world. What is the potential of this thing here? You know, a little tornado could jerk through here and tear up fifteen or twenty homes and kill ten people. Our response to that would be initial fire and EMS and perimeter security and stuff like that. Some sheltering for folks that don't have anywhere to go. Most all of them would have some sort of insurance or something that would cover them to stay in a hotel or motel or something. If it was more wide-spread or if it was a multiple incident like this occurred and it was a hazardous materials deal in Bracken at the same time, dividing those resources and summoning the resources. That's where you get into the lack of far thinking on the government's part because there's no contingency for that. There's no funding sitting there ready to go. The Commissioners Court keeps a contingency fund but a three, four, five million dollar incident like that would be impossible to pay. So that's where, once our resources are expired, used up, at their limit, we would involve the state who would immediately involve the federal government for the FEMA funding and stuff. The funding doesn't come immediately but at least the resources, the man-power, the Red Cross, all those kinds of things. The shelters.

It's hard to comprehend the complexity of it. It's not that complicated or hard to figure out it's just very complex. You take a plan about that thick [holding fingers approximately 3" apart] and you try to make every layer of it work the way it needs to. After the first response everybody is more of, "well let's sit down, kick back, take our time and look through this." "Where do we need to go from here." Very seldom is there a real huge problem in the response. I mean the volunteer fire departments and the EMS and law enforcement folks do everything they know how to do, they are trained to do that over and over and over and they do it very well. But, you have a tornado roll through Central Florida, or a hurricane a couple of miles wide and it destroys everything in its path, and the folks in Wisconsin and Ohio figure "we'll send these folks some clothes." So they unload all the church bizarre closets and all the winter coats and send them to Florida in the middle of July. It's asinine. They sat there and burned seven or eight truckloads of coats in Florida during Hurricane Hugo. Those kinds of resources, the folks, the public needs to be educated. Dollar bills are probably the most welcome. Not particularly to the agency or to the government entity. For the winter snow storms in North Dakota (the capital of North Dakota is Bismark) you call up there on information and say what is the name of the Lutheran church in Bismark, North Dakota and send them a check for \$100. Send that to them and that does way more good than sending a truckload of winter coats to Florida or bikinis to North Dakota in winter. It gives them somewhat more mobility and opportunity to provide services, food, shelter or whatever. It cuts some of their costs. The public doesn't necessarily understand that.

The emergency management community has been really lax in providing that kind of information to the public. The last couple of years, the new director of FEMA has been working very diligently to get that word out. He was, a county emergency manager, a city emergency manager, a state emergency manager, and now a federal guy. He has a good idea of what a five inch rain will do south of Little Rock, Arkansas. He understands the impact of that. He has been in the mud throwing the sacks and watching the fireman struggling to get somebody off the roof of a house. Being that aware of the problem makes him a whole lot more easier to take than some in the past who were rather

insulated, ex-military who have been in a lot of disasters but have never been in domestic type stuff. You know, standing waist deep in Cibolo Creek down here makes you pretty aware of what flooding can do. So it's a public relations nightmare, trying to get the information out for people to understand correctly and respond positively when something like that does happen.

That's where it pretty much stands in this county. The surrounding counties (Hays County and Guadalupe County) we have working inter-local agreements with all three of them. The three of us, in both the Fire Marshall's office, fire investigations, resources in those aspects, fire prevention and those kinds of things. If the Fire Marshal from Hays County is at Texas A&M teaching a class and one of his day cares needs an inspection, I go do his inspection. On the other hand the emergency management part of it, if he had an airplane crash we're his first "gofers" to get there. The same with Guadalupe County. So the emergency management and in the fire Marshall's, the fire Marshall's job and emergency management are closely related. It is very difficult sometimes to draw a line where it starts and where it stops. We work closely with those two counties. The relationship we have with Bexar County is they are there and almost always available and almost always will send us whatever resources that they can spare depending on how it is affecting them.

Except in shelters. There is not really much you can do with shelters as we grow and the population increases and the number of schools increases we do now have out here some rather unique facilities for shelters which we never had before. A hurricane in Corpus Christi, between Corpus and Houston results in about 50 or 60 thousand people leaving the coast and coming to San Antonio and points toward Austin. That inundates the San Antonio shelters. It inundates New Braunfels' and San Marcos'. They've been full several times in hurricane scares. When all the shelters in New Braunfels are full, and we have a flash flood because of a hurricane up here and we have 30 or 40 people out of homes, we're hard pressed to have shelter so we've tried to work with the Red Cross in developing shelters on the run. We used this building right across the road here [across from Pct. 3 Justice of Peace office, Bulverde, Tx.] for shelters in the June 22nd flood. It's an old church. It's an older building. We just provided them with cots and pillows and things like that. They had food from the restaurants and it worked out just fine. The Red Cross thought it was great. FEMA called and made amends with him on the whole amount that he was out.

That's using your local resources but you've got to know where they are. That's the part of the planning that really never gets written down. It's sort of, if I know something I try never to keep anything just to myself. If I am aware of it I tell as many of my guys. I've got deputy fire Marshall's that also help me do emergency management. In the City of Bulverde, he's the Fire Marshall there and he'll probably get involved with emergency management so as I gain knowledge I try to tell them and the folks at the Sheriff's office, in addition to putting it into the plan and adding it to the resource list. I try to let folks know for sure what I'm dealing with and what I've found out. Who came to me and told me, "we've got a building you can use, across the road here," and stuff like that. "The neat part of that is that if I'm not here then four or five other people know some of what I know. When this all starts happening you don't stop and get the plan out and start reading it. You've got to know it and you've got to practice it and you've got to

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drill it. As you do the drills you try to improve the plan. We've re-done the hazardous materials annex through the LEPC. You have to do it every couple of years. Some of the stuff that was in the old one was archaic when it was written.

There are some other ways we can determine what we're dealing with and there are some new resources. Computer programs that six years ago weren't available. Laptop computers. This one I can take and plug it into the truck over there and pull up CAMEO and do all that stuff. I can hook it up to my mobile phone and get on the internet and look at the radar. It's very expensive but if I need to do it for 30 minutes because of a flood we're having and what additional rain is coming then I'll do it. I've got the technology and the equipment to do it with. The road department does pretty good weather monitoring because they are a central location. They are right in the middle of the county. They radio contact not just with me but with the Sheriff's office and the fire departments so they have a pretty good little weather net. If it starts doing anything they start checking roadways, low water crossings and stuff like that so I have a pretty good advance knowledge of what's going on and where, before a lot of places do. Because it's a small county still and most everybody is on a first name basis. I can go to the road departments radio channel and tell by voice who's talking and where they are by their inflection and their tone. If they are really excited, it really is high. That's kind of a luxury but it's not going to last forever because as we grow there are just going to be more and more folks. Right now I can tell if Nacho's on Amman Road and it's over Amman Road and he's just "[rapid gibberish]" then it's going up and it's not coming down.

That's kind of an old holdover deal where you just play it by ear but the weather spotting is something that I have worked on several times since I have been Fire Marshall and Emergency Manager and it's very difficult. I've got a couple of folks now that I think would probably be really interested in being weather spotters. The way I look at it, it's going to help me initially because they're going to let me know. The weather service is going to directly provide me and the Sheriff's office with that information and as time goes on we develop historical data. A guy over here in western Comal County calls in and says it's rained ten inches in the last 6 hours, you know every bit of flooding from that point forward. It gives the weather service that knowledge that if it rains 10 inches in 6 hours over in this area then we know we are going to have flooding here, here, and here. That's what we're doing with the early warning system on the lower river below the dam is taking rainfall rates, stream flow levels, and developing historical data to do reasonable predictions. If we have 5 or 6 inches of rain here, duration such and such, rainfall rates per hour will give us this much river flow in so many hours or so many minutes. We'll have 75,000-80,000 people below the dam to New Braunfels any given summer evening, Thursday, Friday, Saturday, and Sunday. If we have 10-12 inches of rain over there we're going to have probably a couple of drownings but we're going to have lots and lots and lots of cars, a whole bunch of tents, and a bunch of wet, mad people. If we can develop this information and give this information back to them, to the outfitters, to the folks that run the campgrounds in a timely manner, and tell these folks y'all need to move to higher ground, don't just get in your car and drive off because you're just going to cause a traffic jam and everybody's going to wash away. Pick up what you need, your valuables and carry them up the hill. Twenty or thirty feet above where they are is safe. Always has been, always will be.

That education is almost, to me, an impossible task. As you teach and train the outfitters and as they sit around the river and watch it and learn about it, some of the older outfitters, Mr. Rivers and some of those guys, have a tremendous knowledge of that river. It's like a living being to them and they are very helpful in conveying that to their public. You can't hit that many people that come here on a Friday evening and leave on a Sunday afternoon. You cannot educate them in that amount of time because they're drinking and those kinds of things. Floating the river you know. That's one of the biggest obstacles I have right now. The recreational side of how to get the word out. How to provide the information and inform the public. Informing them and educating them I think is two different things. Providing information to them to utilize however they need is one thing, but, you know signage and things like that.

The educational process is painstakingly long. It is very hard to know what specific forms you need to put it in to make them understand it. To get them at least to pay attention and try and understand it. That's really one of the things I work on most of the time. Working with the Water Oriented Recreation District (WORD) guys and the GBRA who have a fairly good reputation of providing information to the public and even educating them on certain things. The river clean-up has been highly successful, so you have to gear it to something they want done or they want to see happen. Then they start paying attention and if you tie it in with dollars it sometimes has more impact. It's kind of an impossible task but you still try. There's no point in just giving up completely

J: Is the county, or has the county accessed any planning grants available from DEM or FEMA?

