

July 2020

Before the Flood Washes it Away: The Road Connecting Urban & Regional Planning and Emergency Management Planning

Ian Cyr
University of Massachusetts Amherst

Follow this and additional works at: https://scholarworks.umass.edu/masters_theses_2



Part of the [Civic and Community Engagement Commons](#), [Emergency and Disaster Management Commons](#), [Fire Science and Firefighting Commons](#), and the [Urban Studies and Planning Commons](#)

Recommended Citation

Cyr, Ian, "Before the Flood Washes it Away: The Road Connecting Urban & Regional Planning and Emergency Management Planning" (2020). *Masters Theses*. 939.
<https://doi.org/10.7275/17659309> https://scholarworks.umass.edu/masters_theses_2/939

This Open Access Thesis is brought to you for free and open access by the Dissertations and Theses at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Masters Theses by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

University of Massachusetts Amherst

ScholarWorks@UMass Amherst

MastersTheses

DissertationsandTheses

Before the Flood Washes it Away: The Road Connecting Urban & Regional Planning and Emergency Management Planning

Ian Cyr

Follow this and additional works at: https://scholarworks.umass.edu/masters_theses_2



Part of the Civic and Community Engagement Commons, Emergency and Disaster Management Commons, Fire Science and Firefighting Commons, and the Urban Studies and Planning Commons

BEFORE THE FLOOD WASHES IT AWAY: THE ROAD
CONNECTING URBAN & REGIONAL PLANNING AND
EMERGENCY MANAGEMENT PLANNING

A Thesis Presented

by

IAN P. CYR

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

MASTER OF REGIONAL PLANNING

May 2020

Department of Landscape Architecture and Regional Planning

BEFORE THE FLOOD WASHES IT AWAY: THE ROAD
CONNECTING URBAN & REGIONAL PLANNING AND
EMERGENCY MANAGEMENT PLANNING

A Thesis Presented

by

IAN P. CYR

Approved as to style and content by:

DocuSigned by:

Elizabeth Brabec

9B9C007BFCB741E...

Elizabeth Brabec, Chair

DocuSigned by:

Ellen Pader

F43E726C4FA8448...

Ellen Pader, Member

DocuSigned by:

Robert L. Ryan

B366480A48F84F3...

Robert Ryan, Member

DocuSigned by:

Robert L. Ryan

B366480A48F84F3...

Robert Ryan, Department Chair
Landscape Architecture and Regional Planning

ABSTRACT

BEFORE THE FLOOD WASHES IT AWAY: THE ROAD
CONNECTING URBAN & REGIONAL PLANNING AND
EMERGENCY MANAGEMENT PLANNING

MAY 2020

IAN P. CYR

B.A., WESTFIELD STATE UNIVERSITY

M.R.P., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Elizabeth Brabec

This master's thesis examines the relationship between emergency management planning and comprehensive land use planning. The incorporation of emergency management practices into the comprehensive planning process allows for a better understanding of the impact of development, zoning, building code, and economic development on the mitigation of hazards that face the community. Academic curricula may provide a brief introduction of the relationship between hazard mitigation and land use; however, a more detailed exploration of how emergency management planning and regional or urban planning are interrelated is needed. The impact of weather-related events, natural disasters, or other human-caused shock or disruption can dramatically impact the physical, social, and psychological structures of a community. This research provides regional planners with the history of emergency management planning in the United States. It examines how cross-sharing of information and process between both planning disciplines can contribute to more robust community development and disaster plans. A case study illustrates the impact of urban development on natural hazard

mitigation and the subsequent risks to public safety, which resulted from the planning decisions. Place identity, place dependence, and public participation concerning hazard mitigation and disaster management are explored to provide planners and emergency managers with a context of the psychological influences which may impact a community

member's decisions when faced with significant disruption of place. Best practices that guide the integration of regional planning and emergency management planning are provided to increase the understanding of both planning processes to increase the capacity of a community to absorb and rebound from a natural disaster or sudden shock.

TABLE OF CONTENTS

	Page
ABSTRACT	iii
LIST OF FIGURES	vi
CHAPTER	
1. INTRODUCTION	1
2. LITERATURE REVIEW	3
Definitions	3
Recovery	4
The Role of Governance	5
The Importance of Participatory Planning Processes	5
The Role of Social Capital & Civic Capacity	6
The Role of Public Participation.....	8
Integrating Emergency Management and Master Plans	8
Conclusion	9
3. METHODOLOGY	10
Limitation	12
4. CASE STUDY- BROADMOOR, NEW ORLEANS	13
Settling New Orleans- Below Sea Level?.....	13
A Different Kind of Settlement.....	16
Broadmoor Neighborhood	17
Broadmoor Improvement Association.....	19
Hurricane Katrina Impact on Broadmoor	19
Rebuilding Plan and the Green Dot Map.....	21
Broadmoor Lives	23
The Broadmoor Redevelopment Plan.....	25
The Intersection of Land Use Planning and Emergency Management.....	28
Conclusion	31
5. PLACE ATTACHMENT AND EMERGENCY MANAGEMENT	33
Home as a Place	34
Maslow's Hierarchy of Needs as it Relates to Housing	34
Place Making	35
Place Identity, Attachment and Disaster Response.....	36

Why Return After a Disaster?.....	38
Conclusion	40
6. THE EMERGENCY MANAGEMENT PROCESS AND ROLE OF THE LAND USE PLANNER	42
Local Level Structure.....	43
Mitigation: Before the Disaster.....	44
Preparedness: Before the Disaster	45
Response: During the Disaster	47
Recovery: Before and After the Disaster	48
Planning, Emergency Management, and Hazard Mitigation	50
Planning for Disaster.....	52
What Role Should Planners Play?	52
Comprehensive Vision and Goal Setting.....	54
Integrating Hazards into Planning	55
The New Normal.....	57
Acute Childhood Experiences.....	59
Conclusion	60
7. CONCLUSION.....	62
WORKS CITED	72

LIST OF FIGURES

Figure	Page
Figure 1: Subsidence in New Orleans.....	17
Figure 2: Neighborhoods in Orleans Parish.....	19
Figure 3: Hurricane Katrina Flood Depths in Broadmoor	21
Figure 4: Green Dot Map.....	22
Figure 5: Broadmoor Lives.....	25
Figure 6: Maslow's Hierarchy of Needs.....	37
Figure 7: Emergency Management Cycles	47

CHAPTER 1

INTRODUCTION

Regional planners should understand the emergency management planning process as both planning efforts rely on and can impact each other. The incorporation of emergency management practices into the comprehensive planning process allows for a better understanding of the impact of development, zoning, building code, and economic development on the mitigation of hazards that face the community. Academic curricula may provide a brief introduction of the relationship between hazard mitigation and land use; however, a more detailed exploration of how emergency management planning and regional or urban planning are interrelated is needed. The impact of weather-related events, natural disasters, or other human-caused shock or disruption can dramatically impact the physical, social, and psychological structures of a community. This research provides regional planners with the history of emergency management planning in the United States. It examines how cross-sharing of information and process between both planning disciplines can contribute to more robust community development and disaster plans. A case study illustrates the impact of urban development on natural hazard mitigation and the subsequent risks to public safety, which resulted from the planning decisions. Place identity, place dependence, and public participation concerning hazard mitigation and disaster management are explored to provide planners and emergency managers with a context of the psychological influences which may impact a community member's decisions when faced with significant disruption of place. Best practices that guide the integration of regional planning and emergency management planning are provided to increase the understanding of both planning processes to increase the

capacity of a community to absorb and rebound from a natural disaster or sudden shock.

CHAPTER 2

LITERATURE REVIEW

This chapter provides an overview of the literature discussing the intersection of emergency management, theory, the emergency management planning process and comprehensive land use plans. Examining the literature on these topics establishes the critical context that grounds this thesis research and informs the interpretation of results, as well as the resulting discussion and recommendations.

Disasters occur with regular frequency in the United States. Floods, earthquakes, hurricanes, and tornados are only a few events that impact various communities within the country. The impact of these events may include physical damage, loss of life, number of displaced persons, and economic loss. While there is no guarantee that residents who are displaced or impacted as a result of such events will return and rebuild this phase of disaster recovery is critical to supporting the broader social and economic efforts to restore the viability of impacted communities (Quarantelli, 1999).

Definitions

For consistency and brevity, the term "planner" will be used to describe Urban or Regional planners and those who are responsible for the creation of comprehensive or master plans for a given community, city, etc. The terms "emergency management" and "hazard mitigation" are used to describe the process of assessing risks to the community and developing appropriate plans to address those risks (FEMA, 2004). "Natural disaster" is used to describe severe natural weather events such as hurricanes, tornadoes, and wildfires (FEMA, 2004). The term "sudden shock" is used to describe acute emergencies such as gas explosions, acts of terror, or other rapidly occurring events where there is a significant loss of life or disruption to the community (FEMA,

2010). Sudden shocks are rapid; however, there may be known risk factors such as a fuel storage facility, hazardous material location, or failing infrastructure that should provide planners and emergency managers with advanced notice of concern. "Disaster" is often the term associated with these events and may or may not be inclusive of a nationally declared disaster, which is a policy mechanism to invoke management or financial assistance from State or Federal government entities. This language is not inclusive of all types of disasters or sudden shock, nor is it intended to diminish the significance of an event on the affected community.

Recovery

Smith and Wenger (2007) define disaster recovery as the "differential process of restoring, rebuilding, and reshaping the physical, social, economic and natural environment through pre-event planning and post-event actions" (237). Rumbach and Foley (2014) state that recent research on community recovery post-disaster, especially after Hurricanes Katrina and Rita, presents powerful evidence that recovery is often a function of community input, power, and capacity, but the impact on individual households is less clear (e.g., Haas et al. 1977; Kweit and Kweit 2004; Olshansky and Johnson 2010; Smith 2012; Kim and Olshansky 2015). Regardless of physical location Quarantelli (1999) shows that disaster recovery varies due to the social characteristics of victims such as socioeconomic status, age, knowledge, and social positioning (57). Enarson and Fordham (2001) show similar findings by race, ethnicity, and gender. Olshansky, Johnson, and Topping (2006) describe "considerable consensus" in the disaster recovery literature that the "higher the socioeconomic level, the more likely households, and businesses are to recover to pre-disaster levels" (356). Additionally,

there is a well-documented connection between social vulnerability and environmental exposure, as low-income and marginalized communities tend to be disproportionately located in hazardous areas (e.g., Adger 2005; Dewan 2013; Peacock et al. 2015; Sherly et al. 2015).

The Role of Governance

Disaster recovery is, in many respects, a function of local governance, and how a local government represents its constituents and the decisions it makes play a central role in the recovery trajectory of individual households (Rumbach & Foley, 2014). Olshansky, Johnson, & Topping (2006) find that local leadership is critical to a successful recovery. Effective leaders can provide vision, work with community organizations, and act as a bridge between citizens and other government agencies, among other roles (see also Prater, Peacock, Arlikatti, & Grover, 2006; Smith, 2011). Specific to disaster management, local governance over disasters and disaster recovery varies widely in terms of capacity, coordination between agencies and organizations, and views on the appropriate role of local government (Olshansky, Johnson, and Topping 2006; Dewan 2013). Local governments with pre-existing expertise in key recovery areas such as community planning, social services, or housing development can act more quickly and with less reliance on outside resources than those without this background or experience (Rumbach & Foley, 2014).

The Importance of Participatory Planning Processes

While a strong local government is helpful, there must be a focus on local leadership engaging the public before the disaster. Historically, governmental guidance was provided by agencies that have been constructed from military models and include an authoritarian, top-down approach (FEMA, 2004). Participation must be approached

from the bottom-up and achieve acceptance and cooperation from community participants to be effective (Creighton, 2012). The goal is to engage the public to build a knowledgeable constituency, able to create a plan that reflects local values, needs, and capabilities, and enable ongoing public input throughout the recovery process (Berke, Cooper, Aminto, Grabich, & Horney, 2014). Cutter, Burton, & Emrich, (2010) argue that community recovery is, in part, dependent on "preparedness and mitigation efforts taken pre-storm, and the capacity (economic, social, and institutional) of the community" (64). Local leaders and planning professionals should evaluate communities that are at risk for disaster impact and develop strategies that engage the community in a dialog. This dialogue should discuss the risks, the required planning efforts to ensure life and property safety, the expected government and community actions during the disaster, and how the community will recover and rebuild from any damage sustained by the disaster.

The Role of Social Capital & Civic Capacity

Social capital has different meanings among different areas of study. In general terms, social capital refers to the social relationships and social structures that have productive benefits (Onyx & Bullen, 2000). Social capital has multiple positive effects on household resilience to disasters and household and community recovery (Onyx & Bullen, 2000). During times of crisis, neighbors with strong ties look out for one another and share emotional, material, and logistical support (Klinenberg 2015; Rumbach and Foley 2014).

Civic capacity refers to shared goals and values and the ability to work collectively using resources that allow communities to establish and achieve shared goals, mobilize political and financial capital, and adapt to change. As the core of

community resilience, this is critical not only to recovery from disasters but in responding to the ongoing economic, political, and social changes faced by cities and neighborhoods (Seideman, 2013). Each community, even each neighborhood, will bring varying skills and talents held by residents in its population. During disaster and recovery, these pre-existing skills and knowledge bases will need to be honed and expanded. Furthermore, where there are knowledge and skill gaps within a community, these capabilities will have to be developed (Fung, 2008).

The resilience of a household can be supported through local governance activities like promoting cultures of volunteerism, creating more robust and inclusive planning cultures, developing pre-disaster plans and policies, and improving the relationships between vulnerable populations and their local governments (Rumbach, 2015). Government leaders and planning professionals can use public participation strategies to promote broader community participation in planning and empower local action to facilitate buy-in and, in turn, increase community capacity to prepare for and respond to a disaster (FEMA, 2011).

After a significant catastrophe, confidence is often shaken. It is a major commitment to return to a place where everything is lost and put the time, money, and emotional investment into rebuilding. Even in disasters where recovery is speedy and well-funded, some residents choose not to return (Fung, 2008). Minority communities often face specific challenges when deciding to return to disaster-damaged communities. For African Americans, the decision to return to their original home is not directly influenced by the damage of a disaster, but rather, they make their decisions based on political trust (Jamali & Nejat, 2016). Deeply embedded patterns of gender, racial/ethnic, and class stratification and segregation shape the relative vulnerability of

residents to extreme events like floods, their capacity to recover from flood effects, and their power to engage in community reconstruction (Enarson, 2001).

