



CDR | MAGUIRE

UNMET NEEDS & COMMUNITY FRAGILITY (UNCF) STUDY

FOR THE 2012 HIGH PARK WILDFIRE & SEPTEMBER 2013 FLOODS



LARIMER COUNTY UNMET NEEDS AND COMMUNITY FRAGILITY STUDY

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Table of Contents

EXECUTIVE SUMMARY	1
KEY FINDINGS	3
INTRODUCTION	5
REPORT METHODOLOGY	7
DATA COLLECTION METHODOLOGY	9
ASSESSMENT METHODOLOGY	10
THEORETICAL FRAMEWORKS	12
FRAGILITY IN EMERGENCY MANAGEMENT FRAMEWORK (HODGES)	12
ORGANIZATIONAL RESILIENCE FRAMEWORK (LEE)	15
OVERVIEW OF THE DISASTER EVENTS	19
HIGH PARK FIRE 2012	19
SEPTEMBER 2013 FLOODS	22
UNMET NEEDS DATA COLLECTION AND ANALYSIS	24
PRIVATE PROPERTY	26
ROADS AND CROSSINGS	27
HOME ACCESS PROGRAM – PRIVATE ROADS AND CROSSINGS	28
BUILDINGS	30
LAND	31
PROPERTY	31
EQUIPMENT	32
LESSONS LEARNED AND RECOMMENDATIONS	32
HOUSING	35
CDBG-DR PROGRAM	36
NON-PROFIT SECTOR	37
HOME DEMOLITIONS – ABATEMENT PROGRAM AND PURCHASE PROGRAM	38
SECOND HOMES	38
INSURANCE	39
LAND USE CODE AND BUILDING CODES	39
LESSONS LEARNED AND RECOMMENDATIONS	40
DEBRIS	42
DEBRIS ON PRIVATE PROPERTY	42
DEBRIS IN THE FLOODWAY	43