M: We've made some applications in the past six years. We've been denied most of them because of the adequate funding that we have from the county. The one that is on-going right now is the hazardous materials training grant which involves some of the EMS. I haven't heard back on it in a month or so.

J: Is that with the state or federal?

M: State, all the FEMA funding that comes to Texas other than direct relief effort is all through the State of Texas. (DEM in Austin) They've done a very good job I think most of the time with dollar bills. However, it's very frustrating locally for someone like me to send it up there repeatedly requesting some money for this and that and things that it is very difficult to get past the commissioners. To get fire departments to get together and donate or something so you can get real frustrated with the state folks. I've been the Emergency Coordinator, in April it'll be 6 years, and I have seen the RLO (Regional Liaison Officer) for Comal County. One time in this county, one time and that's after we had the flood on June 22nd. I've spoken with him hundreds of times and met with him, in San Antonio and wherever, in Austin and stuff but I've never had him in this county. Now I've not requested him, but he hasn't come either. He lives in Corpus and he covers everything from Corpus to Edna to San Antonio, Comal County to Kerrville and all the way down to Laredo. Count the counties, not fun. Their utilization of the funding for

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RLOs and those kind of things I personally believe should be matching. Whatever FEMA provides they ought to provide half and have twice as many of them. Divide each area in half depending on population and need. The state administration of the funds has been fiscal but it hasn't been very realistic. That's the part that kind of hurts the locals because you know there's some funding there that's going to pay some additional salary to a Highway Patrol Captain somewhere that's a Disaster District Chairman and you've got four volunteer guys that you know you could cut them a little overtime every now and then or part-time work and have better, more faithful employees and more to come. That mind set hasn't leaked down yet or seeped back up. It's really frustrating to see the state offer certain courses just at certain times. Your schedule is not at all concerned, they are not at all concerned with my schedule, they are more concerned with who's on vacation this week in DPS than how many emergency managers can we get here. To me, in Texas, besides ice storms, from November 1st to about March the 31st is when all this training needs to take place. I can't leave my county after March 31st because I've got 100,000 people a weekend coming in here riding the river and doing whatever the hell they do.

**J: Is that the highest hazard time too, with fire and...**

M: because of fire and the traffic. You have the regular truck traffic and then you add all these tourists and all these other potentials. Why do they have this really neat course that I need to take in July? I mean it's asinine. I've got 4th of July, people shooting bottle rockets and burning half the country down. Their priorities aren't necessarily what the locals are and they're getting all the money. All that federal money that you hear about goes straight to the state and then they decide how they are going to divvy it up. The locals have little or no input, whatsoever, in where it goes, other than by grant applications and taking advantage of training's and those types of things. It's pretty frustrating. It's irksome sometimes and you can rest assured that at the conference you may hear some locals telling some of those.

**J: That will be what is happening outside,**

M: outside the deal. They have a very good program. The last couple of conferences I've been to have been extremely timely, very current, extremely good information. Internet resources, I've found a lot of things out at that conference about that stuff but outside in the hallway, you'll still hear the state guys going "well you know these locals" and it just goes on from there...

[pause to return a page]

**J: You mentioned drills and exercises, can you expand on that a little bit?**

M: We haven't had a full-blown, full-functional drill in several years. We do have some small functional ones. We've done table-tops. The requirements are that you do it at least every three years, have a full, functional drill. We participated with New Braunfels two years ago in theirs and used it as our credit. The drills are wonderful but doing it is not

necessarily the problem. The response is not really ever the problem. It's the thinking about it, the planning before, the planning after. We work on that quite a bit. We have in Comal County an emergency services association and it's all the fire and EMS departments the Sheriff usually sends a representative. Along with that we have the Local Emergency Planning Committee (LEPC). The LEPC is a SARA Title III, Community-Right-to-Know requirement that each county in the United States have a LEPC chairman, and an LEPC consisting of the public, emergency responders, the press, folks like that. They are charged with providing guidance and assistance to the emergency managers and the emergency responders in planning, in dealing with storage facilities, the hazardous materials and stuff, mainly an EPA type deal. Spills, reporting and those kind of things.

We have a meeting every month of the emergency services folks which consists of most of the LEPC. We stay pretty aware. We do combined training of all the fire and EMS departments every quarter. Not just fire fighting, we do rescue, we do vehicle extraction, we do trains and high angle rescue. We've done a few table-tops and a couple of semi-functional hazardous materials deals. One of the Fire Chiefs is setting up a deal with FEMA hopefully in the fall in October to do a full-scale functional drill, technical, with hazardous materials. We've got some gasoline vendors with trucks available to try to do something like that. To plan for responses and reactions to traffic. Most of our problem is not getting there, surviving or anything like that, it's managing the traffic and managing the crowds. We're going to put the Sheriff to test. We're going to put them on crowd control, perimeter security, traffic control those kinds of things.

The next thing for the emergency responders is the EMS folks. See where this training takes them once we do the drill. If it becomes second nature to think about hazardous materials decontamination before treating or transporting that's what we're shooting for. To broaden their scope of things. I don't know how many folks you know in emergency medicine, but they are well known for tunnel vision. In emergency management you can't have any tunnel vision. You've got to always keep that big picture. You might want to hone in over here for a minute or two but you have to keep that big picture. It's scary, because they'll jump out of that ambulance and run over to a wreck with stuff running down the deal, a guy standing on the side with a gun pointed at them and they haven't seen him yet and they're working on this guy that's bleeding. So you try to get them to start looking around, be aware of your surroundings before they jump into something like that. It's happening, it is just going to take time. Some of them have been doing this stuff 15-20 years and it's very hard to change their initial response to things because they've done it a certain way and it has been successful. They are going to keep doing it. Nothing you say or do is going to change them until they figure out they have got to change.

That's kind of the way it stands right now. Trying to get, the fire departments most of them have a true respect for hazardous materials. The law enforcement folks don't have a clue. We call it a "cop-ometer." If you drive up to a scene where there's a truck turned over and there's stuff leaking out of it, if any cops are standing it's probably okay but if they are all keeled over then you figure it's hazardous. The rule of thumb, the canary in a mine, but you ought to use the rule of thumb that if you can cover it up with your thumb you're probably far enough away, I use the double rule of thumb, if he's doing this with his thumb, I get back up over here and if I can cover him up, up

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wind...The law enforcement community and the EMS community have always been action oriented, the fire department likes to come in down there and put out fires and squirt water and all that kind of stuff and destroy doors and open windows and break things but they have always been real cautious about hazards. You know going into falling down buildings and stuff like that, they're pretty cautious about it. We have got to kind of instill some of that forethought into law enforcement and EMS about hazardous materials.

We don't have very many potential facility problems but we've got all the potential in the world out there on that road. From the railroad and the highways and, it's there, it's out there, sit and watch it. Get your little guide book out and watch and count. Count the placards and write it down, it's scary, there is some pretty nasty stuff out there; coming and going twenty-four hours a day.

**J: Let me throw some people and entities at you and see who is on your side, who's active. Commissioners Court and Judge?**

**M: Very active, very involved. Somewhat more now than they were before June of last year. The Judge has always been very proactive in emergency management. Not proactive in funding but in interest and knowledge and asking what are we doing. Making sure, keeping track of what's going on, ensuring and pushing me to get things done that need to get done on the plan. I've always had a good concern from that corner.**

**J: Road, public works?**

100% participation. Whatever I need. I've got some guys lined up in some hazardous materials training hopefully towards the end of the summer. There again it's in the summer. Hopefully some of the road department machine operators are going to go to a hazardous materials basic to learn how to put the equipment on, wear the suits and not snag them and drive a front end loader with an air pack on. You ever done that? I thought not.

[interruption]

Where were we?

**J: As far as who's active, you've mentioned law enforcement, anything else you want to say?**

**M: The Sheriff's office has been. This Sheriff, this regime has been extremely responsive. They have worked on some modifications to the plans that they are responsible for, the annexes. The Sheriff in Comal County is responsible for Annex A, which is the warning, communications, so they have been very proactive to find out what they need to do to assist and what we need to do to assist them.**

J: I've talked to Lt. Ott, is he your primary contact for this sort of thing or...

M: Probably him or the Chief Deputy.

J: You mentioned Red Cross?

M: The Red Cross, they just had sort of a re-organization in the Bexar, San Antonio district, and (name) I think has retired and stuff, but I had a very close relationship with the Red Cross. I still have a fairly good relationship with them. The county still provides them with office space and things like that so we do what we can for them and they respond in kind.

J: I know they have an office down in New Braunfels, do they have another one out in the county as well?

M: No, that's the one, they consolidate a lot of that kind of stuff.

J: Are high risk residents active at all, especially those ones in the flooding areas?

M: Active in the sense that they will let you know what's going on. If they are not happy with things, they will criticize it. Most of them resign themselves to the fact that they are high risk and if we can't get there because of the floods that they are sort of on their own so they have made some plans on their own. We have luckily, in the two or three big areas that actually flood if we have residents who are actually stranded or in danger we have emergency responders very close. At Spring Branch right there by the river, Spring Branch Fire Department is very close with access either way. Down here on the Cibolo you have this fire station right here [Bulverde] with those big trucks that can go out into stuff. On River Road, it's probably the worst but we have access both ways from down below. From New Braunfels and from Canyon Lake. So really and truly the residents that are high risk know it and they're active to the point that they will ask about it, try to find out information, what they can do.

J: How about linkage with the hospital?