The Role of Public Participation

Public participation is the process by which public concerns, needs, and values are incorporated into governmental and corporate decision making (Creighton, 2005). It is an interactive process that considers the level of impact or influence on the decisions made by government or private organizations. Leaders at the community, local, and state levels can use public participation strategies to increase fruitful dialogue among stakeholders. Tools described in texts such as *The Public Participation Handbook* (Creighton, 2005), and FEMA's *The Whole Community Approach* (2011) can serve as a guide to leaders to develop strategies to improve engagement with communities, especially those communities that lack resources—understanding the community complexity, recognizing community capabilities and needs, while fostering relationships with community leaders helps to build and maintain partnerships, which empowers local action (FEMA, 2011).

Integrating Emergency Management and Master Plans

The process of integrating emergency management and master plans is specific to an individual community. It depends on the known hazards, coupled with the range of planning processes and tools that influence how the built environment is exposed to those hazards (FEMA, 2013). Effective integration of hazard mitigation occurs when a community's planning framework leads to development patterns that do not increase risks from known hazards or leads to redevelopment that reduces risk from known hazards (Schwab, 2010). Frequently, emergency managers lead mitigation planning efforts but may not always take advantage of the unique expertise that community

development or zoning officials can bring to bear in the preparation of these plans (Schwab, 2010). Community planners share the responsibility to seek out their emergency management counterparts and become part of the emergency management team to determine what shared values and potential solutions jointly work best for their community (Schwab, 2010).

Conclusion

The literature serves as important context as preparation before a disaster and recovery after a disaster are related. Planning professionals, emergency management experts and policymakers must understand the relationship between hazard mitigation and land use planning process. Without an understanding of the relationship, practitioners working in these areas cannot make fully informed decisions about the effects that their individual plans may have on their communities.

CHAPTER 3

METHODOLOGY

The purpose of this chapter is to introduce the research methodology for this qualitative study regarding the relationship between emergency management planning processes and land use or master planning processes. This approach allowed for a deeper understanding of the benefits of incorporating various aspects of the respective planning processes to create more robust and comprehensive plans and it provided a way to identify potential gaps in the respective planning processes.

This study builds a theory in answer to the following research questions:

- How does the relationship between emergency management plans and comprehensive or land use plans influence community preparation for, response to a disaster?
- How can the relationship between these separate plans be improved to increase community capacity to absorb and recover from a disaster?

The relationship between emergency planning processes and comprehensive land use planning processes is often weak due to a siloed approach when creating the individual plan. A contributing factor to this disconnect is a lack of awareness or understanding of the respective and concurrent planning process. The two planning processes are different yet share common attributes that practitioners can use to increase collaboration and understanding between the two planning processes. Lack of coordination between the two planning processes affects the overall efficacy of the individual plans and may result in a weakened capacity for a community to absorb and

recover from a disaster or sudden shock to the community. Lack of coordination may influence government decision making, and community stakeholder's ability to recover from a disaster. Governing bodies such as the Federal Emergency Management Agency and the American Planning Association both identify the gap between the two planning processes and have created guidance and strategies to increase collaboration.

This project explores the relationship between emergency management planning and comprehensive land use or master planning to learn more about how planners and emergency managers can work more collaboratively to increase overall community resilience and capacity to mitigate and recover from a disaster.

The methodology incorporated two approaches: a review of the literature focusing on relevant research publications, training documents, and educational guides; and a case study of emergency management and planning outcomes. This approach contributes to the researcher's practical and academic experience in emergency management and regional planning disciplines.

Existing literature sources were collected and reviewed. The data was sourced from online publications of scholarly research, including journal articles, textbooks, and other research documents to understand the existing academic research regarding this relationship. Government documents such as educational texts from the Federal Emergency Management Agency, and congressional reports were also reviewed to understand the position of the emergency management community regarding the inclusion of regional or land use planning in those efforts. Educational resources from governing bodies like the American Planning Association were reviewed to understand the position of regional planning practitioners concerning the inclusion of

emergency management in their planning processes.

The literature selected focused on material produced after 2001 because of substantial changes to the field of emergency management after the 9/11 terror attacks in the United States. Data sources before 2001 were consulted to provide historical context when appropriate.

A case study was conducted to explore the outcomes which may result from a lack of collaboration between emergency management planning and comprehensive land use planning. This case study was selected because it illustrated the impact of a siloed planning approach on the affected community, which threatened the physical and social rebuilding of the community.

Limitations

Due to a change in focus of this research and compressed time allowances, surveys of emergency management, and land use planning, practitioners were not able to be conducted. Additionally, there was no direct analysis of related planning documents to determine to what extent there is, or is not, a collaborative relationship between existing emergency management and comprehensive land use plans.

CHAPTER 4

CASE STUDY- BROADMOOR, NEW ORLEANS

This research used a case study of the impact of planning and disaster management post-Hurricane Katrina on the Broadmoor neighborhood of New Orleans, Louisiana. This neighborhood was chosen because even though, like much of the city, Katrina left high floodwaters and significant property damage in her wake, Broadmoor faced a unique repopulation and rebuilding challenges. This challenge is discussed in greater detail, and it serves as the backdrop of the discussion about planning and emergency management.

It is important to provide a contextual, though limited, history of development within New Orleans. The planning, land use, and engineering used to transform the geography and natural environment to spur developments within the city were innovative and, at the time, a technological marvel that enabled impressive growth. However, it is likely the cause of the continued challenges that the city faces concerning water management and increased risk of future flooding.

Settling New Orleans- Below Sea Level?

The Mississippi River has created most of Louisiana through natural sediment deposits and naturally occurring changes of direction in its quest to reach the Gulf of Mexico by the shortest and steepest gradient (McPhee & Kolbert, 1989). In his article "How Humans Sank New Orleans," Tulane University Geographer Richard Campenella (2018) details how the efforts to remove groundwater from the city have contributed to an increased risk of flooding. He describes that naturally occurring flooding of the Mississippi River deposited coarse sediment along the riverbanks and progressively finer deposits farther away from the river. Areas near the river were higher in elevation, and

areas farther from the river remained lower in elevation with a high water table. Most of these areas remained swampland and marsh. As the colonists started the development of the city, which serves as a major industrial port, they built upon the riverbanks, and other naturally developed higher ground. The proximity of swampland to inhabitants created hygiene, and health issues, specifically insect-borne illnesses, and many inhabitants saw the swamp and marsh as a source of illness and a constant strain on growth and prosperity. Campanella states that at this time, the early 1700s, the city of New Orleans, including the swamps and marshes, was above sea level.

Increased settlement and development were routinely in conflict with the natural deltaic process of flooding, and strategies to remove groundwater and floodwater were developed Campanella, (2018). As the river lengthens toward the Gulf of Mexico, the gradient lessens, and the river slows, developing more sand and silt buildups, which eventually causes the river to spill to one side or another (McPhee & Kolbert, 1989). Early efforts were simple drainage ditches created by property owners, which used gravity to channel water to the lower areas of the city, predominately north of the Mississippi River. In the 1830s, improved engineering and design brought the advent of steam-powered pumps which provided a limited capacity to pump excess groundwater out of low-lying areas, into a system of drainage ditches and ultimately toward Lake Ponchartrain to the north. This drainage system was adequate; however, increased capacity was desired, and the city undertook a process to develop a more robust drainage system. Campanella (2018) states that the city became more serious toward addressing groundwater issues and, in the late 1800s, used surveyors for the first time to map the topography and elevations of locations. As a result of this mapping, in 1895, a system of canals was designed to remove groundwater from areas of the city, and it also revealed

that some areas had, for the first time dipped below sea level.

With the technology and support to develop drainage systems, the effort to rid the city of swamp and marsh began and, in a very short period, transformed the geographical landscape. Campanella (2018) states,

"Construction of the new drainage system began in 1896 and accelerated in 1899 when voters overwhelmingly approved a two-mill property tax to create the New Orleans Sewerage and Water Board. By 1905, 40 miles of canal had been excavated, hundreds of miles of pipelines and drains had been laid, and six pumping stations were draining up to 5,000 cubic feet of water per second. System efficacy improved dramatically after 1913 when a young engineer named Albert Baldwin Wood designed an enormous impeller pump that could discharge water even faster. Eleven wood screw pumps were installed by 1915, and many are still in use today. By 1926, over 30,000 acres of land had been reclaimed via 560 miles of pipes and canals with a capacity of 13,000 cubic feet of water per second. New Orleans had finally conquered its back swamp." (para. 16)

The successful drainage of the swampland allowed for increased growth and building opportunities. "Developers promoted expansion, newspapers heralded it, the City Planning Commission encouraged it, the city built streetcars to service it, [and] the banks and insurance companies underwrote the financing." (Campanella, 2018, para. 19). There was a period of white flight during this time where middle-class whites relocated to newly developed lakefront locations. The drainage also affected the architecture of newly created homes. The canals and pumps had not stopped the flooding, but the public perception was that the technology had prevented and mitigated flood damage by removing excess water. No longer were homes built on pilings above the ground. Homes

in many of the newly developed areas were constructed on concrete slabs at grade.

A Different Kind of Settlement

The removal of groundwater from the city was slowly creating another concern for the development of the city. Campanella (2018) states that "what was beginning to happen was anthropogenic soil subsidence—the sinking of the land by human action

(Figure 1). When runoff is removed, and artificial levees prevent the river from overtopping, the groundwater lowers, the soils dry out, and the organic matter decays. All this creates air pockets in the soil body, into which those sand, silt, and clay particles settle, consolidate—and



Figure 1: Subsidence in the New Orleans Metro Area. Source: Richard Campanella, 2018

drop below sea level."(para.15). Subsidence continued even as more and more people moved into subsiding areas. While most New Orleans's 300,000 residents lived above sea level in the early 1900s, only 48 percent remained above the water in 1960, when the city's population peaked at 627,525. That year, 321,000 residents lived on a former swamp, over which time they dropped into a series of topographical bowls four to seven feet below sea level. (Campanella, 2018)

Most Americans likely believe that New Orleans was built below sea level, which is, in part, correct, but it did not start that way. According to Campanella's account, the impact of technology, planning, and development served to be much more destructive than the natural weather events that impact the city. Subsidence cannot be stopped. As it continues, the city will continue to face challenges such as buckling road surfaces,

sinking foundations, ruptured gas lines, and increased risk to higher flood levels even despite zoning and building code adjustments to mitigate risks.

In 1965, rainfall from Hurricane Betsy overtopped existing levees and flooded the low-lying basins in the city (Rosenthal, n.d.). Congress established the Flood Control Act of 1965, which, among other issues, gave authority for the design and construction of the flood protection in the New Orleans metropolitan area to the United States Army Corps of Engineers. After 1965, the corps built a levee system around a much larger geographic footprint that included previous marshland and swamp. The creation of new levees and improved pumping technology increased the buildable land in the city. Many new subdivisions were developed to cater to those who preferred a more suburban lifestyle but were open to remaining within the city limits of New Orleans (Rosenthal, n.d.).

Broadmoor Neighborhood

New Orleans is a city that defines itself by its individual and unique neighborhoods (New Orleans.com, 2020). Each neighborhood has a distinct identity and flavor that complements the overall feeling of the city called "The Big Easy." As a very old city, large old-growth oak trees line most of the major streets. The architecture of homes is distinctly New Orleans; shotgun homes, cottages, and townhouses that reflect a deep history of French, Caribbean, and Spanish roots. There are 13 identified planning districts within the city and approximately 72 individual neighborhoods (New Orleans.com, 2020). The Broadmoor neighborhood is in the Uptown/Carrolton District and is approximately two miles west of the French Quarter and two miles away from the banks of the Mississippi River.

The Broadmoor neighborhood is 358 acres (.5 sq. mi.) situated in a low-lying basin between the high ground of the Mississippi River's natural levee and the Metairie

Ridge (Figure 2). With an elevation of of 2 feet above sea level, Broadmoor was originally part of the city's back swamps, which would often flood, creating a 12-acre lake. It was considered a favorite fishing location for New Orleanians and remained mostly undeveloped until early twentieth century (Seidman, 2013). The first area drainage canals were built in 1885. A



Figure 2: Neighborhoods in Orleans Parish. Source: Joy Bonaguro

the

pumping station at Broad Street and Washington within the Broadmoor boundaries opened in 1903. In 1915, pumps more powerful than previous ones were established at that pumping station. After 1915, smaller groups of people began settling the area. (Seidman, 2013).

Before Hurricane Katrina, Broadmoor had 7,232 residents living in 2,915 households, equal to 1.5 percent of New Orleans' population (U.S. Census Bureau, 2000). Broadmoor reflected the demographic makeup of New Orleans as a whole. It was 68 percent black and 26 percent white, compared to roughly 67 percent black and 27 percent white for all of Orleans Parish (U.S. Census Bureau, 2000). It had roughly the same number of homeowners. Forty-eight percent of its 2,915 housing units were owner-occupied, but it was somewhat poorer than the city overall, with an average household income in 2000 of \$36,400, compared to about \$43,200 for Orleans Parish. Almost 32 percent of households in Broadmoor lived in poverty, and fully 22 percent reported total household incomes of less than \$10,000 a year (Scott, Fung, 2008).

Broadmoor Improvement Association

The Broadmoor Improvement Association (BIA) was established in 1930 as the Broadmoor Civic Improvement Association to address the needs of the developing Broadmoor neighborhood (Broadmoor Improvement Association, 2019). It was incorporated in 1970 as the Broadmoor Improvement Association, Inc. to stop "blockbusting" in Broadmoor, which was a well-established, multi-racial/multi-ethnic community already living in harmony (The Broadmoor Project, 2007). Even so, by the late 1970s, the neighborhood had substantially deteriorated (Broadmoor Improvement Association, 2019). Undaunted, BIA partnered with the nonprofit Neighborhood Housing Services of New Orleans to secure low-interest home improvement loans for Broadmoor residents (Broadmoor Improvement Association, 2019).

Today, the BIA serves as a hub of wellness for the neighborhood. It offers food pantry assistance, counseling services, educational opportunities, and hosts events to bring community members closer together. It also serves as a conduit to the city government and advocates on behalf of the residents when seeking remedies to infrastructure repairs and addressing blighted homes. The BIA contributed greatly to the success of the repopulation and rebuilding of Broadmoor after Hurricane Katrina (The Broadmoor Project, 2007).