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

LANDFILL USE 44

LESSONS LEARNED AND RECOMMENDATIONS 44

COMMUNICATION 46

 COMMUNICATION NETWORKS 46

 PHONE/INTERNET SERVICE 47

 PUBLIC EDUCATION 49

 WARNINGS 50

 LESSONS LEARNED AND RECOMMENDATIONS 51

UTILITIES 53

 WATER AND WASTE WATER 53

 POWER 54

 FUEL 54

 LESSONS LEARNED AND RECOMMENDATIONS 55

PLANNING 57

 VEGETATION 57

 PESTS/INSECTS 59

 FLOOD 60

 WILDFIRE 61

 MULTI-HAZARD 62

 ROAD 63

 RECREATION 63

 LESSONS LEARNED AND RECOMMENDATIONS 63

ECONOMIC 65

 LARIMER COUNTY SMALL BUSINESS DEVELOPMENT CENTER (SBDC) 65

 LARIMER WORKFORCE CENTER 66

 SMALL BUSINESS RECOVERY FUND 67

 ECONOMIC IMPACT TO AGRICULTURAL AND RANCHING COMMUNITIES 70

 LESSONS LEARNED AND RECOMMENDATIONS 72

SAFETY 74

 SECOND EGRESS/SINGLE POINT OF ACCESS 74

 AMBULATORY CARE AND MEDICAL CLINICS 74

 VULNERABLE POPULATIONS 75

 LESSONS LEARNED AND RECOMMENDATIONS 75

COMMUNITY FRAGILITY DATA COLLECTION AND ANALYSIS 77

COMMUNITY SURVEY DESCRIPTION 77



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

COMMUNITY SURVEY RESULTS77

AGENCY SURVEY DESCRIPTION..... 79

AGENCY SURVEY RESULTS79

SOCIAL VULNERABILITY ANALYSIS 80

FRAGILITY DATA ANALYSIS CONCLUSION 81

COMMUNITY ANALYSIS.....82

SECTION 1 - COMMUNITIES WITH BOTH FRAGILITY SURVEY AND UNMET NEEDS ANALYSIS..... 82

LAPORTE, BELLVUE, LIVERMORE, POUDDRE RIVER82

LOVELAND, JOHNSTOWN, CAMPION, SYLVAN DALE RANCH87

BERTHOUD91

RED FEATHER LAKES, CRYSTAL LAKES, GLACIER VIEW.....96

GLEN HAVEN, DRAKE, WALTONIA 101

BLUE MOUNTAIN, SPRING GULCH (LYONS AREA), X BAR 7 107

SECTION 2 - COMMUNITIES WITH FRAGILITY SURVEYS ONLY 112

BUCKEYE, WELLINGTON, WAVERLY 112

FORT COLLINS, WINDSOR, TIMNATH 114

ESTES PARK, ESTES VALLEY 116

PINEWOOD SPRINGS 118

PUTTING IT ALL TOGETHER120

CONCLUSION.....129

WHERE DO WE GO FROM HERE?..... 129

REFERENCES130

ATTACHMENT A131

APPENDIX 1:135

ACKNOWLEDGEMENTS 135

APPENDIX 2:138

THE NEW CODE OF THE WEST 138

APPENDIX 3:146

SURVEYS USED IN THIS REPORT..... 146

EXECUTIVE SUMMARY



Figure 1: 2012 High Park Wildfire Response. Photo by Karl Gehring / The Denver Post

In recent years, Larimer County was impacted by two Federally-declared disasters – the 2012 High Park Wildfire and the September 2013 floods. These events caused historic destruction and posed significant challenges in the overall recovery.

On June 9, 2012, the High Park Wildfire ignited above Buckhorn Road. The fire burned over 87,000 acres, destroyed over 259 homes and killed one person. High Park was declared the second largest wildfire in state history by acreage, and the third most destructive for property damage.

Just a year after the fire, on September 9, 2013, the Front Range of Colorado experienced what would become the costliest flood event in the state's history. Over a five-day period, the equivalent of an average years' worth of rain fell in the area destroying roads, bridges, and homes and killing nine people. Both Highway 34 and 36 were demolished and impassible, as both the Big Thompson and Little Thompson rivers swelled over their banks isolating communities and forcing aerial evacuation of mountain residents.

UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY



*Figure 2: Section of Highway 34 after September 2013 floods.
Photo by Thomas Hendrick*

As part of its long-term recovery efforts, the county hired a consultant to conduct both an Unmet Needs and Community Fragility assessment. This Unmet Needs and Community Fragility (UNCF) study is meant to close the gap between what is known and what is unknown about community needs nearly two years following the events of 2012 and 2013.

The study begins with an introduction of the methodologies utilized for data collection and assessment. Building on the prior theoretical frameworks of Amy V. Lee and Lori Hodges, the Community Fragility Framework is developed. After a brief summary of both disasters and the damage they caused, a detailed unmet needs analysis follows based upon key areas of need, such as private property or housing. This information has been gathered through formal reports as well as a series of unmet needs community meetings. A number of lessons learned are summarized at the end of each of these sections. Next, the Community Fragility section outlines data provided through surveys and interviews for ten groups of communities throughout Larimer County. These two assessments of needs are combined to create

recommendations specific to each community. Finally, the report outlines recommendations for all communities based upon their unmet needs and the three key components of fragility: Connectedness, Stability and Sustainability. The combination of all this data paints a comprehensive picture of disaster unmet needs as well as key actions for municipalities, Larimer County, and local communities to strengthen systems overall to prepare for the next disaster. At the conclusion of the report, next steps are provided for acting on the report's findings. By looking at potential projects and improvements through a strategic lens, the county will have the greatest opportunity to achieve a maximum return on investment.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

KEY FINDINGS

Summary of Unmet Needs

	Glen Haven, Drake, Waltonia	Loveland	Berthoud	Blue Mountain & Spring Gulch	Poudre Coalition	Sylvan Dale Ranch	Crystal Lakes, Glacier View Meadows, and Red Feather
PRIVATE PROPERTY	31.8%	18.1%	36.0%	13.7%	5.4%	29.6%	13.6%
HOUSING	5.3%	5.6%	5.0%	2.2%	0.0%	0.0%	2.3%
DEBRIS	3.8%	6.9%	23.0%	3.8%	2.7%	11.1%	4.5%
COMMUNICATION	14.4%	12.5%	3.0%	41.0%	37.8%	0.0%	27.3%
UTILITIES	0.8%	0.0%	1.0%	3.8%	0.0%	3.7%	11.4%
PLANS	33.3%	38.9%	27.0%	18.0%	45.9%	55.6%	9.1%
ECONOMIC	3.8%	8.3%	3.0%	1.1%	5.4%	0.0%	0.0%
SAFETY	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	29.5%
OTHER	6.8%	9.7%	2.0%	4.4%	2.7%	0.0%	2.3%
	100%	100%	100%	100%	100%	100%	100%