M: The interesting thing of it is, most, probably 60% of this county EMS will transport to San Antonio. At Bracken, that area from New Braunfels south and from FM 3009 west most all of that transportation is going to be to San Antonio. McKenna can handle a small number of emergency patients at one time. If there's a disaster in this county, something like that airplane crash or something like that, I would venture to say that depending on the weather almost all of them are going to be air-lifted to San Antonio. Or by bus or whatever mode of transportation we can find. You can't haul but two on an ambulance. There are some contingencies on that kind of thing where you can rig up some deals and hang litters and things like that and suspend medical direction, in lieu of realistic protocol. That would be a far fetched deal. I wouldn't make that decision it would be the

head medical person on the scene. They have their own training that they do in conjunction with the fire and law enforcement folks and in Texas they call it Special Triage and Rapid Assessment and Treatment (START). What they do is practice most of the time when we have a drill. That's what EMS is doing is practicing setting up a triage area. Their treatment area, their transportation area. It's the three "T"s. What are we going to need to haul these 47 injured people, who are still alive out of this 300 passenger airplane? Unbelievably they are still alive. What are we going to do? Depending on where it is at, we are going to call one or both of the school districts and bring buses in. You can put back boards across the seats on a bus and wrap them up and tie them and you can haul five or six or ten patients. You don't want to haul too many because you can't get to them once you cut them across there but you can set them up on top of the seats and stuff like that. The air force at Randolph has an extensive amount of resources in those buses that actually have the litter clamps. They take the seats out and just clamp the litters in and stack them. The Air Force is a good resource because they don't ask for anything in return. They come and do whatever you need done and they leave. Write down some names and go home. The San Antonio Airport Fire Department, because it is an international airport, because of the nature of international airports, any flights in or out of that airport are covered as long as they are within their airspace. We are in the San Antonio airspace so their response up here to an airplane crash or something like that would be inevitable. They would come probably without even being summoned.

J: And they would be here pretty quick,

M: They are on the resource list. San Antonio Airport on 37. They can be here in 30 minutes. They can be here quicker than the guy from Hays County can. If it is on this end of the county. That's a resource that we don't discount. They are on the resource list but we probably don't ever even have to call them they will be on the way, for lots of reasons. Because of their knowledge and skills and expertise in airplane, aircraft rescues, things like that and because of their resources. You know those fire trucks and stuff down there at that airport have boxes and boxes of toe tags and all those things. I carry a few around in case we have something small but we can't store and have them readily accessible. When you have the call you're not going to say "wait a minute I need to stop and get that box of flags," you know they have it all there. That response would be very welcome. They, like the fire folks and most of the EMS folks will work under an incident command system. Whoever, when they get here, is in charge, they are going to report to him. They are not going to do anything until they report to him. "We're here. This is what we have got in the way of resources, where do you need us?" "What do you want us to do." He'll throw out his map and say, "Y'all need to go over here and do this, this, and this let me know when y'all need a break and I'll get you some relief," or "I'll provide some manpower to do the lugging."

That's what is interesting about incident command is everybody uses some similar system as incident command. Consolidated or combined incident command. Most of the time you don't have turf wars. You don't have the little arguments between me and the Lieutenant and the Fire Chief, you know, it's non-existent. The Lieutenant from the Sheriff's office knows that his guys need to be out there doing perimeter security and

those kinds of things. I've got certain responsibilities in resource management, public information and stuff like that and the Fire Chief is ops. He's operations and he's going to make sure that these injured people are getting put into this ambulance and his firemen are helping EMS move them around and whatever. If everybody knows their role, the unified command works really well. On fire scenes and most scenes that the fire department is going to be the final resolution, we use what they refer to as incident command. They have one incident commander. On anything involving more than one agency, we try to use the unified command, which is the Fire Chief, the supervisor for the Sheriff's office, and whoever the lead paramedic on the ambulance at that scene. Between the three of them, sometimes the other two may never even come and talk to me, you know, let him call the shots as he sees what needs to be happening if they need something special they will make a request for it and leave him to, it reduces radio traffic and reduces confusion, if everybody reports to the head guy and they know where they are supposed to be, if they are not there then you don't need them on the scene, they can just pack there stuff up and go back home.

About the third or fourth time that we've excused folks from scenes for that, I mean freelancing is probably the worst. The worst thing that you can have is freelancing. You've got a fire scene that covers 760 acres, deep canyons, arroyos, burning brush, burning grass, stumps, tons and tons of hazards out there and you've got two fire trucks driving around with no direction. They won't call on the radio, they won't let you know where they are, they won't go where you've asked them to go, you ask them to leave the scene. About the third time we did that we stopped having freelancing and they started reporting to the incident commander and going where they were supposed to go. So much of that kind of response is providing information back to that commander so that he knows what the heck is going on. He can't get in a vehicle and drive over to that scene, he needs somebody out there telling him in language that he understands what's going on. "I've got three acres of brush on fire." If you said that to me I would assume that you've got three acres of open clear dry hot brush that's burning. The guy from Illinois might think you're referring to pile of brush that looks like it's about three acres in size. Well that's kind of huge but semantics and clear text is very important.

Law enforcement is very reluctant to go to clear text. They have a feeling, a sense of uniqueness. Clear text as opposed to 10-4, and 10-76 and 10-45, and all that kind of stuff. Clear text to the fire service and EMS is becoming more and more important because the 10 codes are different for fire service than they are for law enforcement. EMS never really had a set of 10 codes, they just weren't appropriate. So the 10 codes in law enforcement is very hard to phase out. It's just that on a fire scene or on a major incident if you are able to communicate with the other person in a language both of you understand then the communication problems go away almost immediately. If one guy is talking 10-4, 10-97, and all this and another guy is going 73 acres of short to medium-tall grass on fire, it's traveling northwest, the wind is such and such a speed, I have two trucks deployed on the flanks of it trying to get to the head of it and he's talking to this deputy who's trying to stop traffic out here and they don't communicate, then you're out of luck. The whole thing starts degrading from that point. That's why we try to do a unified command when there is more than one agency involved. Unless it's a fire and EMS call where fire is just assisting EMS with lifting, extraction or something like that.

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Most of the time the Fire Chief, whoever the chief officer on the scene is from the fire department, is in charge. Not of patient care but of apparatus placement, ambulance placement and those kinds of things. He will be the head guy.

J: Of that scene then?

M: Including evidence protection. And, not collection, but if it's a bad wreck and there's traffic everywhere and he needs to get this crashed car out of the road he'll make a mark, he'll mark where it was and remember it or take a photograph. Most of the fire trucks and most of the EMS units now have for extractions and things they can take a picture of trauma victims for the helicopter folks and for the hospital. He'll document it that way. Then move the vehicle for the rest of the public's safety. You know two injured people over here can cause a whole lot of other folks to get injured so the Fire Chiefs, the fire officers in charge, it may not be a chief, it may just be the senior guy on the shift, he is generally the head guy. It's kind of forcing supervision on folks that possibly may not want it but most of them embrace it and do a very good job. You don't tell the medics what to do with the patients but you assist them with apparatus placement and where to put the ambulance and those kinds of things. They assist with manpower, "hey you go help the EMS crew we have this other deal over here okay." They try to guide the law enforcement folks to stop running their license number and this kind of stuff. Lets get this traffic problem handled first and then we'll go to identifying these folks and getting to whether they have insurance and all that. It's a long process for law enforcement to come from the matter-of-fact, just the facts ma'am I'm working this wreck to, there's a whole lot more to this incident than what you're dealing with. Who crashed into who, we've got two or three severely injured people, one of them may or may not die. It's going to change your investigation completely about how long you spend on it. We've got three or four hundred vehicles going two different directions on this highway, plus another intersection, we've got vulnerable firefighters standing out there trying to direct this traffic and the public is not paying any attention to them because they don't care. If a guy is standing out there with a gun then they start paying a little bit more attention.

Educating those folks is... I was a deputy for eleven years and I know the mindset. I live it sometimes but I will jump out of my truck and direct traffic and tell the firemen to go do their thing. I can handle it until the other deputy gets there. "Leave that alone, don't be running that license, number, leave the dispatcher alone, she's trying to get helicopters for these injured people. Y'all should shut-up and direct traffic." It's a subservient role for the law enforcement guys. You know guns, badges, drive fast and all that. The testosterone thing. But most of the time once they realize that you're not doing it to belittle them or to put them down, you're doing it because you've got other priorities, life safety, being a public servant, being a law enforcement officer, their main concern is the preservation of life and property, and if they are not concerned with these two or three people over here then they probably don't need to be in law enforcement and I will go tell the Sheriff.

"Sheriff this guy didn't do what he needed to do and I have a problem with that and if it happens again he is going to be excused from the scene, no matter what his authority is, or what he thinks his authority is in working this wreck, he is going to be

excused from the scene because he is a danger either to himself or to someone else and it's going to cause us more problems." The Sheriff will go "he won't do it again." That's how this Sheriff has been working. The other one we had for eight years didn't really have a concern with what his guys were doing out there to anybody, so we worked through and lived through and survived.

J: That kind of sounds like what Lt. Ott had to say too...

M: Pretty much, it's a whole different world. This regime now, he's an old highway patrolman. The Sheriff is. The Chief Deputy is an old highway patrol sergeant. Ex-Texas ranger. The other Sheriff did not know that the DPS captain in San Antonio is the District Disaster Chairman. Okay for this district 3b. Not only do these guys know what a District Disaster Chairman is, they actually know him. They have coffee with him down at the office every now and then. The other Sheriff didn't even know what one was. I'm trying to say Sheriff, your dispatcher needs to make contact with... "Well who's that?" "Well call the stinking DPS number in San Antonio and they'll find him, they know who it is."