Hurricane Katrina's Impact on Broadmoor

On the morning of Sunday, August 29, 2005, Hurricane Katrina made landfall just east of New Orleans, Louisiana. Katrina was downgraded from a Category 5 hurricane to a Category 3 hurricane by the time it reached land; however, New Orleans and much of the Gulf Coast of the United States had been subjected to days of rain and wind as the storm tracked north over the area (WFAA, 2015). Prior to landfall, storm

experts predicted that Katrina would be a more intense storm than the city had previously experienced. As a precautionary measure, Mayor Ray Nagin ordered mandatory evacuations of the residents of New Orleans. He opened shelters in the Superdome, a sizeable covered football field and the nearby convention center as places of last resort (WFAA, 2015). Though estimates vary, there are reports of sustained winds of 95 mph and 8-10 inches of rain over 48 hours inundating New Orleans. As a result of the storm damage, pumping stations designed to remove floodwater from lower elevations of the city lost power (WFAA, 2015). They were unable to pump water into Lake Ponchartrain as designed, which increased residential flooding. Katrina's storm surge also raised water levels in Lake Ponchartrain, causing a breach of several of the protective levees. The breaches poured floodwater into the city, leaving approximately 80% of New Orleans underwater with depths ranging from 2-15 feet. The putrid water would take over two weeks to recede (WFAA, 2015).

Broadmoor, like all areas of New Orleans, suffered immediate damage from the hurricane effects of the storm. It would be the failure of the levees; however, that was the most significant contributor to the damage and extended displacement (The Broadmoor

Project, 2007). The average flood level in Broadmoor was 5.08 feet, whereas, in affected areas, the average flood level was 4.43 feet (Figure 3). Further observation shows that Broadmoor's blocks sustained on average between 2.9 and 6.52 feet of water, whereas in

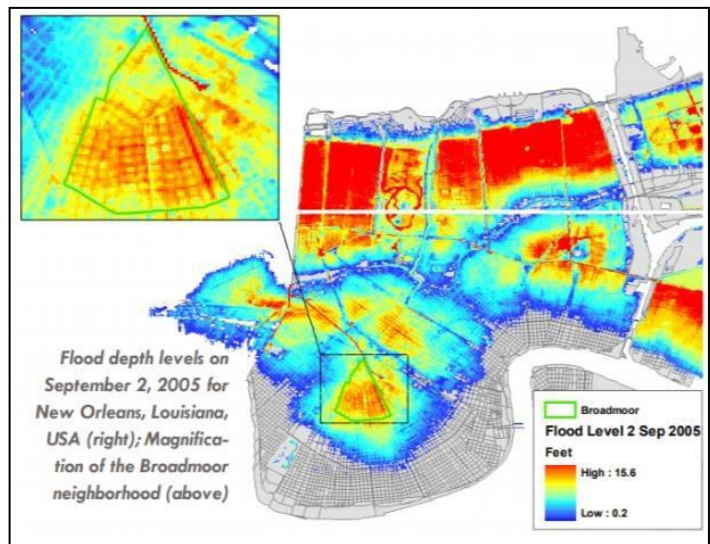


Figure3: Hurricane Katrina Flood Depths in Broadmoor. Source: U.S. Army Corps of Engineers

affected areas, the spread ranged from 2 to 9.59 feet (The Broadmoor Project, 2007). In Broadmoor, 100 percent of the housing units had sustained major or severe damage; 90 percent would require major remediation and repair to be inhabitable again (Scott, Fung, 2008).

Rebuilding Plan and the Green Dot Map

Almost immediately after the storm, the top-down process began with actions by city leaders to quickly craft a rebuilding plan and gain federal implementation funding. This process soon became engulfed in conflicts, mistrust, policies, and bureaucratic rules and processes that slowed the creation of a formal recovery plan as well as the flow of

rebuilding funds (Sideman, 2013). It was around and in response to, this top-down system that the grassroots neighborhood rebuilding efforts by New Orleans' citizens took shape (Sideman, 2013). On September 30, Mayor Nagin formally announced the formation of the 17-member Bring New Orleans Back (BNOB) Commission and charged it with creating a rebuilding plan for the city. Earlier in September, the City Council had announced its intention to appoint an Advisory Committee on Hurricane Recovery, but this committee was

4 MONTHS TO DECIDE
NAGIN PANEL SAYS HARDEST-HIT AREAS MUST PROVE VIABILITY
CITY'S FOOTPRINT MAY SHRINK; FULL BUYOUTS PROPOSED FOR THOSE FORCED TO MOVE
New housing to be developed in vast swaths of New Orleans' higher ground

PLAN FOR THE FUTURE
The Bring New Orleans Back Commission will unveil a sweeping \$11 billion plan today that calls for a vast reworking of the city's neighborhoods and housing patterns. But in the four-month period when the fine print is hashed out over who can build where, all renovation will be halted in the flooded zone.

- Areas where rebuilding allowed now
- Building moratorium until neighborhoods prove viability
- Approximate areas of expected to become parks and greenspace
- Areas to be redeveloped, some with new housing for relocated homeowners

Q&A
Does this plan shrink the footprint of the city or allow rebuilding everywhere?
The plan, if adopted, would not mandate which areas should be rebuilt and which should not; it simply starts a four-month process. First off, for those neighborhoods that suffered little or minimal damage, the plan has little impact on development. But for heavily damaged areas, it puts the onus on residents to show that enough people will return to make the neighborhood sustainable. The plan calls for a four-month study period—during which there would be a moratorium on building permits—so that planners can hold neighborhood meetings and gather information on who plans to return. Those neighborhoods that prove sustainability would be allowed to rebuild, while those that do not would be subject to a buyout program designed to help residents relocate to areas offering greater safety from flooding, higher population density and full city services.

I live in an area that looks unlikely to be rebuilt, as it may be targeted to be park land. What's in store for me?
If the neighborhood planning group recommends a park where your home is located, a buyout program would provide homeowners no less than 60 percent of their pre-Katrina equity—as long as proposed federal legislation sponsors U.S. Rep. Richard Baker, R-Baton Rouge, is adopted. The Magna commission's plan further recommends that homeowners who are forced to sell be made 100 percent whole through a second federal program. The second payment would come from the proposed Crescent City Redevelopment Authority, which would use federal Community Development Block Grants to pay homeowners the remaining 40 percent of their equity. Both programs would deduct homeowners' insurance settlements from the buyout amount. Residents not forced to sell also may be made 100 percent whole with block grants, but only if they buy another property in New Orleans.

See REPORT, A-8
See Q & A, A-8

Figure 4: Green Dot Map Source: New Orleans Times-Picayune

short-lived and never developed any proposals (Lamb, 2019).

The December 2005 release of the infamous green dot map (Figure 4) by then-mayor Ray Nagin's Bring Back New Orleans Commission was unveiled (Lamb, 2019). That map charted a plan to shrink the city's footprint by tightening redevelopment and turning some heavily inundated areas into park space—Broadmoor included. It was as if the city was attempting to "disappear" (Bliss & Bliss, 2015, para.34) certain neighborhoods.

A moratorium on building permits in heavily flooded/damaged areas was recommended. Those sections of the city that contained deeply flooded and heavily damaged properties were designated as special neighborhood planning areas, which would have to prove their viability to rebuild (Lamb, 2019). The chief yardstick of that viability would be whether over 50 percent of their pre-Katrina population would commit to returning (Fung, 2008). The building permit moratorium and other proposals, explained by the BNOB Urban Planning Committee, were intended to protect homeowners from prematurely investing in renovations (Fung, 2008). The plan also envisioned massive buyouts of damaged residential property, according to The Times-Picayune, which would allow for the possibility of significantly expanding the city's open space. It further suggested six residential areas - indicated by the green dots - that could accommodate large parks, depending on whether those areas fail to recover fully. One of the drivers behind this effort was to mitigate against future flooding. The vast amount of impervious surfaces in the city contribute to flooding, and increasing the number of pervious surfaces, including greenspaces, would assist water drainage. Finally, the committee report called for all 73 neighborhoods in the city-organized into 13 neighborhood planning districts and led by teams of residents, urban planners, historic

preservationists, and others to participate in the process of mapping out their vision of the future. It set a tight four-month timetable for the planning teams (Lamb, 2019). If Mayor Nagin were to sign off on the recommendations on January 20 -the day, the last of the BNOB committee reports was due - it would automatically set the clock ticking, The Times-Picayune reported, meaning that the day of reckoning for moribund neighborhoods would be May 20, 2006. Property acquisition in buyout areas, according to the paper, could begin on August 12. The buyouts would not be voluntary (Fung, 2008).

At the time of the BNOB proposal, many residents of Broadmoor had already begun the rebuilding process. Learning that there was a halt on building permits and that their homes might be taken to become greenspace threatened the cohesion of the neighborhood. As its details emerged, the plan elicited expressions of consternation and, increasingly, outrage among residents of New Orleans's flooded neighborhoods (Fung, 2008). The strongest reaction came from those who lived under what one columnist called the curse of the green dot (Fung, 2008). Some residents suspected that the green dots represented a covert land grab by real estate developers. They also perceived unfairness in the green dot designation, noting that Lakeview-a wealthy and mostly white neighborhood near Lake Pontchartrain had sustained more severe flood damage than Broadmoor, but were not placed under a green dot. This confirmed deep suspicions, ...that politics were at play (Fung, 2008).

Broadmoor Lives

In the early months of 2006, and now galvanized against the threat of the Green Dot, Broadmoor residents commenced work on a redevelopment plan under the auspices of the Broadmoor Improvement Association (BIA) (Belfer Center, 2016). This plan

would map out the neighborhood's recovery from the devastating effects of Hurricane Katrina. Residents used the BIA as a conduit to communicate the status of rebuilding efforts in the neighborhood. A marketing executive who lived in the neighborhood created the Broadmoor Lives slogan to illustrate that the neighborhood was actively rebuilding (Belfer Center, 2016). Residents who were actively rebuilding or who intended to rebuild were asked to place lawn



Figure 5: Broadmoor Lives. Source: Broadmoor Improvement Association

signs (Figure 5) with the slogan on their property to message to anyone driving by that even among the destruction and debris Broadmoor Lives - now (Belfer Center, 2016).

Financial and technical assistance toward the New Orleans rebuilding effort was received from many different sources. The Green Dot map caught the attention of the Clinton Global Initiative. They provided \$5 million toward the Broadmoor rebuilding effort. Harvard's Kennedy School of Government received funding from Shell Oil for a three-year grant to support the redevelopment of Broadmoor, including, among other things, additional student internships, executive training programs for neighborhood leaders, and neighborhood forums in Broadmoor (Fung, 2008)

In March 2006, the Federal Emergency Management Agency (FEMA), which was expected to pay for the BNOB planning teams, withdrew its offer of funding. With that, the BNOB initiative and the green dot buyouts effectively ended, though no official pronouncement was made. With no other plan to take the place of the moribund BNOB, the future of the city's severely damaged neighborhoods appeared to be in limbo. Mayor

Nagin, who was running for re-election in May, assiduously sidestepped the question of which neighborhoods would receive city services proclaiming that the market would decide (Fung, 2008).

With the green dot map threat removed, Broadmoor residents believed that rebuilding would be easier thanks to funding from the government through FEMA funding. When residents were disabused of that notion, they were at a loss (Scott, Fung, 2008). Eventually, residents were persuaded that their vision of federal aid would not materialize, nor could they expect much help from the city or state government, which had yet to formulate their recovery plans for New Orleans. Once convinced, Broadmoor faced the next logical conclusion that they would have to handle their implementation. Residents would have not only to scale their plan to realistically doable things but then also figure out the mechanisms by which they were going to accomplish the implementation (Fung, 2008).

The Broadmoor Redevelopment Plan

"We hold the Broadmoor planning process up as a model for post-disaster reconstruction planning. And we also hold the process up as a model for any community-based planning effort. The truly unique thing about the Broadmoor plan is that it was created almost entirely by the residents themselves, and yet achieves a level commensurate with professional planning standards." - Douglas Ahlers, Senior Fellow & Principal Investigator Kennedy School of Government, Harvard University (Broadmoor Improvement Association, 2006, p. 6)

At the time of Hurricane Katrina, the city of New Orleans had an emergency management plan to address risk from hurricanes and flooding; however, it did not have

a master plan. The city did have a comprehensive zoning ordinance, but it was subject to political influence and lacked strong enforcement (Weil, 2010). Developers seeking variances often sought out city councilors directly instead of using the formal process. This abuse contributed to a lack of predictability concerning land use (Collins, 2015). The city also had a history of weak citizen engagement, which is a function of both the city not having a formal process to engage citizens and a culture of disengagement or laissez-faire attitude that tended to permeate all aspects of social life in New Orleans (Weil, 2010).

Using the already defined neighborhood subgroup structure, the BIA established various committees to develop rebuilding plans and communicate outcomes to returning residents (Sideman, 2013). This effort became publicly known and caught the attention of a fellow at the Harvard Kennedy School's Neighborhood Empowerment Initiative, a research project conducted by a team of faculty, students, and staff. A team from Harvard traveled to Broadmoor to aid in the rebuilding effort. Even after the effort to buy back properties failed due to lack of funding, and Broadmoor was no longer under direct threat turning into green space, the Kennedy School continued to provide technical assistance with the creation of the Broadmoor Redevelopment Plan (Clement et al., 2016). They observed and documented the process by which the residents of the Broadmoor neighborhood of New Orleans organized and followed a structured planning process that resulted in the creation of this redevelopment plan, which was published in July of 2006, almost one year after the storm (Broadmoor Improvement Association, 2006).

The research conducted into Broadmoor's rebuilding supports that some of the benchmarks of the rebuilding plan were reached, or are still in process; however, a comprehensive analysis of benchmark achievement was not conducted. Emergency

management and land use planning practitioners are encouraged to consider the redevelopment plan through the lenses of the development process, structure, and participatory nature of this specific plan. Emphasis should be given to how these processes can be incorporated into emergency management, hazard mitigation, and master plans. The Broadmoor plan was developed to assist a small community of only a couple thousand people located in a major U.S. city, and the process should be evaluated for areas of overlap between emergency management and master planning and the potential to scale to larger communities. The Broadmoor Redevelopment Plan was a community effort lead by the BIA. They also worked with a senior fellow, three university staff members, and 22 students from Harvard Kennedy School (Clement et al., 2016). The Harvard group was instrumental in helping the residents develop their plan and set realistic goals. For example, they warned the community not to rely heavily on federal funds, which might not materialize (Fung, 2008). Instead, they needed to rely on their skills and take the initiative to secure external funding. The community created fund-raising efforts through a partnership with outside organizations, including corporate sponsors such as Shell Oil, General Motors, and Travelocity, among others (Broadmoor Improvement Association, 2007). Partnerships were established with universities (MIT, Harvard, Bard College), and faith-based groups within the city. Grant funding and private foundation assistance were received through several sources, including the Carnegie Corporation, YMCE, and Deutsche Bank (Broadmoor Improvement Association, 2007). The community members, along with the BIA, and the Harvard group met and discussed segments of the redevelopment plan. They came up with ideas, and they discussed and agreed on ways they would resolve conflicts, including differences in development goals and priorities. Subcommittees held weekly meetings

that focused on specific goals and then presented their ideas at community-wide meetings (Fung, 2008).