Most Responses
 2nd Most Responses
 3rd Most Responses

Overall, an unmet needs review of nine different categories was conducted. The chart above details the areas of concern based on the community meeting location.

As depicted in the table, the top three areas of unmet needs were Plans, Communication and Private Property. In studying unmet needs, a few themes appeared throughout the communities that put things into perspective.

First, some of the unmet needs gathered stem from either a lack of understanding or acceptance that government services are limited in rural areas. A good primer for residents to educate themselves on these common issues is the “New Code of the West” found in Appendix 2.

Secondly, patience is needed on the part of residents in understanding the massive undertakings currently underway from local, state, and federal agencies developing reconstruction plans on Highways 34 and 36. These two projects have a significant and immediate impact on local planning projects, many of which are dependent on the decisions made here, not to mention the significant impact on the future of the transportation corridor in the Northern Rockies. With a financial investment of hundreds of millions of dollars and the coordination between multiple stakeholders that include master watershed plans for the Big Thompson and Little Thompson Rivers, these projects deserve to be well thought out and planned. That said, a sense of urgency and good public communication processes on developments and updates of these projects should remain as a high priority for all the agencies involved.

Lastly, the county should work with communities to identify areas where additional education is needed and design programs to assist communities and residents to better prepare themselves for the next disaster. Areas identified in this report include, but are not limited to, identifying second egress routes, education on the National Flood



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Insurance Program, the proper design and maintenance of private access roads and crossings, and the benefits of homeowner associations and/or public improvement districts.

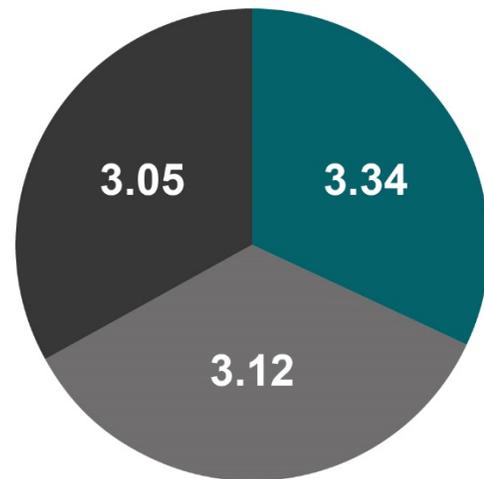
From a Community Fragility perspective, the overall findings are summarized under three components: Connectedness, Stability and Sustainability.

A majority of the communities surveyed showed strong Connectedness, which is not uncommon after a disaster has taken place and a community is forced to come together during recovery efforts. However, many respondents felt that communication was one factor that could use improvement. Suggestions to improve communications include redesigning the county’s website for ease of use, revisiting public outreach efforts and continuing efforts that have yielded a good amount of success like the Annual Family Safety and Emergency Preparedness Expo.

Stability, the second component in Community Fragility, deals directly with how a community feels about its leaders, how well local politics represent their interest, and their community’s ability to prepare and respond to future disasters. Planning efforts and leadership and/or governance are items that could be improved upon. To that end, community leaders should continue to look for avenues to engage community members on their needs and priorities. One suggestion that combines both planning and leadership could be for leaders to engage their communities in developing and communicating preparedness plans for their respective communities that deal with the Who, What, When, and Where of a disaster.

Lastly, with the lowest score of all of Community Fragility components, Sustainability may require the most attention. Sustainability speaks to how respondents felt about accessibility to lifelines and their community’s ability to provide services during an event and learn from past mistakes. Completing a community-wide assessment of single access areas and identifying secondary egress routes is an example of a project that could assist in this area. Another consideration may be to develop plans for alternative energy sources, allowing for redundancies and back-up systems if primary means fail (community solar power, internet hubs, etc.).