It's a whole different world. Their knowledge of DEM and all those folks up there at emergency management and DPS is amazing. They've got better contacts probably in some areas than I, which is just neater than heck because I've got a Sheriff. He was in office less than three weeks and we had an ice storm in New Braunfels and all over the county and we had probably three or four hundred people stranded from New Braunfels to San Marcos on the freeway and they were there for more than ten hours. Cars running out of gas. People were cold. We had a heart attack on one of the buses that was stranded up there.

I called the Judge and I said we need to open the shelters for these people. She said where, and I told her and she said do it. I called the Sheriff and I said I need your assistance in getting the Red Cross folks over to this shelter and he said tell me where they are and I'll have it happen. He sent some of his folks, but he called the police department and said Chief, or whoever the sergeant was and said we need two of your officers to get these folks and take them to this place to set up this shelter. And it happened like that [snapping fingers]. When I talked to Phil Baker [NB Fire Chief/EC] he was aware that I was going to utilize one of his shelters. He said "you do what you need to and if you need anything you just call me," and it worked. Boom, boom, boom. Just perfect. Now the State of Texas, Department of Transportation and Public Safety sort of choked. They opened the highway before it thawed out and everybody left my shelter. I had probably 75 people in the shelter already, we're getting...[phone rings]...

J: E.O.C.?

M: EOC. We've been using a combined EOC with the City of New Braunfels at the police department for many years. We have an alternate EOC at the Guadalupe Valley Telephone Cooperative on FM 3159. It's not weather proof, it's not tornado proof or anything like that but it's, depending on the disaster, it's closer out to the scene. It's got lots of technical, communications and stuff, even when some of the phone lines and stuff are down. They have some fiber optics to San Antonio to long distance trucks that to

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provide us with this access for communications purposes. We are in the process of building a new jail addition in Comal County and I think they let the certificates of obligation go the other day. Involved in that, is a new dispatch center and a training center. This training center will double as an alternate EOC at the Sheriff's office. In addition, every desk will have a computer port and a telephone port and those kinds of things.

It's going to be a pretty neat plan. I've gone over the plans with the Chief Deputy quite a bit. It's more of a Sheriff's EOC, for his operations center but there'll be a portable base station type radio that can be moved into that room to be utilized there, with the dispatch supervisor, so it's a pretty neat plan. It's not going to be an all inclusive deal. I can't get all of my Fire Chiefs and representatives from all of my agencies and school districts in there but it will be supplemental to whatever we have out here. The EOC at the phone company we did, I guess the last drill we did up there we actually used the EOC, was in 1991. What we did was Commissioners Court was there, the Sheriff's Chief Deputy, one of the sergeants. I think a representative from each fire department, all EMS, and the school district. The whole plan, pretty much represented and we did a real full-scale. I mean they were driving trucks from one place to another and stuff. Ridiculously, ridiculous. I mean the scope of this disaster and the modifications to the plan from that have been pretty much unchanged since then.

We realize that there is no way that the resources in this county are going to ever deal with anything more than a small private aircraft crash. We aren't going to be able to deal with the resolution of the problem, but a single gasoline tanker turning over, propane truck, something like that, or any other hazardous materials deal, a train derailment. We're not going to have the resources and we're not ever going to have the resources to be able to deal with that solely. So we are going to have to invite, and request the state and the federal involvement on almost anything. If we have more than a small aircraft crash or a little bit of flooding or something like that. The modifications to the plan were at this point this is when you need to call the Judge and get her to call the Governor's office and start getting these wheels turning because the State can send hundreds of highway patrolmen just for perimeter security. Just for sight security and stopping looting or whatever the problem is. In addition, the National Guard and all those kinds of folks that have lots of transportation. They solve a lot of transportation problems. Our little old school district has a couple of hundred buses I guess, but we could never, in the middle of a disaster, we could never round up enough drivers.

J: They are dispersed all around the area...

M: They are dispersed throughout the area but finding those folks if we have power, you know with ice storms, what is a bus going to do, it is not a very safe vehicle to be driving around on the road. Now these big old fire trucks are, put some chains on them or something like that and the road department dump trucks, those kinds of things are very helpful, any transportation, so...

J: With all that in mind then, are you satisfied with your mutual aid agreements and your inter-local agreements?

M: I think so, because, like I say, anything that goes beyond our capabilities, we are going to call for help right now. I've trained these folks, tried to ingrain into them that calling for help is not a sign of weakness it's smart. I've got the fire departments and the EMS systems calling each other for different kinds of assistance on almost every type of call, which works for better relationships because they know each other better. But calling four or five fire departments at one time for a major structural fire and then if you don't need them turn them around. They have become familiar with that. It's okay to ask for somebody else's help. Very seldom do we ever have any problem with anybody responding to that request. New Braunfels is completely open with the agreements we have with them. They provide fire and EMS service out in the county anyway in some areas. They will send an ambulance to Fair Oaks Ranch if I need it. Never a question. Kendall County is the same way. Blanco is the same way. Bexar County is a little bit different because of the contractual agreements they have with San Antonio, their EMS system, but the fire departments down there will come. Highland Park, Windcrest, they've come to Comal County helping us on stuff. The mutual aid is probably not a big problem. We don't have written agreements with any one other than New Braunfels and Blanco and Kendall Counties. All the fire departments in Comal County have a mutual aid agreement with each other, but a lot them have them with Wimberly or Hays County or Geronimo and those different places. As one has one with one and one has one with another those become sort of all intertwined. The legalities of it are, who knows. Some lawyer might make a big stink about it but while we're doing a deal we don't care. Let the lawyers sort it out later on. Let God sort the dead folks out and let the lawyers sort the money out. That's how it's going to end up anyhow.

J: The Disaster District. Do you have any problem with the fact that Hays is in one and you're in another?

M: No, not really. It gives us a little bit more versatility because being in different disaster districts it expands my resource list as does his. Guadalupe is in the same district but we would discuss that quite a bit initially when we first started talking about this and the folks at DEM, when they heard about it they thought it was pretty neat because that ties the districts together because I've got a county line that's drawn line in the ground. There's nothing there. It doesn't bother us a bit.

J: Just a quick one on emergence. You talked about freelancers as far as fire departments, I think, but emergence of volunteers and people and on-lookers and wanna-bes and everything else...

M: With adequate incident command, I mean firm in charge, getting the folks doing what they need to do, having ops doing what they need to do and EMS doing what they need to do, with that said, if your law enforcement folks are aware of what's going on we can immediately reduce it down to, if they don't have a Comal County I.D. card, being a Sheriff's office employee or a Constable, Fire Marshall's office, whatever, or a fire or EMS I.D. card, they don't make it in. We can do that pretty quickly and we have. We had

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a fire over here at this big building over here. It burned down about five or six years ago. No actually about eight years ago and we limited ingress to almost everybody because when we found out what we found out, the Feds came. He did a lot of government contracts and they insisted on that. We used the Sheriff's office and the Constables and folks like that. The fire department, we were doing what we could just to stop traffic put up barricades, that part is pretty easily solved. Working together, most of these folks, the law enforcement folks, the fire and EMS all know each other and if there is somebody they don't recognize, they challenge them, almost always. I do. If I'm driving up to a wreck scene and get out to help and I see somebody jump out of a car, I say "are you involved in this, what are you doing here." "Show me some I.D." That's what most of the fire and EMS are doing in addition to the law enforcement. It works out pretty well.

**J: Do you see a role for emergent groups at all in any organized form? A secondary role?**

**M:** Sure, absolutely. I think that the community service folks here in the Bulverde/Spring Branch area have a tremendous role and I think the world for them. Unfortunately, last time they were not much help because their building had about eight feet of water. They have a lot of resources in clothing, in household items, small appliances things like that they can provide. We have utilized them in searches for lost persons, lost children on the river and those kinds of things. We've used the Texas Militia, the chapter here in Comal County. The other Sheriff was identified by them as a friend of the militia which was fine. I mean I'm not bad mouthing them, I'm saying if it is a manageable resource you need to manage it. If it is not you need to disband it or keep it out or exclude it. They have been fairly helpful in that respect. We utilize some other local groups, the emergency communications group on the River Road. They do some first responder stuff, not medical but some rescue. They do a lot of traffic control. They do a lot of PR, you know handing out brochures and telling people directions and telling them what to do. They assist with crowd control on incidents so the law enforcement, EMS and fire folks can get down there and do what they need to do. They are really good at hauling trauma kits, and "go get me more flares out of my trunk" something like that. They're support. We have Comal County REACT. They have been tremendously helpful in the past on searches, especially because of the communications they have. I personally have their communications capabilities also for me to communicate with them along with Comal, and the Austin and San Antonio channels. Because it's a different band and it's not as effected by atmospheric stuff and interference, so I have that in my vehicle and I have another walkie-talkie that has it also. They have been helpful in those searches they have been almost always helpful on fire scenes, large wrecks if we need to be there for a long time or whatever, in providing refreshments. We call it rehabilitation. Something where you can rehydrate these folks, give them something more. Preferably a complex carbohydrate. Something to give them energy, not very much sugar and not very much caffeine. Some good solid food to get into them and a lot of moisture. They do that on fire almost invariably. They come and provide that service, coupled with the EMS doing rehab in the form of checking vital signs on a fireman in a house for twenty minutes and his air runs out he needs to get out and sit down and rest otherwise you're going to be hauling him off in an ambulance which is tying up more of your resources. It is not good

resource management. So the REACT folks have helped quite a bit. We have a lot of citizens groups. Some of the fire department auxiliaries will be involved in the rehab portion of that. Obtaining the foodstuffs and stuff like that. We have utilized the Red Cross. We don't make it a habit because we don't want to wear out our welcome but they've brought some MRVs up here a couple of times on large two building. It's a neat resource, but I get a little bit tired of weak Kool-aid and crackers, you know, that's what they generally bring. I just as soon have, some of them Canyon Lake ladies make a pretty good bologna sandwich and a glass of tea. It's a pretty neat county in that most everybody get along with everybody else. They have a couple of, oh, territorial disputes occasionally on things about, not the territory itself, but who's going to respond or something but most of them are minor they...