The Intersection of Land Use Planning and Emergency Management

The Broadmoor Rebuilding Plan identified several benchmarks that served to provide direction for the rebuilding efforts and contribute to the mitigation against future disruption from flooding or other quality of life concerns. The plan was like a comprehensive land-use plan, providing a direction that the community was seeking to build and improve quality of life while mitigating against future occurrences of flooding. Certain benchmarks from the plan have been analyzed and compared with emergency management theory to provide examples of collaboration between the two planning processes and the resulting increased capacity for the community to prepare for future disruption, absorb the impact of the disruption and recovery more efficiently than before Hurricane Katrina.

One of the identified benchmarks of the redevelopment plan was to support continued flood mitigation through ongoing efforts with local, state, and federal assistance agencies (Broadmoor Improvement Association, 2006). This action item was an opportunity to partner with emergency management planners to learn more about the planning efforts of local, state, and federal stakeholders. Successfully collaborating with community leaders to solve problems builds relationships and trust over time. As trust is built, community leaders can provide insight into the needs and capabilities of a community and help to ramp up interest about emergency management programs that support resiliency (FEMA, 2011). Currently, the city of New Orleans provides a rich online resource to educate and provide resources to residents, including a function that estimates flood risk by specific address (City of New Orleans, 2020). The Broadmoor

Rebuilding plan identified for and provided resources for residents to enable them to take care of their own needs as much as possible. Information was provided to residents so they could create go-kits and home kits before an emergency. These kits contain necessary legal documents (insurance policies, account numbers, deeds) and necessary emergency supplies (cash, prescriptions, clothing) so residents could evacuate to safety and retain important legal and personal items (Broadmoor Improvement Association, 2006). Pre-hurricane season planning is offered, and community response events are utilized to continue education and preparedness activities.

The plan also proposed a package of zoning changes, including an overlay district. The overlay district intended to preserve one of Broadmoor's most valuable assets, its historic character. However, two of the provisions within the overlay district proposal also served to assist in flooding mitigation. The first mitigation-related proposal was the establishment of a tree preservation district within Broadmoor patterned on the Metairie Ridge Tree Preservation District (Broadmoor Improvement Association, 2006). The district ensured that viable trees were not lost during new construction. In addition to adding to the aesthetics of the neighborhood and acting as windbreaks, trees also provide water uptake during rainstorms. The more trees that remained in the neighborhood, the less stormwater went into the drainage system. The second mitigation-related proposal was the limitation of pavement within residential lots. Again, while ensuring a more beautiful neighborhood, such a measure also allowed rainwater to be absorbed into the soil, rather than running off into the streets and then through the drainage system to Lake Pontchartrain (Broadmoor Improvement Association, 2006). A stormwater management plan identifies the contribution that stormwater infrastructure makes to a flood hazard and identifies policies or improvements that can be made to mitigate the hazard (FEMA,

2013). Localized flooding may be created or exacerbated by channeling stormwater runoff. Implementing low-impact development stormwater management techniques may be proposed as a way to mitigate this impact. Open space is often an appropriate use of hazard areas and can be used to buffer developed areas from hazards (FEMA, 2013).

The Improvement Plan provided an opportunity for partnerships with a local university and faith-based groups to redevelop the industrial area at the north tip of the Broadmoor neighborhood and increase commercial and residential opportunities for residents (Broadmoor Improvement Association, 2006). By matching existing capabilities to needs and working to strengthen these resources, communities can improve their disaster resiliency (FEMA, 2011). Community leaders and partners can help emergency managers in identifying the changing needs and capabilities that exist in the community.

The Improvement Plan sought to redevelop commercial areas by working with merchants, commercial property owners, and commercial developers to redevelop certain areas of Broadmoor (Broadmoor Improvement Association, 2006). In this type of functional plan, methods and goals to guide private investment to areas that are less vulnerable to known hazards encourage mutual public and private objectives focused on protecting, sustaining, and enhancing the community's economic base (FEMA, 2013). Such opportunities may also include structural or other protective measures of commercial areas, business continuity planning, or activities that promote a diverse economic base that is not overly reliant on businesses or industries that are particularly vulnerable to the impacts of disasters. Economic development plans can also highlight the rationale for infrastructure projects that prevent impacts or disruption to the business community and support long-term economic stability (FEMA, 2013).

The Broadmoor Improvement plan created needed relationships and partnerships at the time that it was rebuilding the community. This was effective but it was not ideal. Relationships and partnerships should be identified, established, and cultivated during times of non-emergency (FEMA, 2011). The BIA did create a relationship with the city of New Orleans to address specific community concerns, but it was not until 2010 that the city of New Orleans integrated the master plan with a emergency management plan (FEMA, 2013) . The New Orleans Comprehensive Emergency Management Plan (CEMP) is also referenced within the 2010 Hazard Mitigation Plan Update. The CEMP is described as the primary resource for emergency operations, whereas the Hazard Mitigation Plan Update is aimed at reducing the community's vulnerability to disasters and emergencies (FEMA, 2013). Plan integration helps clarify the difference between the CEMP and the hazard mitigation plan. "Successful integration of hazard mitigation efforts has led to six out of every ten residents in New Orleans reporting that they have seen progress to stormwater protection in their city, a common subject matter in many planning mechanisms" (FEMA, 2013, p.5-5).

Conclusion

New Orleans was settled 300 years ago, and it was not unlike other developing cities. Desires to create livable spaces to suit human needs or economic development are at times in conflict with environmental restrictions. Human innovation provides mechanisms to overcome natural obstacles, and development continues. Planners and city officials in New Orleans were successful in removing floodwater, swamp, and marshland from the city, allowing that space to dry and continue the built environment. Doing so has created another environmental challenge, which is the subsidence of those

drained landmasses. Settling of the earth is creating areas of the city that are below sea level and more prone to flooding. The unprecedented damage by Hurricane Katrina and the subsequent failure of water control safeguards like the pumping system and levees demonstrated how vulnerable to flooding certain areas of the city remain. In the wake of the storm, the city instituted plans to rebuild, and to reduce future flooding in these areas, challenging the identified neighborhoods to demonstrate viability, the return of residents, very quickly. The failure to return to a pre-storm population percentage would result in forced buyouts of property, and the neighborhood would be taken by the government, converting it to greenspace. From a planning perspective, takings may have been the most appropriate course of action to reduce the likelihood of future flooding and potential loss of life and property. The Green Dot plan failed as a result of perceived racial disparity, political corruption, and ultimately lack of funding. In the absence of a rebuilding plan from the city, the Broadmoor Improvement Association created its plan to rebuild the neighborhood and encourage residents to return. This process of developing and implementing the plan was centered around the community input and strengthened through key partnerships with corporate, philanthropic, and community resources. The plan incorporated strategies of land use and hazard mitigation plans to be thoughtful of the relationship between redevelopment and hazard mitigation. The Broadmoor plan illustrates how establishing working relationships and integrating land use and emergency management theory, and practice can result in a planning process that increases community capacity and resilience.

CHAPTER 5

PLACE ATTACHMENT AND EMERGENCY MANAGEMENT

“While lives families can be restarted in many locations, a city and its culture are necessarily tied to a place” (Sideman, 2013, 6).

Before discussing the relationship among emergency managers, planners, and the public, it is helpful to provide a context for the discussion. Emergency managers and planners provide services to the community as a whole and its public or residents as individuals. These services represent the governing body, such as the local state or federal government. It may be difficult for the public to contextualize the need for these services as they often provide for, or protect from, something that has not yet happened. For example, emergency managers may prepare plans for evacuations of the community if there is a need, which may or may not be likely.

Similarly, planners may provide for zoning or code guidance to ensure the safety of land or building uses to protect citizens from an event that may or may not occur. Both practitioners develop plans to increase mitigation of damage, prevent loss of life, and reduce property damage from many different sources. Often the risk or vulnerability is not immediate, which may lead to disagreement or discourse on the part of the public as to the importance of such guidance or restriction.

The public's ability to own land, own a home (residence) or rent a home in which they have legal and social right to also influences how they may respond to changes in their built environment. Thus, through the common law, state law, and the Constitution, property rights—the rights of people to freely acquire, use, and dispose of property are provided certain protections. Often a 'home' is associated with a physical structure inside

which an individual or family lives. The theoretical concept of 'home' is much more powerful. Planners and emergency managers must understand the role that the concept of home plays during times of disaster or sudden shock because it is often a powerful influence on human behavior.

Home as a Place

Easthope (2004, 135) stated, "Homes can be understood as places that hold considerable social, psychological, and emotive meaning for individuals and groups.", and "Home can be directly experienced." It is this experience that gives 'home' its power to elicit a strong emotional response from people. In this context, 'home' is what has not moved. For those who are absent from it, 'home' becomes defined as something that must be returned to, a place of both familiarity and safety. (Morrice, 2013)

Home is a place. It is not just a structure; it is the location of the structure, the physical property, the location of the property within the broader community, the community itself, and the location of the community within the larger geographical areas such as the state or even country. Not only is home identified by physical or geographical boundaries, but it is also defined perhaps more importantly, by the social connection, feelings, and emotions that it provides to the individual people. There may be many factors that connect or attach people to a place.

Maslow's Hierarchy of Needs as it Relates to Housing

Some of the attachment to place that people experience may be explained in part through the fulfillment of needs as described by Maslow (Urbaner, 2017), (Figure 6).

The home as a structure may provide for basic physiological needs such as

shelter, sleep, and food.

The home as a structure and perhaps extending out to aspects of the community may provide for safety and security needs. For example, the home itself is keeping people safe, and perhaps

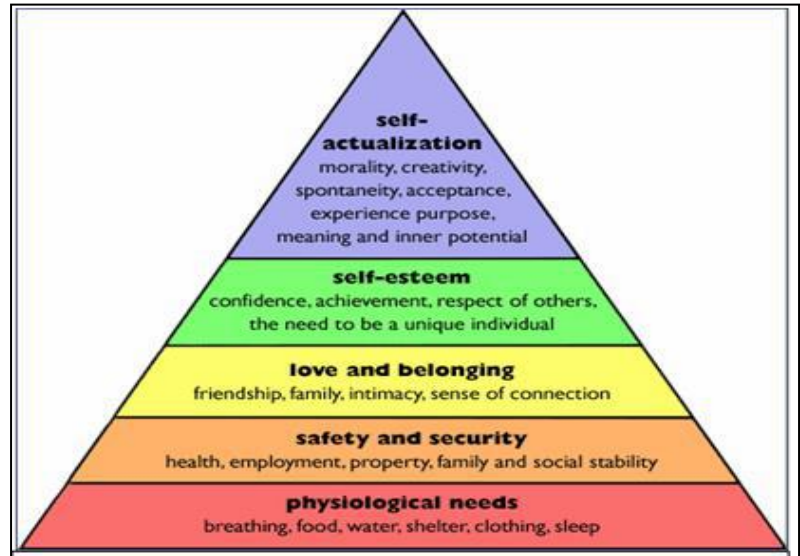


Figure 6: Maslow's Hierarchy of Needs. Source: www.simplepsychology.com

it is located on a safe street or in a safe neighborhood. Individuals spend hours in their homes, often with loved ones, which creates strong emotional bonds. When family members and community members learn to work together toward a common goal, their acceptance of each other increases. Acceptance creates a sense of love and belonging (Urbaneer, 2017). Houses and neighborhoods can be unique and provide recognition for an individual or as a smaller community within a broader community (Urbaneer, 2017), i.e., Brooklyn is identified separately from Staten Island or New York City.

Often living in specific locations is not by choice; it is by necessity, and there may be factors that contribute to the ability or inability of one to move to another home. Socio-economic status, specifically poverty has been linked to housing location and influences the available resources for persons in those locations (Joseph Roundtree Foundation 2017).

Place Making

What creates the attachment that people have to places? In “What Makes a

Successful Place?”, The Project for Public Places (2020), states that four key attributes can influence place.

1. Uses and Activities
2. Comfort and Image
3. Access and Linkages
4. Sociability

These key attributes may be fulfilled through various "intangibles," which may be experienced by the user of the place at an individual level or associated with a place through a more extensive social network (The Project for Public Spaces, 2020). Users of a space may question or seek to evaluate how the place demonstrates the key attributes in a way that affects their desired outcome of experiencing the space. The decision to reside in a certain neighborhood for example may be influenced by the availability of access to needed resources, the level of volunteerism or formal and informal social networks such as neighborhood associations that the place demonstrates, or the environmental uses of the space (The Project for Public Spaces, 2020).

Place Identity, Attachment and Disaster Response

Place identity is substructure of social identity, like gender and social class (Qazimi, 2014). The identity with a place may consist of memories, values, thoughts, ideas, and settings and may also include the relationship between different settings such as home, neighborhood and school (Qazimi, 2014). As described above, places may create attachments between and individual and the physical environment. This attachment may manifest itself through the association one has with their home, their neighborhood or the region as people see themselves as distinct from, but related to, the

physical environment (Qazimi, 2014). A relationship may form between people sharing the same place and this relationship may create social networks which in turn may strengthen the attachment to a place and contribute to establishing social capital.

According to Agrawal and Monroe (2006:163),

“social capital is both an economic and non-economic benefit that individuals, groups, and communities get through the structure of their relationships. It is referred to as “social” because it grows out of relationships between people. It is a form of “capital” in that it helps individuals achieve things that they might not have been able to achieve otherwise.”

Social participation in local community, neighborhood connections, family/friends and work connections can lead to the building of social capacity, which refers to the necessary steps and conditions in which social capital will flourish, which include feelings of trust and safety, acceptance of diversity, appreciation of life, and being proactive in a social context (Onyx & Bullen, 2000).