COMMUNITY FRAGILITY



■ Connectedness ■ Stability ■ Sustainability



INTRODUCTION

Living in Colorado can mean spectacular views of majestic mountains and wild animals in open space. It's one of the reasons why communities along the Front Range have experienced an exploding population since the 1990s. With growth, however, comes a certain expectation of government services often at odds with the reality of living in a rural community. So much so, that in the late 1990s, Larimer County Commissioner John Clarke penned a document titled, "The Code of the West – the Realities of Rural Living" to educate new rural dwellers on the harsh reality of rural living. Mr. Clarke in essence modernized famous western writer Zane Grey's "Code of the West", to inform new residents on what to expect as far as access, utilities, property, mother nature, and agriculture in a rural community. Since then, almost 100 different jurisdictions have adopted the code in many western states including, but not limited to, Arizona, New Mexico, California and Montana to name a few. A copy of the "New Code of the West" is included in the Appendix of this document.

Many of the issues addressed in the "New Code of the West" came to light after the High Park Fire and September 2013 floods. Since then, millions of dollars have been spent on rebuilding rural roads and utilities, interstate highways, and other recovery efforts; and yet needs remain unmet in these communities. In

addressing these needs, it is important that recovery efforts take into account a desire to build back better, without destroying what drew people to these communities in the first place.

In April of 2015, the Board of Commissioners held a work session to discuss continuing needs from the disasters of 2012 and 2013. In that session, the Board recommended a comprehensive study to determine unmet needs for affected communities. However, Commissioners did not necessarily think this went far enough to examine the needs of the community.

To understand some of the shortcomings of an unmet needs study, it is important to understand how a typical unmet needs study is conducted. A typical unmet needs study is based on damage assessments submitted to the Federal Emergency Management Administration (FEMA) Public Assistance Program to request recovery grant dollars to aid in recovery. These damage assessments are then used to create Project Worksheets, a tool used



- Live each day with courage
- Take pride in your work
- Always finish what you start
- Do what has to be done
- Be tough but fair
- When you make a promise, keep it
- Ride for the brand
- Talk less and say more
- Remember that some things aren't for sale
- Know where to draw the line



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

to document a recovery project's overall costs. To calculate the unmet needs of a community, you calculate your total damages assessed and subtract out what is covered under the Public Assistance Program federal and state share, following a disaster. This approach is suitable when a community is trying to target long-term recovery dollars (e.g., CDBG-DR), but falls short in assessing what a community and its citizens perceive to be their greatest unmet need.

Recognizing that a more detailed approach was necessary, the Commissioners drew upon recent research in the field of Emergency Management. This research discusses the idea of Community Fragility, a concept that looks at systems designed to reduce the impacts to a community from disaster. In contemplating this analysis, the county Commissioners determined it was critical to incorporate a detailed analysis of Community Fragility that would allow for more in-depth discussion about solutions and future recommendations.

Disaster Unmet Needs Assessment

The Disaster Unmet Needs Assessment guides governmental leadership through a process for identifying and prioritizing critical unmet needs for long-term community recovery. It is designed to be used at any time following a disaster. However, the quality of the assessment is directly tied to the quality and completeness of the impact data available. Thus, an accurate assessment is typically not possible for months following a disaster. The assessment should take into account work already accomplished, community goals, and the jurisdiction's capacity to plan for, manage, and implement a coordinated long-term recovery process. The ultimate goal is to enable the county to better design recovery programs that are responsive to the types and locations of actual needs within each community.

Community Fragility Study

The field of Community Fragility is a new area of research inquiry in emergency management, and as such, does not have a large body of literature written on the topic. However, the Community Fragility theory draws on literature in the fields of systems theory and community and organizational resilience as the topics share many commonalities. Some definitions of resilience focus on the ability of organizations to “bounce back” from unanticipated impacts and dangers¹. This definition of resilience may be considered a description of “passive resilience,” a reaction to an event and thus reactive in nature². In contrast, “active resilience” can be differentiated as “a deliberate effort to become better able to cope with surprise”³, and thus may be considered proactive in nature. Passive resilience is discussed more frequently in the literature and is generally demonstrated after a major disaster or crisis⁴; however, active resilience may be a more effective method of framing the discussion of Community Fragility.