J: Do you think that would be heightened in a disaster situation or...?

M: I think it would go away. We have had some large fires where it just goes away.

J: So it's down time when these things...

M: It's very difficult to comprehend this, but when a 26 year veteran of the Sheriff's office, a patrol supervisor, a twelve year veteran Fire Chief, and a 6 year veteran Fire Chief, and an eight year Deputy Fire Chief relinquish command to a guy that's been involved in this thing about three years. When they respond to what he tells them, when they do what he tells them, that's amazing to me and it works, and it has. The kid didn't make all the right decisions but what he decided they did and the results were basically back in his pocket. They gave him information and advice he took some of it, didn't take some of the other. He learned a great deal. He's become very good at incident command since then through training and just. You ain't run for political office until you run for Sheriff. You can run for president all day long but until you run for Sheriff in a county like this you really haven't run for political office. So you haven't really been an incident commander until you've done it and he had a real good baptism by fire, and he did good. But the Sergeant and the chiefs, they responded to him just like they would anybody else and that works because this is for four different fire departments two different EMS, Sheriff's office, Constables, everybody working together. Corps of Engineers, we work very closely with them during the summer time and everything else, up at the lake.

J: They've got a standing presence out there, don't they somewhere?

M: Yes, and they assist the law enforcement folks quite a bit. They will do almost anything they can to assist EMS and fire on like rescues, boat accidents and things like that. The Parks and Wildlife folks have two different agendas. Some of them are water safety and some of them are game wardens. I mean they are all game wardens but some of them specifically are assigned to water safety. They assist, they are involved with the wet teams with the water rescue, that kind of thing. They have the extensive knowledge of boats and they have those resources available to them. The other game wardens have that training and knowledge and access to resources but we generally try to use them in a

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different light like on a search or something like that and then they can come and provide us with their outdoor skills and stuff like that. So we utilize our, I will say this and I am not bragging on myself but simply because the people have such an awareness of it, resource management is probably very top notch in this county because all of my emergency responders utilize their resources quite well. They know how to deal with resources that come from somewhere else, use it or lose it. If you don't need it then send it out of here. Send it somewhere else. We don't need the problem. So resource management is really not a terrific problem. The state and the Feds have become very good at managing because of the seven truckloads of winter coats in August. They've become very good at resource management and they have folks that specialize in that. If we go beyond our capabilities we call the state. We mesh right in with their system the best that we can. They won't come and take over. They come and assist. Used to, they would come and take over. Now they come and assist. Six, seven, eight years ago if you had a small hazardous materials problem and you called anybody. DPS would send a license and weight trooper because they'd been to the school. They know what they're doing and they're over there telling Fire Chiefs what to do in a hazardous materials deal and this Fire Chief's got more hazardous materials experience than this kid's ever seen. That became a problem. That doesn't happen anymore. They are there for technical assistance, resource management and that's the state's involvement now, so, that's cool. They have a list of vendors that the state has contracts with to come and pick this stuff up and get it out of here and that's what we use.

## **APPENDIX H**

### **CHI-SQUARE RESULTS**

The results of chi-square for independence of responses for participant groupings (Comal County/New Braunfels and Community Organizations/Public Officials) is presented. Differences in response that are significant at  $p < 0.05$  are “boxed.” In those cases where expected frequencies less than five effect the reliability of the chi-square procedure those values are also boxed. In 2 X 2 tables, no expected frequency cell should be less than five and in larger tables fewer than twenty percent of the expected frequencies should be less than five. In such cases the results are interesting but an “exact” test should be conducted to determine their significance.

## Appendix H: Chi-square results

### SECTION 1: Awareness of Preparedness Issues

#### 1. Emergency Operations Plan

	Aware	Unaware	Total	Expected	Expected
Comal County	15	10	25	11.54	13.46
New Braunfels	3	11	14	6.46	7.54
Total	18	21	39		

Chi-square 5.37245 df = 1 Probability **0.020**

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	6	16	22	10.15	11.85
Public Officials	12	5	17	7.85	9.15
Total	18	21	39		

Chi-square 7.23988 df = 1 Probability **0.007**

#### 2. Plans for search and rescue

	Aware	Unaware	Total	Expected	Expected
Comal County	11	14	25	7.69	17.31
New Braunfels	1	13	14	<b>4.31</b>	9.69
Total	12	27	39		

Chi-square 5.7231 df = 1 Probability **0.017**

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	3	19	22	6.77	15.23
Public Officials	9	8	17	5.23	11.77
Total	12	27	39		

Chi-square 6.95477 df = 1 Probability **0.008**

#### 3. Plans for emergency evacuation

	Aware	Unaware	Total	Expected	Expected
Comal County	12	13	25	8.33	16.67
New Braunfels	1	13	14	<b>4.67</b>	9.33
Total	13	26	39		

Chi-square 6.74143 df = 1 Probability **0.009**

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	6	16	22	7.33	14.67
Public Officials	7	10	17	5.67	11.33
Total	13	26	39		

Chi-square 0.83422 df = 1 Probability 0.361

#### 4. Plans for emergency shelters

	Aware	Unaware	Total	Expected	Expected
Comal County	14	11	25	10.90	14.10
New Braunfels	3	11	14	6.10	7.90
Total	17	22	39		

Chi-square 4.3621 df = 1 Probability **0.037**

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	8	14	22	9.59	12.41
Public Officials	9	8	17	7.41	9.59
Total	17	22	39		

Chi-square 1.07178 df = 1 Probability 0.301

## SECTION 1: Awareness of Preparedness Issues

## 5. Process of emergency planning

	Aware	Unaware	Total	Expected	Expected
Comal County	9	16	25	8.33	16.67
New Braunfels	4	10	14	4.67	9.33
Total	13	26	39		

Chi-square 0.22286 df = 1 Probability 0.637

Community Orgs.	6	16	22	7.33	14.67
Public Officials	7	10	17	5.67	11.33
Total	13	26	39		

Chi-square 0.83422 df = 1 Probability 0.361

## 6. Multiple hazards approach to emergency planning

	Aware	Unaware	Total	Expected	Expected
Comal County	6	19	25	5.13	19.87
New Braunfels	2	12	14	2.87	11.13
Total	8	31	39		

Chi-square 0.5194 df = 1 Probability 0.471

Community Orgs.	4	18	22	4.51	17.49
Public Officials	4	13	17	3.49	13.51
Total	8	31	39		

Chi-square 0.16819 df = 1 Probability 0.682

## 7. Efforts to solicit public input into the emergency planning process.

	Aware	Unaware	Total	Expected	Expected
Comal County	4	21	25	3.21	21.79
New Braunfels	1	13	14	1.79	12.21
Total	5	34	39		

Chi-square 0.6299 df = 1 Probability 0.427

Community Orgs.	2	20	22	2.82	19.18
Public Officials	3	14	17	2.18	14.82
Total	5	34	39		

Chi-square 0.62812 df = 1 Probability 0.428

## 8. Efforts to involve the local media in emergency planning

	Aware	Unaware	Total	Expected	Expected
Comal County	7	18	25	5.77	19.23
New Braunfels	2	12	14	3.23	10.77
Total	9	30	39		

Chi-square 0.95086 df = 1 Probability 0.330

Community Orgs.	4	18	22	5.08	16.92
Public Officials	5	12	17	3.92	13.08
Total	9	30	39		

Chi-square 0.68128 df = 1 Probability 0.409

## Appendix H: Chi-square results

### SECTION 1: Awareness of Preparedness Issues

#### 9. Efforts to obtain emergency related state and federal planning grants

	Aware	Unaware	Total	Expected	Expected
Comal County	3	22	25	2.56	22.44
New Braunfels	1	13	14	1.44	12.56
Total	4	35	39		

Chi-square 0.23002 df = 1 Probability 0.632

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	2	20	22	2.26	19.74
Public Officials	2	15	17	1.74	15.26
Total	4	35	39		

Chi-square 0.07448 df = 1 Probability 0.785

#### 10. Emergency Coordinator

	Aware	Unaware	Total	Expected	Expected
Comal County	14	11	25	11.54	13.46
New Braunfels	4	10	14	6.46	7.54
Total	18	21	39		

Chi-square 2.71673 df = 1 Probability 0.099

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	7	15	22	10.15	11.85
Public Officials	11	6	17	7.85	9.15
Total	18	21	39		

Chi-square 4.17361 df = 1 Probability **0.041**

#### 11. Emergency Operations Center

	Aware	Unaware	Total	Expected	Expected
Comal County	10	15	25	7.69	17.31
New Braunfels	2	12	14	4.31	9.69
Total	12	27	39		

Chi-square 2.78571 df = 1 Probability 0.095

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	4	18	22	6.77	15.23
Public Officials	8	9	17	5.23	11.77
Total	12	27	39		

Chi-square 3.75401 df = 1 Probability 0.053

#### 12. Emergency-related resource stockpiling efforts

	Aware	Unaware	Total	Expected	Expected
Comal County	8	17	25	5.13	19.87
New Braunfels	0	14	14	<b>2.87</b>	11.13
Total	8	31	39		