Place attachment and social capacity work together, so that higher social capacity often leads to robust places which lead to stronger place attachment subsequently encouraging stronger social capacity, and so on (Bihari & Ryan, 2012). Increased social capital may facilitate more preparedness actions and mitigation measures at the community level, which supports the findings of previous research that suggests that residents of communities with higher social capital will be more willing to collaborate on solving common problems (Agrawal & Monroe, 2006). Place attachment impacts people's actions in times of disaster. The results indicate that past experience with wildfires and stronger place attachment significantly influence social capital and thereby preparedness in at-risk communities (Bihari & Ryan, 2012).

When Hurricane Katrina bore down on New Orleans, the storm threatened not only individual possessions but also homes, lifestyles, and social networks. The way in which evacuees accommodate this stress is an essential determinant in their return decisions (Morrice, 2013). The scale of physical and economic losses faced by the city and its residents presented the greatest trial for New Orleans. It raised confounding questions about if and how New Orleans could be rebuilt. While lives and families can be restarted in many locations, a city and its culture are necessarily tied to a place (Sideman, 2013).

Why Return After a Disaster?

Rebuilding after a disaster consists of repopulation, which is the return of people to live in the affected area but rebuilding also constitutes the re-establishing of social connections in the community. Although rebuilding a neighborhood and city depends on individual decisions, it is also a community project. It requires that many people, households, and businesses decide to return. These decisions are influenced by the actions of neighbors and the aid and support provided on the ground to overcome the many obstacles to returning (Sideman, 2013). For residents of New Orleans who were displaced by Hurricane Katrina, numerous obstacles stood in the way of returning to the city and rebuilding. The scope of the damage required the city limits to be closed in order to keep people safe and it took a substantial amount of time for flood waters to recede. The storms impact on the economy, primarily tourism resulted in fewer available jobs for many residents who work in the tourism and service industries (Sideman, 2013). Although socioeconomic factors often play a role in deciding to return, emotional issues also play a significant role in the making of this decision. There may be a "nostalgic

connection" as feelings of safety and familiarity with the devastated area. This connection offers a strong incentive for people to return to their homes after a disaster (Jamali & Nejat, 2016).

In her article *Heartache and Hurricane Katrina: Recognizing the Influence of Emotion in Post-Disaster Return Decisions*, Stephanie Morrice says,

"New Orleanians hold a powerful and emotional attachment to their city. Many residents spoke at length about the affinity to the city. This romanticized culture creates a strong sense of nostalgia among those who are forcibly separated from the city. This, in turn, influences their desire to return and succeeding return decisions." (Morrice, 2013).

Morrice also captured the following responses from two residents who were forced to evacuate New Orleans. The responses illustrate the powerful connection to home and place.

Lucy: "New Orleans is always going to be home. I know some people who think that it's weird to call New Orleans home because so much has changed. The first time I went back it was – like stepping into the Twilight Zone, you know. And it was just heartbreaking to see. But I grew up in the city, that's where my parents grew up and that's where their parents grew up. It's always been home – and always will be. There's just something about the city, it's so familiar, even though it's been really beaten up, it's just where I feel like I belong. One of the hardest things for me to deal with now is being away from home. This [Houston] isn't home, it's just a place I was forced to come to."

Bernice: "There's no place like New Orleans, no people like New Orleans and you really have to be a part of that community to really understand what we're saying . . .

Before I came home, I thought about what it would be like to go back. Seeing my house for the first time after Katrina just filled me with emotion. I remember feeling instantly comforted by familiarity."

Lucy's account explores the emotional power of place attachment in the post-disaster landscape. The nostalgia she feels towards 'home' is a primary influence in her desire to return to New Orleans. Lucy's situation represents one of continued displacement; as she remains in a city she does not feel a connection to. Her emotions, then, intersect with other return variables, such as financial stability, that likewise play a role in the decision process, limiting her capacity to return (Morrice, 2013).

Understanding this dialectic between place and 'home' helps to identify how an evacuee's sense of belonging is grounded, understood, and negotiated in a site of displacement. For evacuees like Bernice, New Orleans represents a landscape of familiarity and safety – a place where memories and connections create a nostalgic desire to return. By negotiating and overcoming the feelings of loss and uncertainty created by Katrina's destruction, an evacuee's return decision, and outcome, is driven by this nostalgia and perception of 'home' (Morrice, 2013). The impact of a disaster or sudden shock is not limited to only those who were forced to evacuate. In cases of sudden shock, there may be no evacuation necessary, yet the community sense of place suffers an impact.

Conclusion

There may be many factors that connect or attach people to a place and people may experience attachments to places for a variety of reasons. A home is a place, and an individual's attachment to place is an essential factor to understand when planning for

disaster response and recovery. A planner or emergency manager may ask: What defines the community, and how can one learn more about why people are living there? Often living in specific locations is not by choice; it is by necessity, and there may be factors that contribute to the ability or inability of one to move to another home or community.

It is important to remember that places meet human needs. What are the key attributes in the community that contribute to meeting the community needs? What are the strengths to build on, and where are the gaps? How is social capital cultivated? Place attachment impacts people's actions in times of crisis. Place attachment may impact their ability to prepare for and respond to a and it can impact their ability to return, repopulate, and rebuild. Repopulation includes the re-establishing of social networks and requires that many people, households, and businesses decide to return, and these decisions are influenced by the actions of neighbors and the aid and support provided on the ground to overcome the many obstacles to return. A place may create memories and connections and a nostalgic desire to return. When place is threatened or damaged, the community often feels the emotional impact even if physical damage is isolated. There is a deep emotional bond between the sites of survivors and sites of tragedy (Tumarkin & O'Reilly, 2006). It is this emotional bond that can drive the displaced back to these localities. (Morrice, 2013) This deep emotional experience, especially when shared with others in the community, may influence an evacuees' capacity to return to the community. Different return outcomes also remind us that each evacuee negotiates the emotions within the post-disaster migration experience in a different way. (Morrice, 2013)

CHAPTER 6

THE EMERGENCY MANAGEMENT PROCESS AND ROLE OF THE LAND USE PLANNER

Contemporary emergency management in the United States traces its roots to the Cold War era of the 1950s (FEMA, 2004). As the nation prepared for nuclear attack, almost every American community maintained a civil defense director, and most States had an official who represented civil defense in the State government hierarchy (FEMA, 2004). By profession, these individuals were primarily retired military personnel, and their operations received little political or financial support from their state or local governments (FEMA, 2004). Through the 1960s and 1970s, as communities across the U.S. managed severe storms and other disasters, there was a minimal coordinated effort between local, state, and federal governments. In 1978 President Carter created Reorganization Plan Number 3 (3 CFR 1978, 5 U.S. Code 903). The stated and achieved intent of this plan was to consolidate emergency preparedness, mitigation, and response activities into one federal emergency management organization (FEMA, 2004). The President proclaimed that the plan would provide for the establishment of the Federal Emergency Management Agency (FEMA) and that the FEMA Director would report directly to the President (FEMA, 2004). As a fledgling federal agency, FEMA became mired in bureaucracy and received criticism for being slow to respond to various disasters during the late 1980s and early 1990s (FEMA, 2004).

In the early to mid-1990s, President Clinton appointed a new FEMA director who had emergency management experience. Under new leadership, FEMA returned to partnering with communities to identify risks and develop response plans under an "All Hazards Approach" (FEMA, 2004). This approach encouraged collaborative

mitigation and response planning for a variety of disruptions and began to standardize how communities could respond more effectively (FEMA, 2004). After the September 11, 2001 terror attacks, President Bush consolidated FEMA and several other agencies under the newly created Department of Homeland Security, broadening FEMA's responsibility to include response to terror attacks. Since 2001, several Presidential policy declarations provided additional structure to FEMA's management of disasters, which is governed by the National Preparedness Goal, National Response Framework, and the National Incident Management System (FEMA, 2010).

FEMA describes four phases of emergency response: Mitigation, Preparedness, Response, and Recovery (FEMA, 2004). These phases are often presented visually through a cyclical diagram and generally begin at the mitigation phase. Figure (7) illustrates one version of this diagram and aids the reader in

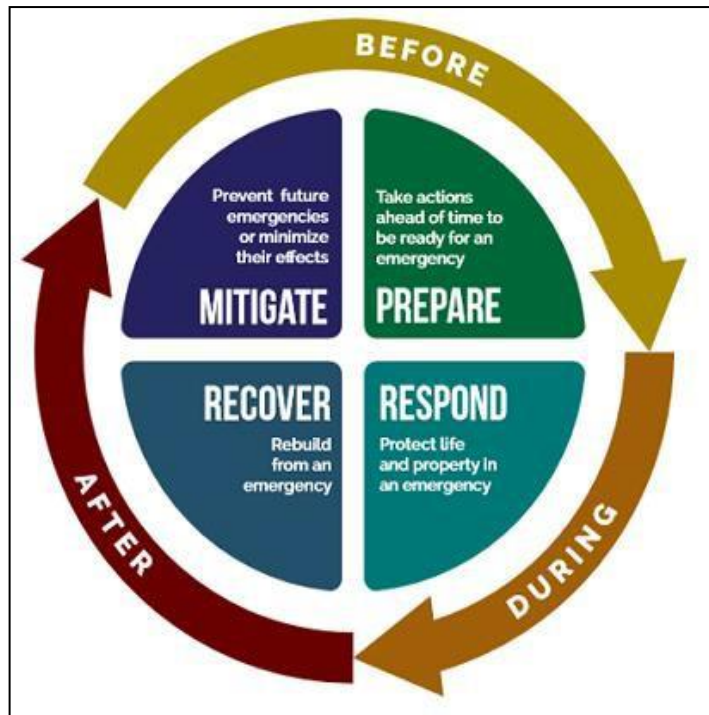


Figure 7- Emergency Management Cycles. Source: Fairfax County VA

better understanding the phases in relation to when a disaster strikes.

Local Level Structure

At the local or state level, an Emergency Manager or Office of Emergency Management (OEM) may be established to address the planning for and response to disasters or sudden shocks. Historically, OEM and the emergency planning process

have been the responsibility of people with experience as traditional first responders because they are often responsible for managing the sites of disasters (FEMA, 2013). The OEM is also responsible for conducting hazard vulnerability assessments to prioritize the known or suspected risks facing the community and is often charged with developing plans to address the risk at each stage of the four-step process (FEMA, 2004).

FEMA's Academic Emergency Management and Related Courses (AEMRC) for the Higher Education Program-Emergency and Risk Management Case Studies Textbook (2004) defines and describes each phase of emergency management. In order to incorporate these concepts into comprehensive plans, planners should be aware of and understand this process. Specific to each phase below, the synthesis of planning knowledge, skills, abilities, or theory is provided to clarify the cooperation between master planning and emergency planning.

Mitigation: Before the Disaster

Mitigation is defined as a sustained action to reduce or eliminate risk to people and property from hazards and their effects (FEMA, 2004). The function of mitigation differs from the other emergency management disciplines in that it looks at long-term solutions to reducing risk as opposed to merely accepting that they will happen and preparing for their consequences, responding to their consequences, or recovering from them. Except for the fire service community who lead early in the effort to mitigate fire risks through their support for building codes, code enforcement, and public education, the emergency management community has remained focused on response and recovery obligations (FEMA, 2013). Changes in leadership at the Federal level and more significant disasters have created substantial increases in funding, and

more value and professionalism in emergency management, have resulted in greater acknowledgment of the importance of mitigation (FEMA, 2004).

According to FEMA,

"Implementing mitigation programs and activities requires the participation and support of a broad spectrum of players outside of the traditional emergency management circle. Mitigation involves, among other public and private sector participants, land-use planners, construction and building officials, business owners, insurance companies, community leaders, and politicians" (FEMA, 2004).

However, planners are not included in the language of the other phases and arguably should have a role in each phase of the emergency management process.

Planners are also uniquely qualified because the comprehensive/master planning process utilizes the same skills needed to accomplish mitigation- planning expertise, political acumen, marketing, and public relations and consensus building, among others. These skills are different from the operational, first responder skills, which more traditionally characterize emergency management professionals.

Historically, the emergency management professional has been reluctant to take a lead role in promoting mitigation because it appears to fall outside of this scope of activities (FEMA, 2004). This siloed mentality ultimately limits the effectiveness of the emergency manager and their planning process.

Preparedness: Before the Disaster

Preparedness within the field of emergency management can best be defined as a state of readiness to respond to a disaster, crisis, or any other type of emergency (FEMA, 2020). Often, preparedness consists of taking actions ahead of time to be

ready for the emergency. These actions may be educational and practical. The simple act of exposing students to a fire drill is preparing them to respond in a specific way should an actual fire take place. Community preparation is not as easy, and community members must receive education regarding risks that may present to them. Emergency managers must address and overcome the community's denial of danger as well. In areas prone to recurring natural events, there may be public sentiment to stay in place as the storm passes because it is more convenient than evacuating. Preparedness can never be truly complete. The adage among emergency management professions states, "the earthquake you prepare for might not be the earthquake that you get." Each disaster or sudden shock has unique nuances that may or may not fit neatly into preparedness activities.

The process planners use when conducting charrettes is very similar to the process of preparing for a disaster. In a charrette, a designated team organizes and runs the process, which typically includes the project sponsor (e.g., the city planning agency, developer, or community group) and a multi-disciplinary team of professionals. This group is usually staffed, at a minimum, with planners, architects, landscape architects, transportation engineers, and economists. Consultants or agency staff may augment this team. Emergency management planning and preparation use a very similar process and stakeholder participation. The involved stakeholders usually include OEM, first responders (fire/police), government representatives, community representatives, and at times outside consultants. Including community members, particularly those at higher risk of harm from disaster or sudden shock, is critical to developing an informed plan.

In both processes, a multi-disciplinary team is essential to ensuring that the

design work during each step of the process is realistic. Emergency plans need to account for what is likely to happen, not a conglomeration of calamities that are extremely unlikely to manifest. Every decision point must be fully informed to create a feasible plan in both disciplines. The focus on feasibility brings a level of seriousness and rigor to the process for everyone involved.

Emergency management organizations cannot function without a strong preparedness capability. This capability is built through planning, training, and exercising, and has led to increased professionalism within the discipline of emergency management. All organizations in private, public, and government sectors are susceptible to the consequences of a disaster and must consider preparedness. Preparedness not only focuses on restoring essential government services, such as utilities and emergency services at pre-disaster levels but assisting businesses in quickly reopening to the public. Preparedness helps to minimize the required time for the affected population to return to pre-disaster life (FEMA, 2020).