¹ Wildavsky, 1988

² Somers, 2009

³ Lovins and Lovins, 1982; Wildavsky, 1988, p. 98; Somers, 2009

⁴ Wildavsky, 1988



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

One of the reasons the typical damage assessment approach of an unmet needs study may not be suitable when addressing Community Fragility is that it focuses strictly on hard asset costs and ignores soft assets that contribute to a resilient, less fragile community such as social capital and community connectedness. Secondly, damage assessments are typically conducted shortly after a disaster while recovery operations are in their infancy and emergency repairs are the main focus. As the initial shock wears off, the news cameras go away, and communities have time to think about long-term recovery, lessons are learned that can have lasting impacts when woven into the fabric of each community. Lastly, some unmet needs cannot be assessed through damages alone, like community leadership or communication networks.

Examinations of communities that have suffered severe impacts from natural disasters show that there are differences in how communities respond and recover. While some communities band together and recover rapidly, becoming stronger than they were before, other communities are left compromised by the disaster, requiring far longer recovery periods⁵. Assessing the fragility of communities is one way of anticipating how communities will respond and recover during future disasters.

The purpose of this Unmet Needs and Community Fragility Study (UNCF) is to take a proactive approach to assessing both disaster unmet needs from two large-scale disasters and Community Fragility in the county, ultimately identifying key areas that can be addressed prior to future events. This provides a holistic approach to the entire recovery system and allows decisions to be made from a new perspective, on what can be done to improve the overall systems. The goal is to “bounce forward” instead of just bouncing back.

REPORT METHODOLOGY

The following section outlines the methodology utilized for the study, including how information was gathered, the analysis of that data, and the limitations of the report. The study team interacted with partners⁶ from each of the participating communities and used a multi-method approach to gather relevant data. These methods included interviews, community/town hall meetings, and a review of local, state and federal reports.

With any study, however, there will be limitations. The scope of the study is Larimer County, and therefore, does not include information specific to other affected counties such as Boulder or Weld. Additionally, because of time limitations, some Larimer County communities were unable to participate fully. This in no way should be an indication that these areas do not have ongoing recovery needs and several of the findings of the study may still be useful to these communities in the future.

⁵ Quinn, 2013; Zimmermann, 2012

⁶ See Appendix 1 for a full list of report partners



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Other time constraint factors include the inability to reach all populations, including non-English speaking individuals and second homeowners living outside of the county. Additionally, personal interviews were limited to only a few municipalities, such as Estes Park and Timnath.

The collection of data occurred two years after the 2013 Flood and three years after the 2012 High Park Wildfire, indicating that some affected populations may no longer be in the area. Additionally, many communities changed dramatically after the disaster some creating strong internal connections while others fractured into disparate groups. Because these changes have already occurred, the study may not illustrate the conditions of each community pre-disaster. Responses to interviews and questionnaires are from those community members still involved in recovery efforts and do not capture those who have since moved out of the area.

The addition of the Community Fragility component of analysis is another unique factor of this study. Larimer County wanted to determine not only the unmet recovery needs but to also capture community culture. Consequently, many communities are included in the data analysis that may not have been affected by flood or fire. Therefore, parts of the study will focus directly on disaster-affected areas, such as the unmet needs portion, parts will discuss Community Fragility, and others will be a combination of the two.