Chi-square 5.63613 df = 1 Probability **0.018**

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	2	20	22	<b>4.51</b>	17.49
Public Officials	6	11	17	<b>3.49</b>	13.51
Total	8	31	39		

Chi-square 4.03825 df = 1 Probability **0.044**

## SECTION 1: Awareness of Preparedness Issues

## 13. Emergency warning systems

	Aware	Unaware	Total	Expected	Expected
Comal County	14	11	25	12.18	12.82
New Braunfels	5	9	14	6.82	7.18
Total	19	20	39		

Chi-square 1.47819 df = 1 Probability 0.224

Community Orgs.	10	12	22	10.72	11.28
Public Officials	9	8	17	8.28	8.72
Total	19	20	39		

Chi-square 0.21514 df = 1 Probability 0.643

## 14. Emergency-related reciprocal, inter-local agreements

	Aware	Unaware	Total	Expected	Expected
Comal County	8	17	25	6.41	18.59
New Braunfels	2	12	14	3.59	10.41
Total	10	29	39		

Chi-square 1.477 df = 1 Probability 0.224

Community Orgs.	3	19	22	5.64	16.36
Public Officials	7	10	17	4.36	12.64
Total	10	29	39		

Chi-square 3.81478 df = 1 Probability 0.051

## 15. Emergency-related mutual aid agreements

	Aware	Unaware	Total	Expected	Expected
Comal County	10	15	25	7.05	17.95
New Braunfels	1	13	14	3.95	10.05
Total	11	28	39		

Chi-square 4.78455 df = 1 Probability 0.029

Community Orgs.	2	20	22	6.21	15.79
Public Officials	9	8	17	4.79	12.21
Total	11	28	39		

Chi-square 9.10605 df = 1 Probability 0.003

## 16. Efforts to coordinate emergency planning with local hospital and medical units

	Aware	Unaware	Total	Expected	Expected
Comal County	9	16	25	7.05	17.95
New Braunfels	2	12	14	3.95	10.05
Total	11	28	39		

Chi-square 2.08965 df = 1 Probability 0.148

Community Orgs.	5	17	22	6.21	15.79
Public Officials	6	11	17	4.79	12.21
Total	11	28	39		

Chi-square 0.74789 df = 1 Probability 0.387

Appendix H: Chi-square results

SECTION 1: Awareness of Preparedness Issues

17. Emergency related public education programs

	Aware	Unaware	Total	Expected	Expected
Comal County	9	15	24	6.95	17.05
New Braunfels	2	12	14	4.05	9.95
Total	11	27	38		

Chi-square 2.31674 df = 1 Probability 0.128

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	4	17	21	6.08	14.92
Public Officials	7	10	17	4.92	12.08
Total	11	27	38		

Chi-square 2.23673 df = 1 Probability 0.135

18. Hazard awareness programs

	Aware	Unaware	Total	Expected	Expected
Comal County	11	14	25	8.33	16.67
New Braunfels	2	12	14	4.67	9.33
Total	13	26	39		

Chi-square 3.56571 df = 1 Probability 0.059

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	5	17	22	7.33	14.67
Public Officials	8	9	17	5.67	11.33
Total	13	26	39		

Chi-square 2.55481 df = 1 Probability 0.110

19. Training efforts to enhance the emergency preparedness of citizens

	Aware	Unaware	Total	Expected	Expected
Comal County	8	17	25	5.13	19.87
New Braunfels	0	14	14	2.87	11.13
Total	8	31	39		

Chi-square 5.63613 df = 1 Probability 0.018

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	2	20	22	4.51	17.49
Public Officials	6	11	17	3.49	13.51
Total	8	31	39		

Chi-square 4.03825 df = 1 Probability 0.044

20. Training efforts to enhance emergency preparedness of its officials and department

	Aware	Unaware	Total	Expected	Expected
Comal County	12	13	25	10.26	14.74
New Braunfels	4	10	14	5.74	8.26
Total	16	23	39		

Chi-square 1.40012 df = 1 Probability 0.237

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	5	17	22	9.03	12.97
Public Officials	11	6	17	6.97	10.03
Total	16	23	39		

Chi-square 6.98465 df = 1 Probability 0.008

**SECTION 1: Awareness of Preparedness Issues**

**21. Training to enhance emergency preparedness of business and private organizations**

	Aware	Unaware	Total	Expected	Expected
Comal County	5	20	25	3.85	21.15
New Braunfels	1	13	14	2.15	11.85
Total	6	33	39		

Chi-square 1.13961 df = 1 Probability 0.286

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	2	20	22	3.38	18.62
Public Officials	4	13	17	2.62	14.38
Total	6	33	39		

Chi-square 1.53573 df = 1 Probability 0.215

**22. Participation in training programs provided by state and federal EM agencies**

	Aware	Unaware	Total	Expected	Expected
Comal County	6	19	25	5.77	19.23
New Braunfels	3	11	14	3.23	10.77
Total	9	30	39		

Chi-square 0.03343 df = 1 Probability 0.855

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	3	19	22	5.08	16.92
Public Officials	6	11	17	3.92	13.08
Total	9	30	39		

Chi-square 2.53396 df = 1 Probability 0.111

**23. Full-scale disaster simulation exercises to assess emergency planning**

	Aware	Unaware	Total	Expected	Expected
Comal County	12	13	25	8.97	16.03
New Braunfels	2	12	14	5.03	8.97
Total	14	25	39		

Chi-square 4.43295 df = 1 Probability 0.035

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	2	20	22	7.90	14.10
Public Officials	12	5	17	6.10	10.90
Total	14	25	39		

Chi-square 15.7609 df = 1 Probability 0.000

**24. Participation in multi-jurisdictional disaster simulation exercises**

	Aware	Unaware	Total	Expected	Expected
Comal County	6	19	25	5.13	19.87
New Braunfels	2	12	14	2.87	11.13
Total	8	31	39		

Chi-square 0.5194 df = 1 Probability 0.471

	Aware	Unaware	Total	Expected	Expected
Community Orgs.	1	21	22	4.51	17.49
Public Officials	7	10	17	3.49	13.51
Total	8	31	39		

Chi-square 7.89192 df = 1 Probability 0.005

Appendix H: Chi-square results

SECTION 2: Concern for Preparedness Issues

1. Emergency Operations Plan

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	17	7	1	25	12.82	10.26	1.92
New Braunfels	3	9	2	14	7.18	5.74	1.08
Total	20	16	3	39			

Chi-square 7.91004 df = 2 Probability 0.019

Community Orgs.	10	10	2	22	11.28	9.03	1.69
Public Officials	10	6	1	17	8.72	6.97	1.31
Total	20	16	3	39			

Chi-square 0.70388 df = 2 Probability 0.703

2. Plans for search and rescue

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	14	8	3	25	9.62	10.26	5.13
New Braunfels	1	8	5	14	5.38	5.74	2.87
Total	15	16	8	39			

Chi-square 9.41293 df = 2 Probability 0.009

Community Orgs.	7	11	4	22	8.46	9.03	4.51
Public Officials	8	5	4	17	6.54	6.97	3.49
Total	15	16	8	39			

Chi-square 1.70364 df = 2 Probability 0.427

3. Plans for emergency evacuation

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	17	7	1	25	14.10	8.33	2.56
New Braunfels	5	6	3	14	7.90	4.67	1.44
Total	22	13	4	39			

Chi-square 4.91045 df = 2 Probability 0.086

Community Orgs.	14	6	2	22	12.41	7.33	2.26
Public Officials	8	7	2	17	9.59	5.67	1.74
Total	22	13	4	39			

Chi-square 1.09018 df = 2 Probability 0.580

4. Plans for emergency shelters

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	17	7	1	25	14.10	9.62	1.28
New Braunfels	5	8	1	14	7.90	5.38	0.72
Total	22	15	2	39			

Chi-square 3.81288 df = 2 Probability 0.149

Community Orgs.	14	7	1	22	12.41	8.46	1.13
Public Officials	8	8	1	17	9.59	6.54	0.87
Total	22	15	2	39			

Chi-square 1.07975 df = 2 Probability 0.583

SECTION 2: Concern for Preparedness Issues

5. Process of emergency planning

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	13	11	1	25	8.97	12.82	3.21
New Braunfels	1	9	4	14	5.03	7.18	1.79
Total	14	20	5	39			
Chi-square	9.97684	df = 2		Probability	0.007	~	
Community Orgs.	6	13	3	22	7.90	11.28	2.82
Public Officials	8	7	2	17	6.10	8.72	2.18
Total	14	20	5	39			
Chi-square	1.67217	df = 2		Probability	0.433		

6. Multiple hazards approach to emergency planning

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	15	9	1	25	10.26	10.26	4.49
New Braunfels	1	7	6	14	5.74	5.74	2.51
Total	16	16	7	39			
Chi-square	14.0897	df = 2		Probability	0.001		
Community Orgs.	7	12	3	22	9.03	9.03	3.95
Public Officials	9	4	4	17	6.97	6.97	3.05
Total	16	16	7	39			
Chi-square	3.81453	df = 2		Probability	0.148		

7. Efforts to solicit public input into the emergency planning process.

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	9	15	1	25	7.05	13.46	4.49
New Braunfels	2	6	6	14	3.95	7.54	2.51
Total	11	21	7	39			
Chi-square	9.53944	df = 2		Probability	0.008		
Community Orgs.	7	12	3	22	6.21	11.85	3.95
Public Officials	4	9	4	17	4.79	9.15	3.05
Total	11	21	7	39			
Chi-square	0.76109	df = 2		Probability	0.683		