Response: During the Disaster

When a disaster event such as a flood, earthquake, or hurricane occurs, the first responders to this event are local police, fire, and emergency medical personnel. Their job is to rescue and attend to those injured, suppress fires, secure the disaster area, and to begin the process of restoring order. They are supported in this effort by local emergency management personnel and community government officials (FEMA, 2020). The efforts of first responders are coordinated through a process called the Incident Command System (ICS), which is a resource management structure designed to process situational awareness and resource allocation as needed (FEMA, 2020). ICS is modular and scalable based on the size of the incident. Because of this modular

design, planners can be incorporated into one or more of the pre-established function groups. ICS offers different functions which are tasked with achieving identified goals in the response phase. These functions are Operations, Planning, Logistics, and Finance (FEMA,2013). Planners may serve in any of these functions based on the current or future needs of the community response.

It is important to note that in the mitigation and preparation phases, public participation is encouraged, even required, to build the best plans and ensure the most effective preparatory actions. These phases utilized a democratic decision process whereby all stakeholders are included in the decision making and development process. However, in order to ensure life safety and property preservation, the response phase requires a different decision-making process, one which is much more autocratic. During the response phase, clear direction from government officials to the community is essential to ensure personal safety. Response actions may include evacuation orders, restrictions on returning to affected areas, or curfews, and each action or direction helps to preserve life and property. Many community members may object to this approach; however, it is necessary. The understanding of this shift in the decision-making process allows planners to integrate contingencies into the master plan. For example, how will a long-term evacuation impact the economic viability of the community? If homes are flooded and not covered by insurance or slow to rebuild, how does blight affect the housing market and the return of residents? There is an infinite number of contingencies that can be considered and evaluated for inclusion in the master plan.

Recovery: Before and After the Disaster

There is often a theoretical debate over when the response function ends, and

the recovery function begins (FEMA, 2004). This thesis defines the response function as the immediate actions to save lives, protect property, and meet basic human needs. The recovery function is not so easily classified. Recovery typically begins in the first hours and days following a disaster event and can continue for months and, in some cases, years, depending on the severity of the event (FEMA,2004). Logically this makes sense, as there must be a disaster or event to recover from. However, recovery must be planned; local planners and emergency planners are encouraged to consider the community recovery goals during the mitigation and preparation phases of the planning processes.

Unlike the response function, where all efforts have a singular focus, the recovery function or process is characterized by a complex set of issues and decisions that must be made by individuals and communities. These issues and decisions are more easily identified and addressed in the calm of a non-emergency period, and they serve to inform the mitigation and preparation phases. Recovery involves decisions and actions relative to rebuilding homes, replacing property, resuming employment, restoring businesses, and permanently repairing and rebuilding infrastructure. The recovery process requires balancing the more immediate need to return the community to normalcy with the longer-term goal of reducing future vulnerability (FEMA, 2020). The recovery process can provide individuals and communities with opportunities to become more economically secure and improve the overall safety and quality of life.

Because the recovery function has such long-lasting impacts and (generally) high costs, the participants in the process vary. They include all levels of government, the business community, political leadership, community activists, and individuals. Each of these groups plays a role in determining how the recovery will progress.

Some of these roles are regulatory, such as the application of State or local building ordinances, and some, such as the insurance industry, provide financial support. The goal of recovery is to bring all the stakeholders together to plan, finance, and implement a recovery strategy that will rebuild the disaster impacted area to be safer and more secure as quickly as possible (FEMA, 2020).

Planners are well suited to participate in the emergency management process, and many guiding FEMA documents and training programs promote the inclusion of planners to develop more effective emergency management plans and improve capacity at all four phases of the emergency management process (FEMA, 2013).

Planning, Emergency Management, and Hazard Mitigation

Planners are often responsible for the creation of the future vision of a community. This process usually involves community government, stakeholders, and other interested parties. Generally, master plans and comprehensive plans guide the following (Schwab, 2010):

1. land use (both existing and future),
2. demographics (existing and projected),
3. housing,
4. infrastructure,
5. education,
6. recreation, and
7. transit

This list is not all-inclusive, and the individual community determines which elements contribute to the vision. Emergency management and hazard mitigation professionals also have an overarching planning process. Comprehensive Emergency Management Plans (CEMP) focus on how the community will prepare and respond to a disaster. Still, those plans often do not include elements that are in a master plan, which may inform that process. Each plan needs the information, in part, from the other to become more inclusive and effective (FEMA, 2013).

Emergency plans may consider pre-disaster mitigation efforts such as removal of underbrush in a fire-prone area, and plans may guide actions to recover from the disaster. Because emergency management has its origin in response to emergencies, many emergency plans historically focused on what actions are taken when the disaster strikes and the period between then and when the community is stabilized and rebuilding. Government entities are frequently responsible for initiating the evacuation of residents from communities that are under immediate threat. Some residents will self-evacuate seeking safer harbor during the event; however, local authorities often implement pre-established response plans to protect from loss of life and mitigate property damage. When the threat is no longer present or has sufficiently reduced, residents often return to their personal and community property to assess the damage. Under the Stafford Act, Federal and State governments can provide support and resources to local communities in times of disaster (FEMA, 2011). This support varies in size, scope, and duration based on the event and is often used in tandem with local government and community resources. In many instances, the rebuilding of the community continues long after the government support has left. Some communities

can support this process, but some communities may remain unable to rebuild.

Planning for Disaster

Emergency management plans and master plans should complement each other and coordinate how a community addresses the concerns of disasters and how the community responds should the disaster happen. Rebuilding a community after a disaster or sudden shock is also often discussed, and for many outside the affected community, rebuilding refers to the physical restoration of the damaged property. However, for affected communities, rebuilding is much more and must account for the psychological recovery of its residents who must adapt to a new normal. Rebuilding often takes years to complete, and most emergency management plans do not account for this long-term process. The master plan and the planner or planning department must be prepared to manage the recovery from the disaster long after the emergency plan has concluded.

A community, regardless of size, may have a master plan guiding its development. The same community may also have an emergency management plan guiding its preparation and response to risks that threaten the community. Planners should not expect to be emergency management practitioners and be fluent in all aspects of the field. However, an understanding of the process of emergency management, hazard mitigation, resilience, and how emergency management plans are developed will provide a better understanding of how emergency management processes can be incorporated into master plans.

What Role Should Planners Play?

The field of emergency management and hazard mitigation has been growing

significantly since its inception in the 1950s. Emergency managers have become joined by other practitioners, such as civil engineers and others involved in planning for and developing public infrastructure. There are many people and institutions with stakes within the range of structural and nonstructural approaches to hazard mitigation. Nevertheless, planners' role in the process is central, and the process is less robust and less comprehensive without them (Schwab, 2010). The adoption of mitigation tools can strengthen the role of planning in both the short and long term. Planners must perceive the centrality of their role in this area and use their talents to the maximum benefit of public health and safety (Schwab, 2010).

In 2010 the American Planning Association issued Planning Advisory Service Report Number 560 titled: *Hazard Mitigation: Integrating Best Practices into Planning*. The report details the importance of integrating emergency management, hazard mitigation, and planning to improve community resilience and capacity to prepare for a disaster or sudden shock (Schwab, 2010).

"One of the primary goals of planning has always been the enhancement of quality of life in our communities. Most planners practice in the firm belief that their efforts are helping to improve the lives of people in the communities they serve. Nothing is more essential to protecting the quality of life than ensuring personal safety. All other benefits or public goods that people might regard as elements of a high-quality life—aesthetics, cultural activity, peaceable civic life, prosperity—are difficult or impossible to cultivate or enjoy when personal safety is in jeopardy" (Schwab, 2010, 1).

Integrating hazards into the planning process on paper is easy, putting that integration into practice amid a myriad of local variables is much tougher. The

commitment and political will to address hazards wane when the immediate threat of, or response to, a disaster is gone. (Schwab, 2010). Planners can help temper this by initiating the public dialogue before disaster strikes, helping people to understand the urgency of the problem through effective public outreach and education. This entails involving as many key stakeholders as possible and helping them to achieve consensus on as many broad principles and action items as possible, given the prevailing norms of the community (Schwab, 2010).

Comprehensive Vision and Goal Setting

The ability to integrate hazard mitigation into the larger context of plan making in a community is tied directly to a unique and crucial planner's skill: the ability to think comprehensively about the challenges facing a community, how to address them with the resources available, and how to steer the public and its decision-makers toward goals and objectives that are reasonably constructed to achieve the desired ends (Schwab, 2010). Many other local government professionals are trained to manage particular and often isolated functions—civil engineering with sewer and water systems, for example, or police and fire officials with public safety—but few, except county, city, or town managers, are trained to think about the welfare of the community in its entirety with all. The complex relationships that exist among land use, economic development, population growth, the environment, and the physical impact of the built environment on any number of other factors are within the planners' scope. A planners' ability to think about the big, long-term thoughts about the interrelatedness and interdependency of all these factors makes them indispensable to hazard mitigation planning (Schwab, 2010).

Planners are often the one group of local government professionals who are specially trained to analyze spatial relationships. They plan for future growth and development and implement the resulting decisions. However, few planners receive formal training to understand how hazards should influence those tasks and processes. Hazard mitigation training in academic curriculums is sparse, though growing, and many planners have essentially learned on the job or through continuing education training.

Integrating Hazards into Planning

According to Godschalk (2010, 48), Integrating hazards into planning implementation tools has three primary goals:

- Keeping future development out of known hazard areas. The purpose is to influence the location of public and private investment, guiding it away from known hazard areas and toward safe growth locations. For example, zoning and subdivision regulations can direct private development away from hazard areas through the designation of location-specific allowable land uses and standards for public safety. Capital improvement programs (CIPs) can direct funding for public facilities such as roads, bridges, utility systems, and critical facilities to locations outside hazard areas.
- Keeping hazards from affecting existing developed areas. The purpose is to improve the protection of already built-up areas through structural mitigation projects or environmental management techniques that modify the progression of the hazard itself, using combinations of local funds from CIPs and funds from state and federal programs. For example, dams and levees can be constructed to provide a certain

amount of protection from future flooding for low-lying developed areas. At the same time, reforestation and wetland preservation can be used for flood control.

- Strengthening existing development to resist hazards. The purpose is to enhance hazard resistance by enacting and enforcing construction code provisions concerning hazard stresses and impacts. For example, hazard area zones and subdivision regulations, as well as building codes, can contain design standards and project review procedures for ensuring the safety of projects subject to earthquake, landslide, wildfire, and flood hazards.

A variety of tools and techniques can be used to link hazard mitigation planning and land use planning. Communities should establish complementary goals, policies, and recommendations in hazard mitigation plans and comprehensive plans (e.g., land use, natural resource protection/environmental management, transportation, public safety, etc.) It cannot be overstated that there is a distinct reliance between these planning processes and outcomes. Capital improvement plans (e.g., water/sewer line extension, construction of public facilities) and development regulations (e.g., zoning ordinance, subdivision regulations, building, and housing codes) should also incorporate hazard mitigation recommendations. Demographic data such as growth trends, land use patterns, critical infrastructure maps, and future land use maps should continue to be collected and shared with emergency management professionals to inform their planning process better. The sharing of information across planning disciplines and conducting proactive and coordinated outreach and stakeholder involvement in the planning processes helps to promote a strong culture of preparedness and mitigation.

The New Normal

When considering the four phases of emergency management (mitigation, preparation, response, and recovery), some may think that once the danger has passed and the community has rebuilt, the application of the emergency plan would conclude. The cycle would then begin anew before the next disaster. Planners and emergency managers must incorporate awareness of the long-term effects of the disaster on the community into both emergency management and master plans.

It seems intuitive that the goal of an impacted community after experiencing a disaster or sudden shock is to return to normal; or to those conditions which preceded the disaster. Recovery usually meant rebuilding the damaged structures, cleaning up the debris, and making necessary changes to avoid more damage should the next disaster befall the community. This approach makes sense for most people, especially those who are not impacted. However, for those impacted by a disaster or sudden shock, the experience of the disaster is never gone. The term "return to normal" is often used to describe a desired state of return after a disaster or sudden shock, however a more accurate term "the new normal," is used to describe this process (Mccoll & Burkle 2012) . The new normal offers more respect for the impact of the event on the community. The new normal acknowledges that the disaster or sudden shock may prevent the return to pre-disaster conditions; for example, rebuilding damaged structures does not rebuild the family who suffered a loss of life. An event such as the 2012 Sandy Hook Elementary school shooting where 26 people, including 20 children between six and seven years old, and six adult staff members (Wikipedia, 2020) were shot and killed is so disturbing that the community is forever altered and normal, as it was before the tragedy, is impossible to return to. The new normal

acknowledges that disasters and sudden shocks are opportunities to address factors that contribute to the impact of disasters.

Those impacted by disaster are often surrounded by reminders of the event, which may result in a state of chronic stress which may serve to keep the disaster alive and present for many years. Individuals and communities begin to assume responsibility for rebuilding their lives, and people adjust to a new “normal” while continuing to grieve losses. The reconstruction phase often begins around the anniversary of the disaster and may continue for some time beyond that. Following catastrophic events, the reconstruction phase may last for years (Washington 2020). For areas experiencing a natural disaster such as tornado or flood, the sight of unrepaired homes, blight, empty lots where homes once stood, and anniversaries of the event will almost certainly bring a return of the trauma which was experienced (Mccoll & Burkle 2012). Even a change in seasons, like the beginning of hurricane season in the southern U.S., can bring back trauma, which impacts the wellbeing of communities at risk. These constant stressors, be them conscious or subconscious, can accumulate and affect communities in ways that are not usually accounted for in contemporary emergency management literature and are not usually considered when planners and local governments develop master plans. Planners should be aware of the possibility of retraumatizing community members during the planning process. There also are psychological impacts with long-term adaptive consequences, such as changes in risk perception (beliefs in the likelihood of the occurrence a disaster and its personal consequences for the individual) and increased hazard intrusiveness (frequency of thought and discussion about a hazard) (Lindell 2013). In turn, these beliefs can affect risk area residents’ adoption of household hazard adjustments that reduce their

vulnerability to future disasters (Lindell 2013). Experiencing a disaster may provide more involvement in the planning process and may serve to increase capacity to absorb the impact of a disaster. The disaster may forever alter the trajectory of the community, and planners must be work with others, especially mental health professionals, so that the impact of the disaster can be respected and incorporated into the comprehensive planning process.