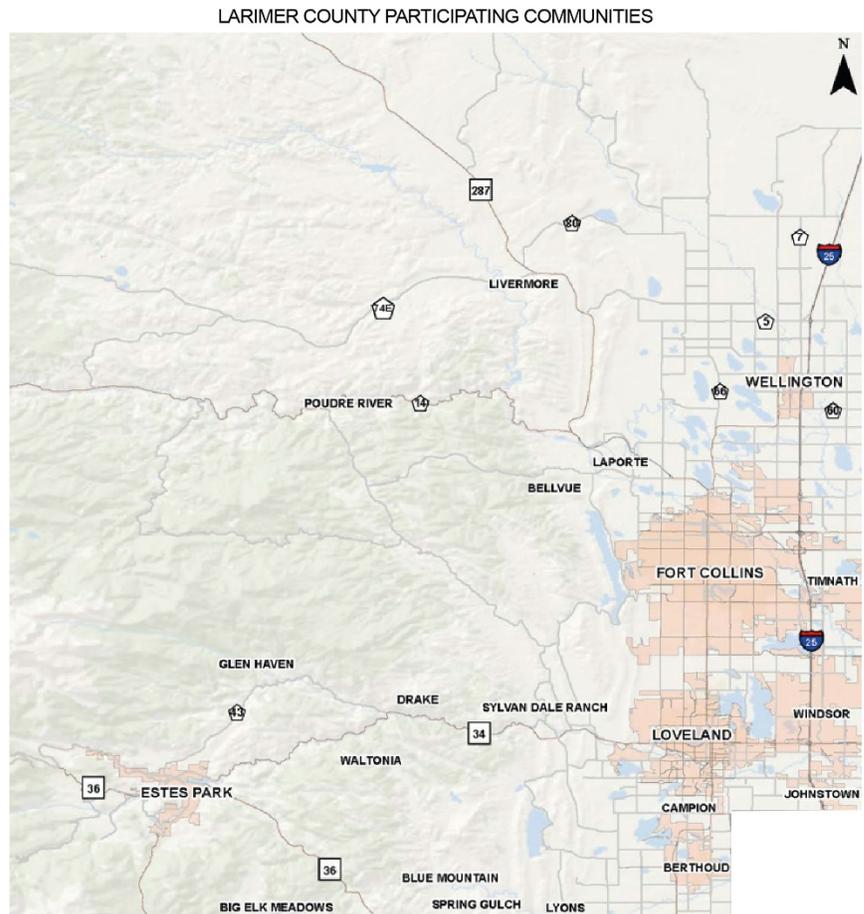


UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

DATA COLLECTION METHODOLOGY

UNMET NEEDS

The Disaster Unmet Needs Assessment included both quantitative and qualitative data analysis. Because of the timing of the study, a large amount of data was available through local, state and federal reports and other sources regarding damages, impacts and costs. State and federal grant programs have assisted in different stages of recovery supporting the county in many areas of concern. Through this data analysis, certain gaps and unmet needs have been identified that could not be addressed through available programs. This is where the qualitative analysis was most helpful. A total of eight (8) community meetings were held throughout Larimer County during the summer of 2015 to determine what the



communities themselves felt were remaining unmet needs. These meetings were conducted at a time when most grant funding dollars had been identified and committed. Over fifteen (15) personal interviews were conducted with different community stakeholders and leaders who were able to provide firsthand knowledge and insight on what worked well and what could have been done better. The responses from the community meetings were then categorized into 9 categories. Each category was then broken down further into sub-categories and discussed in further detail later on in this report. The study team then reviewed comments and statements from the interviews conducted with public officials and included pertinent statements in this analysis. A section on lessons learned is presented at the conclusion of each category analysis to capture important information and thoughts the study team felt were important.⁷

⁷ For complete minutes of these meetings, contact Lori Hodges, Director of Emergency Management Larimer County at lhodges@larimer.org.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

COMMUNITY FRAGILITY

The Community Fragility assessment utilized data from three different sources and synthesized all of the results to develop a comprehensive view of each community's fragility. Data sources included public surveys (474 respondents) that were sent out via social media, listserves, email lists, and notifications in public spaces, such as libraries, in order to reach the greatest number of Larimer County residents possible. Secondly, county officials, elected leaders, and agency and organizational leaders were also surveyed (28 respondents) in order to assess the perspectives of county leaders. Lastly, census data from the most recent census (2010) was utilized to obtain data necessary for evaluation of each community's social vulnerability.

Following the collection of both public and county leader surveys and the census data, public survey responses were divided by community and the mean and standard deviation for each question was analyzed within each community in order to determine the level of agreement with each question. Next, all questions were separated based on which factor they were related to in the Community Fragility Model: Connectedness, Stability, or Sustainability. This level of analysis was conducted in order to identify specific areas within each community that could be focused on and in which areas communities were the strongest. Through these steps of data collection and analysis, each community's fragility was assessed and key areas of strengths and areas for improvement were identified.