8. Efforts to involve the local media in emergency planning

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	11	11	3	25	8.33	11.54	5.13
New Braunfels	2	7	5	14	4.67	6.46	2.87
Total	13	18	8	39			
Chi-square	4.9075	df = 2		Probability	0.086		
Community Orgs.	6	12	4	22	7.53	10.42	4.05
Public Officials	7	6	3	16	5.47	7.58	2.95
Total	13	18	7	38			
Chi-square	1.30495	df = 2		Probability	0.521		

Appendix H: Chi-square results

SECTION 2: Concern for Preparedness Issues

9. Efforts to obtain emergency related state and federal planning grants

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	9	10	6	25	7.05	8.97	8.97
New Braunfels	2	4	8	14	3.95	5.03	5.03
Total	11	14	14	39			

Chi-square 4.57291 df = 2 Probability 0.102

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Community Orgs.	6	7	9	22	6.21	7.90	7.90
Public Officials	5	7	5	17	4.79	6.10	6.10
Total	11	14	14	39			

Chi-square 0.60265 df = 2 Probability 0.740

10. Emergency Coordinator

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	14	8	3	25	10.90	9.62	4.49
New Braunfels	3	7	4	14	6.10	5.38	2.51
Total	17	15	7	39			

Chi-square 4.58973 df = 2 Probability 0.101

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Community Orgs.	7	10	5	22	9.59	8.46	3.95
Public Officials	10	5	2	17	7.41	6.54	3.05
Total	17	15	7	39			

Chi-square 2.88824 df = 2 Probability 0.236

11. Emergency Operations Center

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	12	9	4	25	8.97	10.26	5.77
New Braunfels	2	7	5	14	5.03	5.74	3.23
Total	14	16	9	39			

Chi-square 4.78181 df = 2 Probability 0.092

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Community Orgs.	7	8	7	22	7.90	9.03	5.08
Public Officials	7	8	2	17	6.10	6.97	3.92
Total	14	16	9	39			

Chi-square 2.17246 df = 2 Probability 0.337

12. Emergency-related resource stockpiling efforts

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	9	11	5	25	6.41	12.18	6.41
New Braunfels	1	8	5	14	3.59	6.82	3.59
Total	10	19	10	39			

Chi-square 4.09705 df = 2 Probability 0.129

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Community Orgs.	4	12	6	22	5.64	10.72	5.64
Public Officials	6	7	4	17	4.36	8.28	4.36
Total	10	19	10	39			

Chi-square 1.49941 df = 2 Probability 0.473

## SECTION 2: Concern for Preparedness Issues

## 13. Emergency warning systems

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	19	5	1	25	16.03	5.77	3.21
New Braunfels	6	4	4	14	8.97	3.23	1.79
Total	25	9	5	39			

Chi-square 6.04983 df = 2 Probability 0.049

Community Orgs.	16	4	2	22	14.10	5.08	2.82
Public Officials	9	5	3	17	10.90	3.92	2.18
Total	25	9	5	39			

Chi-square 1.65733 df = 2 Probability 0.437

## 14. Emergency-related reciprocal, inter-local agreements

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	11	11	3	25	7.05	12.18	5.77
New Braunfels	0	8	6	14	3.95	6.82	3.23
Total	11	19	9	39			

Chi-square 10.1811 df = 2 Probability 0.006

Community Orgs.	4	13	5	22	6.21	10.72	5.08
Public Officials	7	6	4	17	4.79	8.28	3.92
Total	11	19	9	39			

Chi-square 2.91513 df = 2 Probability 0.233

## 15. Emergency-related mutual aid agreements

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	14	8	3	25	8.97	9.62	6.41
New Braunfels	0	7	7	14	5.03	5.38	3.59
Total	14	15	10	39			

Chi-square 13.65 df = 2 Probability 0.001

Community Orgs.	5	11	6	22	7.90	8.46	5.64
Public Officials	9	4	4	17	6.10	6.54	4.36
Total	14	15	10	39			

Chi-square 4.23816 df = 2 Probability 0.120

## 16. Efforts to coordinate emergency planning with local hospital and medical units

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	15	7	3	25	11.54	8.33	5.13
New Braunfels	3	6	5	14	6.46	4.67	2.87
Total	18	13	8	39			

Chi-square 5.9475 df = 2 Probability 0.051

Community Orgs.	10	8	4	22	10.15	7.33	4.51
Public Officials	8	5	4	17	7.85	5.67	3.49
Total	18	13	8	39			

Chi-square 0.27807 df = 2 Probability 0.870

Appendix H: Chi-square results

SECTION 2: Concern for Preparedness Issues

17. Emergency related public education programs

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	15	8	2	25	12.82	7.69	4.49
New Braunfels	5	4	5	14	7.18	4.31	2.51
Total	20	12	7	39			

Chi-square 4.90684 df = 2 Probability 0.086

Community Orgs.	13	6	3	22	11.28	6.77	3.95
Public Officials	7	6	4	17	8.72	5.23	3.05
Total	20	12	7	39			

Chi-square 1.32359 df = 2 Probability 0.516

18. Hazard awareness programs

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	16	7	2	25	12.18	7.69	5.13
New Braunfels	3	5	6	14	6.82	4.31	2.87
Total	19	12	8	39			

Chi-square 8.82778 df = 2 Probability 0.012

Community Orgs.	10	9	3	22	10.72	6.77	4.51
Public Officials	9	3	5	17	8.28	5.23	3.49
Total	19	12	8	39			

Chi-square 2.96026 df = 2 Probability 0.228

19. Training efforts to enhance the emergency preparedness of citizens

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	14	8	3	25	11.54	8.33	5.13
New Braunfels	4	5	5	14	6.46	4.67	2.87
Total	18	13	8	39			

Chi-square 3.96036 df = 2 Probability 0.138

Community Orgs.	10	8	4	22	10.15	7.33	4.51
Public Officials	8	5	4	17	7.85	5.67	3.49
Total	18	13	8	39			

Chi-square 0.27807 df = 2 Probability 0.870

20. Training efforts to enhance the emergency preparedness of its officials and departments

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	17	6	2	25	13.46	7.69	3.85
New Braunfels	4	6	4	14	7.54	4.31	2.15
Total	21	12	6	39			

Chi-square 6.09673 df = 2 Probability 0.047

Community Orgs.	12	7	3	22	11.85	6.77	3.38
Public Officials	9	5	3	17	9.15	5.23	2.62
Total	21	12	6	39			

Chi-square 0.1229 df = 2 Probability 0.940

SECTION 2: Concern for Preparedness Issues

21. Training to enhance the emergency preparedness of business and private organizations

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	12	9	4	25	9.62	10.26	5.13
New Braunfels	3	7	4	14	5.38	5.74	2.87
Total	15	16	8	39			

Chi-square 2.76761 df = 2 Probability 0.251

Community Orgs.	8	9	5	22	8.46	9.03	4.51
Public Officials	7	7	3	17	6.54	6.97	3.49
Total	15	16	8	39			

Chi-square 0.17858 df = 2 Probability 0.915

22. Participation in training programs provided by state and federal EM agencies

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	17	6	2	25	10.90	9.62	4.49
New Braunfels	0	9	5	14	6.10	5.38	2.51
Total	17	15	7	39			

Chi-square 17.1473 df = 2 Probability 0.000

Community Orgs.	7	12	3	22	9.59	8.46	3.95
Public Officials	10	3	4	17	7.41	6.54	3.05
Total	17	15	7	39			

Chi-square 5.52201 df = 2 Probability 0.063

23. Full-scale disaster simulation exercises to assess emergency planning

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	14	7	4	25	10.26	10.26	4.49
New Braunfels	2	9	3	14	5.74	5.74	2.51
Total	16	16	7	39			

Chi-square 6.83395 df = 2 Probability 0.033

Community Orgs.	7	10	5	22	9.03	9.03	3.95
Public Officials	9	6	2	17	6.97	6.97	3.05
Total	16	16	7	39			

Chi-square 1.92635 df = 2 Probability 0.382

24. Participation in multi-jurisdictional disaster simulation exercises

	V.C.	S.C.	N.C.	Total	Expected	Expected	Expected
Comal County	13	8	4	25	8.33	10.26	6.41
New Braunfels	0	8	6	14	4.67	5.74	3.59
Total	13	16	10	39			

Chi-square 11.1874 df = 2 Probability 0.004

Community Orgs.	4	12	6	22	7.33	9.03	5.64
Public Officials	9	4	4	17	5.67	6.97	4.36
Total	13	16	10	39			

Chi-square 5.77701 df = 2 Probability 0.056

Appendix H: Chi-square results

SECTION 3: Attitudes Toward Mitigation Issues

9. Local government condemnation and purchase of property to reduce exposure to hazards

	Strongly Favor	Favor	Total	Expected	Expected
Cornal County	5	11	16	4.17	11.83
New Braunfels	1	6	7	1.83	5.17
Total	6	17	23		
Chi-square	0.7268	df = 1	Probability	0.394	
Community Orgs.	5	9	14	3.65	10.35
Public Officials	1	8	9	2.35	6.65
Total	6	17	23		
Chi-square	1.71981	df = 1	Probability	0.190	

10. Local government public education campaigns to enhance awareness of mitigation issues

	Strongly Favor	Favor	Total	Expected	Expected
Cornal County	11	13	24	9.75	14.25
New Braunfels	2	6	8	3.25	4.75
Total	13	19	32		
Chi-square	1.07962	df = 1	Probability	0.299	
Community Orgs.	9	12	21	8.53	12.47
Public Officials	4	7	11	4.47	6.53
Total	13	19	32		
Chi-square	0.12619	df = 1	Probability	0.722	