Acute Childhood Experiences

Acute Childhood Experiences (ACE's) refer to significant traumas that are experienced during childhood, such as escaping extreme violence or in this example surviving Hurricane Katrina (CDC, 2019). ACES can create a multitude of mental health conditions (Johnson 2018). Children that witnessed the devastation or watched parents cope with the storm and aftermath are at a higher risk of mental health difficulties as an adult. Increases in mental health crises such as stress and anxiety may be felt as the hurricane season approaches. Even storms that bring heavy rain generate stress and concern in Broadmoor because it is in one of the lowest areas of the city, and it is usually last to drain. Reminders of the destruction of Katrina are brought out regularly. This chronic stress condition is detrimental to health and wellbeing; it may increase crime and disorder and lower quality of life (Johnson 2018).

This aspect of disaster recovery was not intended to be explored as part of this thesis. However, the research uncovered an area that requires further exploration and consideration when developing emergency management and master plans. Emergency management and master planners should learn more about the impact of ACE's from mental health professionals so that they are better informed about the long-term impact that disasters and sudden shocks may present to survivors. Plans should account for

these impacts and specify resources that may be available to provide monitoring well past the believed recovery period of the event.

Conclusion

Contemporary emergency management in the United States has its roots in the Cold-War era community preparation and response to a nuclear threat. The Federal Emergency Management Agency (FEMA) was created in the 1970s and modified several times until 2001 when it was incorporated under the Department of Homeland Security. FEMA identifies four phases of emergency management: Mitigation, Preparation, Response, and Recovery. Mitigation and Preparation occur before an emergency, Response and Recovery occur during and after the emergency. Recovery, though often identified as the last phase, should be considered when creating action items, policy, or plans during all other planning phases because these decisions will directly impact recovery. Planners may be responsible for maintaining recovery efforts long after the acute response to the emergency has passed. Planners may need to acknowledge that it may be challenging to engage stakeholders in a hazard mitigation planning process in the absence of an emergency. Despite this, planners are uniquely poised to see the broader spatial relationships of community, planning, and mitigation, which is helpful in the development of plans. The integration of planning and hazard mitigation should include the following principles: Keeping future development out of known hazard areas, keeping hazards from affecting existing developed areas, and strengthening existing development to resist hazards. The coordination with emergency managers can assist in these efforts by better informing both planning disciplines as their plans are developed. Should a disaster or sudden shock impact the community, the response phase will rely on guidance and preparations laid out in the

plans. It may minimize the level of damage or disruption to the community. The psychological impact of natural disaster or sudden shock can have negative consequences on the mental health of those who experience it, especially children. Acute Childhood Experiences (ACES) can influence the psychological and emotional stability of a child who experienced disaster and the result may not present itself for many years. Planners and emergency managers should consult with mental health professionals to learn how to incorporate ACES mitigation strategies into their plans.

CHAPTER 7

CONCLUSION

The importance of communities to prepare for and respond to disaster or disruption could not be any more clearly illustrated than right now. As the conclusion of this research is written, the United States and the rest of the world is grappling with the rapid spread of a global pandemic, Coronavirus (COVID-19).

COVID-19 could be considered a natural disaster, sudden shock, pandemic, or any other myriad of calamities combined into one global event. Communities across the world are relying on emergency managers, public health officials, economic forecasters, policymakers, and citizens to keep their communities safe from exposure to the virus. The disruption this pandemic is creating impacts economic markets, employment security, and social cohesion, which may result in instability, concern, and in the worst case, possibly panic among the populace. Planning for a pandemic may or may not already be incorporated in emergency or master plans. Communities that have developed plans for pandemic response are implementing their plans at this very moment; however, the speed of exposure and spread of the virus is threatening the community's ability to absorb the impact.

COVID-19 illustrates the various approaches which are needed for the successful planning, response, and recovery; similarly, there are different ways to view and interpret those approaches. An emergency management practitioner might see that systems of addressing the virus impact are being implemented based on established emergency management practices. There are organized management practices that are being used to dedicate resources accordingly, track cost expenditures, and ensure the

safety of responders, healthcare workers, and community stakeholders. Bringing subject matter experts from various disciplines (e.g., public health, academic, first responders, government) together to provide their knowledge to the overall planning and response processes helps inform the response. This process of collaborative stakeholder involvement and decision making reduces the unknowns and better informs the decisions made in a rapidly changing and uncertain landscape. The COVID-19 decision-making process has seen changes. State and federal declarations of emergency have been declared. As described earlier, our country is entering the response phase of this emergency, and our democratic process of decision making is slowly being replaced with an autocratic one, issuing clear directions and making strategic decisions designed to keep us safer. Those strategic decisions must be informed with information that is provided by subject matter experts; policymakers providing direction cannot ignore subject matter expertise. Competing interests must be weighed and considered when making policy decisions. In this specific case, the public health risks and economic stability risks, are being debated and an educated, informed decision must be made to achieve a level of balance which minimizes risk as much as possible.

Rebuilding after a disaster often takes years to complete, and most emergency management plans do not account for this long-term process leaving planners to aid the community in returning to the "new normal." Through the lens of a regional planner, one can see that COVID-19 may severely impact our communities, unlike any flood, hurricane, or tornado has. Though property destruction is unlikely as a result of the virus, the death of a significant number of our population is a concern. Planners cannot prepare for this impact; however, planners and communities are forced to

manage the impact on our communities long after the emergency response has concluded. The economic impact of the pandemic is likely to create unforeseen joblessness in communities. The master planning process often considers the economic development of the community, and planners will likely be forced to make adjustments to master plans in a post-COVID-19 world. This outcome is an example of planners being charged with the long-term recovery after the responders, and immediate resources have addressed acute concerns of the disaster.

As our communities recover from the impact of COVID-19, we will have opportunities to meet with various stakeholders to review how we were impacted, how we responded, and how we can improve to reduce negative impacts. For example, planners can provide demographic information to emergency managers regarding high-risk populations, such as the elderly in assisted care facilities or elsewhere, so that rapid mitigation efforts can be provided to reduce exposure to the virus. Planners will enter these discussions at the policy-making level, responder level, and most certainly at the community level. Planners need to listen to the community. They will be one of the best sources of information regarding how this disaster was handled. Planners have a unique ability to serve as liaisons between the community and the local government, and this skill will be critical as our country, and our communities recover from this disaster.

A significant factor in rebuilding a community after a disaster is the attachment that the residents have to their communities in the physical sense (e.g., houses, neighbors) and the psychological and emotional sense through their attachment to social circles and sense of community belonging. Planners must also prepare for the long-term impacts of disaster and sudden shock. The psychological impact of disaster

trauma on people may be profound. It may be visible as anniversaries of the event come and go, or it may not present itself until many years after the event. As planners work with communities that have been impacted by disaster, there must be careful consideration of the strategies used to address planning concerns. The psychological impact of disaster may remain present for the community, and the planning process should take care to avoid re-traumatizing residents as plans are crafted. Subject matter experts who are trained in disaster trauma may be a valuable resource for planners so that re-traumatizing can be mitigated or avoided.

Public participation is critical to developing comprehensive and emergency management plans, and planners have a unique ability to facilitate public engagement, which assists in a whole community approach to the planning process. Through this process, civic capacity is identified and developed. Civic capacity increases the ability of a community to prepare for and absorb the impacts of disasters. The more a community can absorb, the more likely it is to recover quicker and reduce long-term negative impacts. Effective integration of hazard mitigation occurs when a community's planning framework leads to development patterns that do not increase risks from known hazards or leads to redevelopment that reduces risk from known hazards. Community planners share the responsibility to seek out their emergency management counterparts and become part of the emergency management team to determine what shared values and potential solutions are likely to work best for their community. The planning approaches taken by emergency managers and regional planners should identify each other and suggest or require the sharing of information during the planning process to best inform the respective plan development. Planners need not be experts in emergency planning or vice versa. Trained practitioners should

complete the development of individual plans. What must be incorporated, however, is a mechanism of information sharing and a bridge that facilitates communication between the plans and a collaborative partnership before an emergency befalls the community.

Planning the future of a community requires assessing the immediate situation and predicting the future. During the development of New Orleans, the immediate needs of housing and commerce were addressed by advanced building processes that altered the physical environment. One of the lessons learned from this process, now 300 years later, is that the physical environment wants to return to how it was created. As subsidence has continued, New Orleans faces an enormous and never-ending process of addressing water management. The case study of Broadmoor, New Orleans, illustrates how disaster not only impacts the physical environment but may threaten the social and cultural structure of a community. Broadmoor and other neighborhoods in New Orleans faced a government taking in order to reduce the likelihood of future flooding and to assist in the overall drainage of floodwater in the city. From a planning theory perspective, this action may be appropriate, even necessary, to reduce future risk to the broader community. However, the execution of this action was overshadowed by perceived political corruption, lack of public participation in the process, and concerns about racial or socio-economic drivers influencing this action. A significant factor in the Broadmoor rebuilding process was the residents' sense of place and attachment to their neighborhood. As this neighborhood was threatened with forced buyouts, the people became galvanized and used their civic capacity to demonstrate that they would not be taken. Underlying community strength and organization from the Broadmoor Improvement Association (BIA) provided the

structure of this grass-roots effort to succeed. Today, Broadmoor continues to provide community resources and education designed to prepare the residents for future disruption from flooding. The BIA maintains a robust planning function, which is based on continuous attention to the needs of the residents, including mental health resources, to address trauma from Hurricane Katrina and other flooding events.

The United States has robust emergency management and hazard mitigation structures. The Federal Emergency Management Agency (FEMA) provides overarching direction, training, and response capabilities to state and local governments during times of disaster or sudden shock. Similar systems at state and local levels provide more direct services to those communities. As the field of emergency management has developed, assessment processes have been created to aid communities in identifying known or unknown risks. Tools and strategies have also been developed to mitigate damages and respond to disasters more quickly and effectively. The processes that planners use to develop master plans can assist in the emergency management planning process. When there is a better understanding of the built environment, its inhabitants, its limitations, and its potential for impact from risks, the community is better prepared to safeguard against a threat.

In a post-disaster situation, it might be tempting for residents to wait for city, state, or federal leaders to take charge and tell them what to do to rebuild. It seems counterintuitive that the victims of the disaster should be the ones in charge of their recovery. However, the rebuilding of a community cannot be done by government alone. City planning departments, city councils, and mayors are vital to the rebuilding effort. However, the task of rebuilding an entire community requires the involvement of the entire community— a business as usual approach will not work. (Ahlers, 2007).

The Broadmoor rebuilding plan was a community development plan. It happened to be the result of a natural disaster, but this served to inform the plan and make changes to improve the resiliency of the neighborhood as it transitioned to the new normal. The foundation of this process was both to rebuild and to not face a taking from the government. This became the base on which a robust public participation process was built. Much like rebuilding a house, as the Broadmoor rebuilding and repopulation structure took shape, details and finishing touches were identified and completed by residents, culminating in a citizen-created plan that received extensive support from the residents

The integration of emergency management and regional planning is supported by respective governing bodies and demonstrates the need for collaboration and resource sharing. FEMA encourages planners to participate in the emergency management planning process. The American Planning Association also encourages the integration of hazard mitigation into comprehensive and master plans. In *Hazard Mitigation: Integrating Best Practices into Planning* (2010), Schwab has suggested the following strategies to address gaps in collaboration.

- Act before a disaster. Funding will likely be a consideration, but planners should not wait for grant funds; by the time disaster strikes, much of the damage could have been prevented through proper planning (Schwab, 2010). Referring to the four-step emergency planning process, this type of planning takes place in the Mitigation and Preparation phases. It may be difficult to begin or sustain planning for a disaster in the absence of immediate threat. Partnering with emergency management from the beginning of the planning process can leverage importance of coordinated processes and may increase the effectiveness of both plans respectively.

- Mitigation requires patience, monitoring, and continuing evaluation.

Disasters are not built in a day; they are the product of numerous planning and political decisions over many years. Mitigation is often hard work that requires diligence and political patience. Realize that implementation is often a messy process and develop the necessary tools to minimize vulnerability over time (Schwab, 2010). The development work that planners do may have a direct impact on the community's ability to mitigate, absorb, and recover from a disaster. Planners who understand emergency management, or who incorporate emergency managers in the planning process will likely mitigate future risk through a design process that provides for adequate emergency response to disruption.

- Planners must account for stakeholder values in light of hazard mitigation.

They should perform an analysis of the interests of local stakeholders in order to identify both obstacles and opportunities, and to compare priorities and conflicts. Involve others wherever possible (Schwab, 2010). Much like subject matter experts who can lend technical expertise to the planning process, local stakeholders are a very valuable source of information during hazard and master planning processes. Public participation should be a requirement during phases of the planning, and emergency management planning process. The case study of Broadmoor, New Orleans illustrates that strict top-down policy decisions without stakeholder involvement may create larger issues and ultimate failure. Plans that address hazard mitigation and include stakeholder input will serve needs more effectively.

- Emphasize multiple-objective planning. Drawing on such analyses, determine where the same program or objective can serve multiple purposes, such as open space and bicycle paths in a floodplain that may draw support from fitness advocates,

environmentalists, and parks and recreation proponents. Find opportunities for the community to discover useful synergy in hazard mitigation (Schwab, 2010). The ability for one space to serve multiple purposes may be a significant factor in obtaining buy-in from government leaders and community stakeholders. The creation of spaces to absorb impact from floods, or wildfires while contributing to the development of the community will likely be received favorably.

- Communicate risks for hazards. Planning is not just concerned with the physical development of a community; it is also very much about public education, and planning staff must be able to communicate the elements of risk to planning commissions and the general public. The community can learn to take responsibility for the impacts of its decisions. Enabling those who wish to take foolish risks is not good planning (Schwab, 2010). This is a critical area for planners and emergency managers to collaborate efforts. A shared approach to communicating risks may be most effective as it demonstrates that no one singular voice is serving as an outlier voicing concern. Demonstrating the impact of decisions that impact planning and hazard mitigation better serves the community and informs policymakers and citizens, respectively.