Mean is the average of a set of values

Standard Deviation is the degree of variation in the data (do people agree on the question or is there a large difference of opinion?).

Why is this important? The average of all answers only gets you so far. We also have to see how much variation there was in the answers themselves to determine the validity of the data.

ASSESSMENT METHODOLOGY

UNMET NEEDS

While the data collection process for the Unmet Needs Assessment and the Community Fragility Study differed, the methodology of both provides a holistic picture of Larimer County and its communities following two community altering disasters. The study used quantitative data whenever possible to provide both statistical analysis as well as historical analysis. A qualitative study provided the information necessary to fill in gaps in existing data. Through this process, it was found that many of the factors involved in unmet needs easily fit within one of the three key components of the combined Community Fragility Framework: Connectedness, Stability or Sustainability. Following the data collection and analysis sections of this report, information is synthesized into these three areas and recommendations for future action are provided.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

COMMUNITY FRAGILITY

Much like the Disaster Unmet Needs Assessment, the Community Fragility Assessment uses both quantitative and qualitative data collection and analysis. Census data provides a strong picture of the demographics, social structure and social vulnerability of each community. To strengthen the validity of that information, qualitative interviews and surveys were also used to hear from members of each community directly.

CDR Maguire's approach to the qualitative analysis portion of the Community Fragility Assessment utilized two theoretical frameworks: the "Fragility in Emergency Management Theoretical Framework" proposed by Lori Hodges (2015) and the "Model of Organizational Resilience" proposed by Amy Lee, John Vargo, and Erica Seville in *Natural Hazards Review* (2013). These theoretical frameworks provided an academic background and structure for examining Community Fragility and assisted in identifying key areas of focus.



THEORETICAL FRAMEWORKS

After reviewing reports on the progress of the disaster, CDR Maguire then reviewed the relevant literature in the field of unmet needs and Community Fragility. The summaries below cite the two most relevant assessments that helped to drive the process.

FRAGILITY IN EMERGENCY MANAGEMENT FRAMEWORK (HODGES)

(From “Systems Fragility: The Sociology of Chaos” by Lori Hodges, 2015)

Hodges (2015) proposed a theoretical framework of fragility in Emergency Management focusing on three key components: Connectedness, Stability, and Sustainability. Each component contains four factors (or indicators) that contribute to Community Fragility. Thus, a community that has low social capital and is physically or culturally isolated would have low Connectedness, resulting in a more fragile community overall. Communities that are well connected, have good emergency and disaster plans in place, and have good accessibility to lifelines are less fragile and hence better able to withstand and recover from impacts of major shocks such as natural disasters.

FRAGILITY IN EMERGENCY MANAGEMENT THEORETICAL FRAMEWORK

CONNECTEDNESS	STABILITY	SUSTAINABILITY
* Loss of community lead or emergency management partners	* Little or no inter-jurisdictional relationships	* Lack of resources or ability to obtain them
* Isolated communities faced with disaster with no plan	* Large emergency management system with no or little compartmentalization	* Inaccessibility to lifelines (power, water, electricity, road access)
* Low Social Capital	* Weak emergency management leadership and/or local governance	* Lack of resiliency
- Little or no trust	* Inflexible plans and procedures; inability to adapt	* Inability to recognize small system failures leading to cascading failures
- Lack of community engagement		
- Lack of social cohesion		
* Command and control vs. collaborative models		



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

FACTORS AND INDICATOR DEFINITIONS

Each factor and indicator laid out by Hodges (2015) is included below.