11. Technical assistance to encourage hazard resistance actions by individuals and business

	Strongly Favor	Favor	Total	Expected	Expected
Cornal County	9	14	23	8.43	14.57
New Braunfels	2	5	7	2.57	4.43
Total	11	19	30		
Chi-square	0.25766	df = 1	Probability	0.612	
Community Orgs.	7	12	19	6.97	12.03
Public Officials	4	7	11	4.03	6.97
Total	11	19	30		
Chi-square	0.00069	df = 1	Probability	0.979	

12. Loans to encourage hazard resistance actions by private individuals and businesses.

	Strongly Favor	Favor	Total	Expected	Expected
Cornal County	5	10	15	3.95	11.05
New Braunfels	0	4	4	1.05	2.95
Total	5	14	19		
Chi-square	1.80952	df = 1	Probability	0.179	
Community Orgs.	4	7	11	2.89	8.11
Public Officials	1	7	8	2.11	5.89
Total	5	14	19		
Chi-square	1.36023	df = 1	Probability	0.243	

## 13. Grants to encourage hazard resistance actions by private individuals and businesses.

	Strongly				
	Favor	Favor	Total	Expected	Expected
Comal County	7	12	19	5.78	13.22
New Braunfels	0	4	4	1.22	2.78
Total	7	16	23		
Chi-square	2.11842	df = 1	Probability	0.146	
Community Orgs.	5	8	13	3.96	9.04
Public Officials	2	8	10	3.04	6.96
Total	7	16	23		
Chi-square	0.90989	df = 1	Probability	0.340	

## 14. Tax deductions/credits to encourage haz. resistance actions by individuals and business

	Strongly				
	Favor	Favor	Total	Expected	Expected
Comal County	9	10	19	6.33	12.67
New Braunfels	0	8	8	2.67	5.33
Total	9	18	27		
Chi-square	5.68421	df = 1	Probability	0.017	
Community Orgs.	6	11	17	5.67	11.33
Public Officials	3	7	10	3.33	6.67
Total	9	18	27		
Chi-square	0.07941	df = 1	Probability	0.778	

Appendix H: Chi-square results

SECTION 4: Attitudes Toward Mitigation Issues

1. Mandatory that property purchasers and users be notified of land's hazard proneness.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	18	6	24	16.00	8.00
New Braunfels	6	6	12	8.00	4.00
Total	24	12	36		
Chi-square	2.25	df = 1	Probability	0.134	
Community Orgs.	14	7	21	14.00	7.00
Public Officials	10	5	15	10.00	5.00
Total	24	12	36		
Chi-square	0	df = 1	Probability	1.000	

2. Sub-division applications should include hazard impact & mitigation statements.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	16	8	24	15.09	8.91
New Braunfels	6	5	11	6.91	4.09
Total	22	13	35		
Chi-square	0.47468	df = 1	Probability	0.491	
Community Orgs.	13	8	21	13.20	7.80
Public Officials	9	5	14	8.80	5.20
Total	22	13	35		
Chi-square	0.0204	df = 1	Probability	0.886	

3. Hazard & risk analysis are essential functions of local government.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	11	11	22	9.63	12.38
New Braunfels	3	7	10	4.38	5.63
Total	14	18	32		
Chi-square	1.11746	df = 1	Probability	0.290	
Community Orgs.	10	9	19	8.31	10.69
Public Officials	4	9	13	5.69	7.31
Total	14	18	32		
Chi-square	1.49913	df = 1	Probability	0.221	

4. Hazard & risk analysis, by local government, should occur annually.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	8	12	20	6.40	13.60
New Braunfels	0	5	5	1.60	3.40
Total	8	17	25		
Chi-square	2.94118	df = 1	Probability	0.086	
Community Orgs.	5	8	13	4.16	8.84
Public Officials	3	9	12	3.84	8.16
Total	8	17	25		
Chi-square	0.51965	df = 1	Probability	0.471	

## SECTION 4: Attitudes Toward Mitigation Issues

## 5. Vulnerability profile from hazard &amp; risk analysis should be reported in public forum.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	9	13	22	8.00	14.00
New Braunfels	3	8	11	4.00	7.00
Total	12	21	33		
Chi-square	0.58929	df = 1	Probability	0.443	
Community Orgs.	7	12	19	6.91	12.09
Public Officials	5	9	14	5.09	8.91
Total	12	21	33		
Chi-square	0.00443	df = 1	Probability	0.947	

## 6. Hazardous materials monitoring &amp; surveillance programs are essential functions.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	11	11	22	9.06	12.94
New Braunfels	3	9	12	4.94	7.06
Total	14	20	34		
Chi-square	2.00357	df = 1	Probability	0.157	
Community Orgs.	10	10	20	8.24	11.76
Public Officials	4	10	14	5.76	8.24
Total	14	20	34		
Chi-square	1.56122	df = 1	Probability	0.211	

## 7. It is essential that business &amp; industry report hazardous materials inventories.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	14	10	24	12.00	12.00
New Braunfels	4	8	12	6.00	6.00
Total	18	18	36		
Chi-square	2	df = 1	Probability	0.157	
Community Orgs.	11	10	21	10.50	10.50
Public Officials	7	8	15	7.50	7.50
Total	18	18	36		
Chi-square	0.11429	df = 1	Probability	0.735	

## 8. Private individuals &amp; business bear primary responsibility for mitigating hazards.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	8	12	20	7.59	12.41
New Braunfels	3	6	9	3.41	5.59
Total	11	18	29		
Chi-square	0.11717	df = 1	Probability	0.732	
Community Orgs.	8	9	17	6.45	10.55
Public Officials	3	9	12	4.55	7.45
Total	11	18	29		
Chi-square	1.45388	df = 1	Probability	0.228	

Appendix H: Chi-square results

SECTION 4: Attitudes Toward Mitigation Issues

9. Local government should share the cost of mitigating hazards.

	Strongly Agree	Agree	Total	Expected	Expected
Comal County	2	12	14	2.21	11.79
New Braunfels	1	4	5	0.79	4.21
Total	3	16	19		
Chi-square	0.09048	df = 1	Probability	0.764	
Community Orgs.	3	8	11	1.74	9.26
Public Officials	0	8	8	1.26	6.74
Total	3	16	19		
Chi-square	2.59091	df = 1	Probability	0.107	

9. Local government should share the cost of mitigating hazards.

	Disagree	Strongly Disagree	Total	Expected	Expected
Comal County	4	4	8	4.36	3.64
New Braunfels	2	1	3	1.64	1.36
Total	6	5	11		
Chi-square	0.24444	df = 1	Probability	0.621	
Community Orgs.	6	1	7	3.82	3.18
Public Officials	0	4	4	2.18	1.82
Total	6	5	11		
Chi-square	7.54286	df = 1	Probability	0.006	

10. Economic considerations more important than public safety and health.

	Disagree	Strongly Disagree	Total	Expected	Expected
Comal County	5	11	16	7.70	8.30
New Braunfels	8	3	11	5.30	5.70
Total	13	14	27		
Chi-square	4.49185	df = 1	Probability	0.034	
Community Orgs.	8	7	15	7.22	7.78
Public Officials	5	7	12	5.78	6.22
Total	13	14	27		
Chi-square	0.36346	df = 1	Probability	0.547	

11. Individual choice more important than public safety and health.

	Disagree	Strongly Disagree	Total	Expected	Expected
Comal County	5	11	16	7.38	8.62
New Braunfels	7	3	10	4.62	5.38
Total	12	14	26		
Chi-square	3.71815	df = 1	Probability	0.054	
Community Orgs.	7	8	15	6.92	8.08
Public Officials	5	6	11	5.08	5.92
Total	12	14	26		
Chi-square	0.00375	df = 1	Probability	0.951	

SECTION 4: Attitudes Toward Mitigation Issues

12. Local government mitigation should consider both man-made and natural hazards.

	Strongly Favor	Favor	Total	Expected	Expected
Comal County	8	14	22	6.67	15.33
New Braunfels	2	9	11	3.33	7.67
Total	10	23	33		

Chi-square 1.14783 df = 1 Probability 0.284

	Strongly Favor	Favor	Total	Expected	Expected
Community Orgs.	7	12	19	5.76	13.24
Public Officials	3	11	14	4.24	9.76
Total	10	23	33		

Chi-square 0.90672 df = 1 Probability 0.341

13. Local government should pay more attention to mitigation than to preparing response.

	Strongly Agree	Agree	Disagree	Total	Expected	Expected	Expected
Comal County	4	8	6	18	3.21	7.71	7.07
New Braunfels	1	4	5	10	1.79	4.29	3.93
Total	5	12	11	28			

Chi-square 1.02195 df = 2 Probability 0.600

	Strongly Agree	Agree	Disagree	Total	Expected	Expected	Expected
Community Orgs.	4	6	6	16	2.86	6.86	6.29
Public Officials	1	6	5	12	2.14	5.14	4.71
Total	5	12	11	28			

Chi-square 1.34697 df = 2 Probability 0.510

13. Local government should pay more attention to mitigation than to preparing response.

	Agree	Disagree	Total	Expected	Expected
Comal County	8	6	14	7.30	6.70
New Braunfels	4	5	9	4.70	4.30
Total	12	11	23		

Chi-square 0.35402 df = 1 Probability 0.552

	Agree	Disagree	Total	Expected	Expected
Community Orgs.	6	6	12	6.26	5.74
Public Officials	6	5	11	5.74	5.26
Total	12	11	23		

Chi-square 0.04752 df = 1 Probability 0.827

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