- Above all, aim for resilience. The long-term goal is a community with the will, the resources, and the capacity to bounce back successfully from disaster (Schwab, 2010). Planners and emergency managers who share an understanding of the other's work can be better suited to develop plans that increase the capacity and resilience of the community. They need not work in isolation, a whole community, and the all-hazards approach will be the most successful. Both planning process should incorporate strategies for physical and emotional resilience. The physical restoration

from the impact of a disaster will likely be completed much faster than the psychological recovery. Plans should account for the immediate and long-term psychological needs of the impacted community. The existence of plans will not stop the occurrence of a disaster, but the outcome of the planning process, as described here, may reduce the negative impacts of the disaster and contribute to a more robust return, or perhaps the improvement of the community's pre-disaster state.

WORKS CITED

- Adger, W. N. (2005). Social-Ecological Resilience to Coastal Disasters. *Science*, 309(5737), 1036–1039. doi: 10.1126/science.1112122
- Agrawal, S., & Monroe, M. C. (2006). *Using and improving social capital to increase community preparedness for wildlife*. Newton Square, PA: U.S. Dept. of Agriculture. Forest Service. Northern Research Station.
- Berke, P., Cooper, J., Aminto, M., Grabich, S., & Horney, J. (2014). Adaptive Planning for Disaster Recovery and Resiliency: An Evaluation of 87 Local Recovery Plans in Eight States. *Journal of the American Planning Association*, 80(4), 310–323. doi: 10.1080/01944363.2014.976585
- Bihari, M., & Ryan, R. (2012). Influence of social capital on community preparedness for wildfires. *Landscape and Urban Planning*, 106(3), 253–261. doi: 10.1016/j.landurbplan.2012.03.011
- Bliss, L., & Bliss, L. (2015, August 25). 8 Maps That Explain Why We May Never Fully Know Where Katrina Survivors Ended Up. Retrieved March 15, 2020, from www.citylab.com/equity/2015/08/10-years-later-theres-still-a-lot-we-dont-know-about-where-katrina-survivors-ended-up/401216/
- Broadmoor Improvement Association. (2006). *The Redevelopment Plan for Broadmoor* (Vol. 1).
- Broadmoor Improvement Association. (2007). Neighborhood Association: New Orleans, LA. Retrieved from www.broadmoorimprovement.com/
- Campanella, S. by R. (2018, February 7). How Humans Sank New Orleans. Retrieved from www.theatlantic.com/technology/archive/2018/02/how-humans-sank-new-orleans/552323/
- Center for Disease Control and prevention. Preventing Adverse Childhood Experiences: Leveraging the Best Available Evidence, Preventing Adverse Childhood Experiences: Leveraging the Best Available Evidence (2019). Retrieved from www.cdc.gov/violenceprevention/pdf/preventingACES.pdf
- City of New Orleans. (n.d.). Plan for Emergencies. Retrieved April 30, 2020, from www.ready.nola.gov/plan/hurricane/
- Clement, J., Kayyem, J., Baron, J., Herzog, S., Malin, M. B., Allison, G., & O'Sullivan, M. L. (2016, January 1). Broadmoor Project, New Orleans: Looking Back and Ahead. Retrieved from www.belfercenter.org/publication/broadmoor-project-new-orleans-looking-back-and-ahead

- Collins, R. A. (n.d.). No More “Planning by Surprise”: City Planning in New Orleans Ten Years after Katrina. Retrieved from www.amazonaws.com/gnocdc/reports/The Data Center - Land Use Planning in New Orleans.pdf
- Creighton, J. L. (2012). *Public participation handbook: making better decisions through citizen involvement*. Place of publication not identified: John Wiley & Sons Inc.
- Cutter, S. L., Burton, C. G., & Emrich, C. T. (2010). Disaster Resilience Indicators for Benchmarking Baseline Conditions. *Journal of Homeland Security and Emergency Management*, 7(1). doi: 10.2202/1547-7355.1732
- Dewan, A. M. (2013). Hazards, Risk, and Vulnerability. *Floods in a Megacity*, 35–74. doi: 10.1007/978-94-007-5875-9_2
- Easthope, H. (2004). A place called home. *Housing, Theory and Society*, 21(3), 128–138. doi: 10.1080/14036090410021360
- Enarson, E. (2001). Lines That Divide, Ties That Bind: Race, Class, and Gender in Women's Flood Experiences in the US and Canada. Retrieved from www.academia.edu/943606/Lines_That_Divide_Ties_That_Bind_Race_Class_and_Gender_in_Womens_Flood_Experiences_in_the_US_and_Canada
- FEMA. (2004, September 1). Academic Emergency Management and Related Courses (AEMRC) for the Higher Education Program. Retrieved from www.training.fema.gov/hiedu/aemrc/booksdownload/emoutline/
- FEMA. (2010, November). CPG 101, Developing and Maintaining Emergency Operations Plans, Version 2. Retrieved from www.fema.gov/media-library/assets/documents/25975
- FEMA. (2011). A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action. *A Whole Community Approach to Emergency Management: Principles, Themes, and Pathways for Action*. Retrieved from www.fema.gov/media-library-data/20130726-1813-25045-0649/whole_community_dec2011_2_.pdf
- FEMA. (2013, March 1). Integrating Hazard Mitigation Into Local Planning. Retrieved from www.fema.gov/media-library-data/20130726-1908-25045-0016/integrating_hazmit.pdf
- Fung, A. (2008). "Broadmoor Lives": A New Orleans Neighborhood's Battle To Recover from Hurricane Katrina (A). Retrieved from www.case.hks.harvard.edu/broadmoor-lives-a-new-orleans-neighborhood-s-battle-to-recover-from-hurricane-katrina-a/
- Gesch, D. (n.d.). Topography-based Analysis of Hurricane Katrina Inundation ... Retrieved from www.pubs.usgs.gov/circ/1306/pdf/c1306_ch3_g.pdf

- Haas, J. E., Kates, R. W., Bowden, M. J., & Amaral, D. (1977). *Reconstruction following disaster*. Cambridge MA: MIT Press.
- Jamali, M. M., & Nejat, P. A. (2016). Place attachment and disasters: Knowns and unknowns. *Journal of Emergency Management*, 14(5), 349. doi: 10.5055/jem.2016.0299
- Johnson, R. W. (Ed.). (2018, June 20). The Truth About ACEs Infographic. Retrieved from www.rwjf.org/en/library/infographics/the-truth-about-aces.html?cid=xsh_rwjf_ec_0004
- Joseph Roundtree Foundation. (2017, September 18). The links between housing and poverty. Retrieved from www.jrf.org.uk/report/links-between-housing-and-poverty
- Kayyem, J., Allen, T., Wilke, S., Ahlers, D., O'Sullivan, M. L., Walt, S. M., ... Blackwill, R. D. (2016, January 1). Broadmoor Project, New Orleans: Looking Back and Ahead. Retrieved from www.belfercenter.org/publication/broadmoor-project-new-orleans-looking-back-and-ahead
- Kim, K., & Olshansky, R. B. (2014). The Theory and Practice of Building Back Better. *Journal of the American Planning Association*, 80(4), 289–292. doi: 10.1080/01944363.2014.988597
- Kim, K. (2015). Planning for Post-Disaster Recovery: Next Generation, edited by James C. Schwab. *Journal of the American Planning Association*, 81(2), 159–160. doi: 10.1080/01944363.2015.1054722
- Klinenberg, E. (2015). *Heat wave: a social autopsy of disaster in Chicago*. Chicago: The University of Chicago Press.
- Kweit, M. G., & Kweit, R. W. (2004). Citizen Participation and Citizen Evaluation in Disaster Recovery. *The American Review of Public Administration*, 34(4), 354–373. doi: 10.1177/0275074004268573
- Lamb, Z. (2019). Connecting the Dots: The Origins, Evolutions, and Implications of the Map that Changed Post-Katrina Recovery Planning in New Orleans. *Louisianas Response to Extreme Weather Extreme Weather and Society*, 65–91. doi: 10.1007/978-3-030-27205-0_3
- Lindell, M. K. (2013). Recovery and Reconstruction After Disaster. *Encyclopedia of Natural Hazards Encyclopedia of Earth Sciences Series*, 812–824. doi: 10.1007/978-1-4020-4399-4_285
- Liu, A. (2011). *Resilience and opportunity: lessons from the U.S. Gulf Coast after Katrina and Rita*. Washington, D.C.: Brookings Institution.
- Marso, J. (2017, April). Disaster Risk Reduction Ambassador Curriculum Module 10: Integrating Hazard Mitigation into Local Planning. Retrieved from www.nhma.info/drr-curriculum/

- Maslow's Hierarchy Of Needs And Toronto Real Estate For Buyers. (2017, February). Retrieved from www.urbaner.com/blog/maslows_hierarchy_of_needs_and_toronto_real_estate_for_buyers
- Mccoll, G. J., & Burkle, F. M. (2012). The New Normal: Twelve Months of Resiliency and Recovery in Christchurch. *Disaster Medicine and Public Health Preparedness*, 6(1), 33–43. doi: 10.1001/dmp.2012.8
- McPhee, J., & Kolbert, E. (1989). Atchafalaya. Retrieved from www.newyorker.com/magazine/1987/02/23/atchafalaya
- Morrice, S. (2012). Heartache and Hurricane Katrina: recognising the influence of emotion in post-disaster return decisions. *Area*, 45(1), 33–39. doi: 10.1111/j.1475-4762.2012.01121.x
- Neighborhood Association: New Orleans, LA. (n.d.). Retrieved March 15, 2020, from www.broadmoorimprovement.com/
- New Orleans.com. (2020). Neighborhood Guides: New Orleans. Retrieved from www.neworleans.com/plan/neighborhoods/
- Nigg, J. M. (1996, January 1). Policy Issues for Post-Disaster Mitigation: The Need for a Process. Retrieved from www.core.ac.uk/display/55659694
- Olshansky, R. B., Johnson, L. A., & Topping, K. C. (2006). Rebuilding Communities Following Disaster: Lessons from Kobe and Los Angeles. *Built Environment*, 32(4), 354–374. doi: 10.2148/benv.32.4.354
- Olshansky, R., & Johnson, L. (2018). *Clear As Mud: planning for the rebuilding of new orleans*. S.I.: Routledge .
- Onyx, J., & Bullen, P. (2000). Measuring Social Capital in Five Communities. *The Journal of Applied Behavioral Science*, 36(1), 23–42. doi: 10.1177/0021886300361002
- Peacock, W. G., Zandt, S. V., Zhang, Y., & Highfield, W. E. (2014). Inequities in Long-Term Housing Recovery After Disasters. *Journal of the American Planning Association*, 80(4), 356–371. doi: 10.1080/01944363.2014.980440
- Prater, C., Peacock, W. G., Arlikatti, S., & Grover, H. (2006). Social Capacity in Nagapattinam, Tamil Nadu after the December 2004 Great Sumatra Earthquake and Tsunami. *Earthquake Spectra*, 22(3_suppl), 715–729. doi: 10.1193/1.2201968
- Qazimi, S. (2014). Sense of Place and Place Identity. *European Journal of Social Sciences Education and Research*, 1(1), 306. doi: 10.26417/ejser.v1i1.p306-310
- Quarantelli, E. L. (1999, January 1). The Disaster Recovery Process: What We Know and Do Not Know From Research. Retrieved from www.space.udel.edu/handle/19716/309

- Rosenthal, S. (n.d.). Join Levees.Org. Retrieved January 14, 2020, from www.levees.org/levee-exhibition-full-length-version/
- Rumbach, A., & Foley, D. (2014). Indigenous Institutions and Their Role in Disaster Risk Reduction and Resilience: Evidence from the 2009 Tsunami in American Samoa. *Ecology and Society*, 19(1). doi: 10.5751/es-06189-190119
- Rumbach, A., Makarewicz, C., & Németh, J. (2016). The importance of place in early disaster recovery: a case study of the 2013 Colorado floods. *Journal of Environmental Planning and Management*, 59(11), 2045–2063. doi: 10.1080/09640568.2015.1116981
- Washington, E. (2020, February 25). Phases of Disaster. Retrieved from www.samhsa.gov/dtac/recovering-disasters/phases-disaster
- Wikimedia Foundation. (2020, April 17). Sandy Hook Elementary School shooting. Retrieved from www.en.wikipedia.org/wiki/Sandy_Hook_Elementary_School_shooting
- Schwab, J. (2010). Hazard Mitigation (PAS 560). Retrieved from www.planning.org/publications/report/9026884/
- Seidman, K. F. (2013). *Coming home to New Orleans neighborhood rebuilding after Katrina*. New York: Oxford University Press.
- Sherly, M. A., Karmakar, S., Parthasarathy, D., Chan, T., & Rau, C. (2015). Disaster Vulnerability Mapping for a Densely Populated Coastal Urban Area: An Application to Mumbai, India. *Annals of the Association of American Geographers*, 105(6), 1198–1220. doi: 10.1080/00045608.2015.1072792
- Sills, G. L., Vroman, N. D., Wahl, R. E., & Schwanz, N. T. (2008). Overview of New Orleans Levee Failures: Lessons Learned and Their Impact on National Levee Design and Assessment. *Journal of Geotechnical and Geoenvironmental Engineering*, 134(5), 556–565. doi: 10.1061/(asce)1090-0241(2008)134:5(556)
- Smith, G. P., & Wenger, D. (2007). Sustainable Disaster Recovery: Operationalizing An Existing Agenda. *Handbook of Disaster Research Handbooks of Sociology and Social Research*, 234–257. doi: 10.1007/978-0-387-32353-4_14
- Smith, G. (2011). *Planning for post-disaster recovery: a review of the United States disaster assistance framework*. Fairfax, VA: Public Entity Risk Institute.
- Smith, G. (2014). Involving Land Use Planners in Pre-Event Planning for Post-Disaster Recovery. *Journal of the American Planning Association*, 80(4), 306–307. doi: 10.1080/01944363.2014.990789
- The Project for Public Spaces. (n.d.). What Makes a Successful Place? Retrieved from www.pps.org/article/grplacefeat
- Tumarkin, M. M., & O'Reilly, M. (2006). *Traumascaples: The Power and Fate of Places Transformed by Tragedy*. Sydney, N.S.W.: Vision Australia Information and Library Service.

Uberti, D. (2015, August 24). Is New Orleans in danger of turning into a modern-day Atlantis? Retrieved from www.theguardian.com/cities/2015/aug/24/new-orleans-hurricane-katrina-louisiana-wetlands-modern-atlantis

WFAA. (2015, August 28). Timeline: Hurricane Katrina and the aftermath. Retrieved from www.wfaa.com/article/news/nation/timeline-hurricane-katrina-and-the-aftermath/287-142230560