Connectedness

- **Availability of Community Leadership and Emergency Management Partners:** Availability of a key community leader or essential emergency response organization (i.e., fire chief, police chief, OEM Director) or absence of key personnel during an emergency or crisis. Adequate leadership or leadership structure leading to a loss of trust, lack of information and/or resources.
- **Community Isolation:** Physical and/or cultural isolation of communities, including rural communities with limited access and limited resources or services, and communities that are disconnected from information and/or services during an emergency. Strength or weakness in relationships with neighboring areas leading to a connected or isolated environment during or after an emergency.
- **Social Capital:** The networks of relationships among people who live and work in a community or society, enabling that community or society to function effectively. Key components of social capital include trust, social cohesion, and networks.
 - **Trust:** Includes trust in other members of the community, trust in informal leaders, trust in elected and appointed community leaders, and trust in county-level leaders.
 - **Social Cohesion/Community Culture:** Willingness of members of a community or society to cooperate with each other in order to survive and prosper. Process by which community organizations and individuals build ongoing, permanent relationships for the purpose of contributing to a collective vision for the benefit of the community. Involvement of community members in community building activities, such as fundraisers, fairs, parades, pancake breakfasts, community meetings, etc.
 - **Networks:** The arrangement of interconnections between members of a community or of an organization that contributes to the development of a strongly connected and engaged community or organization. Networks between communities.
- **Social Vulnerability:** Inability of people, organizations, and societies to withstand adverse impacts from multiple stressors that they are exposed to. These impacts may come from natural disasters, societal disruptions, or human-caused events. Socio-economic, ethnic and cultural factors that may lead to an increased vulnerability. People with disabilities without connections to support systems and the inability to respond during and after an emergency.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- **Access to Information and Technology:** Accessibility of information and technology to communities before, during, and after a disaster.
- **Access to Resources:** Accessibility of resources to communities before, during, and after a disaster; includes physical and informational resources and services.
- **Access to Political Power/Representation:** Ability of members of a community to access political power and political representation at the local, county, and state level.
- **Authority Structure:** Vertical command and control authority structures, horizontal collaborative models or a hybrid approach to both.

Stability

- **Inter-Jurisdictional Relationships:** Good working relationships with organizations in other jurisdictions; ability to work together and cooperate in a variety of situations.
- **Emergency Management System Design:** Design of local emergency management system, including what strategies and plans are utilized in the system.
- **Emergency Management Leadership/Local Governance:** Type and organization of local governance and emergency management leadership, for example, centralized, decentralized or distributive.
- **Flexibility of Plans, Ability to Adapt:** Ability of plans to be flexible and adaptable to multiple types of situations and hazards. Presence or absence of adequate plans.

Sustainability

- **Resource Management and Supply Chain Management:** Presence or absence of resources and the ability to obtain them, including physical and informational resources.
- **Accessibility to Lifelines:** Access to lifelines including electricity, clean drinking water, gas, wastewater systems, and emergency services. Accessibility to lifelines through supply chain networks, alternative routes and roadways.
- **Resiliency and Mitigation:** Ability to mitigate hazards. Ability or inability to bounce back quickly after a significant impact.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Early Recognition of System Failures and Unintended Consequences:** Ability of organizations to identify and recognize small problems and weaknesses that can lead to larger system failures or cascading events if they are not addressed. Ability to proactively see possible consequences and mitigate their effects.

ORGANIZATIONAL RESILIENCE FRAMEWORK (LEE)

(From “Model of Organizational Resilience”, by Amy Lee, John Vargo, Erica Seville, in *NATURAL HAZARDS REVIEW*, 2013)

Lee et al. (2013) proposes a model of organizational resilience centered on three interconnected key factors: leadership and culture, networks, and change ready attitude. Each key factor includes multiple sub-factors, all contributing to an organization’s resilience, its ability to recover or “bounce” back from impacts, either human or natural in origin. Resilient organizations are more likely to withstand shocks from natural disasters, such as a hurricane, and are also more likely to survive human-related impacts, such as economic depressions.

ORGANIZATIONAL RESILIENCE FRAMEWORK

LEADERSHIP & CULTURE	NETWORKS	CHANGE READY
* Leadership	* Effective partnerships	* Stress testing plans
* Staff engagement	* Internal resources	* Proactive posture
* Decision-making	* Leveraging knowledge	* Planning strategies
* Situation awareness	* Breaking silos	* Unity of purpose
* Innovation and creativity		

RESILIENCE INDICATORS



From www.resorgs.org.nz.

FACTORS AND DEFINITIONS

Each factor and indicator laid out by Lee et al. (2013) is included below.

Leadership and Culture

- **Leadership:** Strong crisis leadership to provide good management and decision-making during times of crisis, as well as continuous evaluation of strategies and work programs against organizational goals.
- **Staff Engagement:** The engagement and involvement of staff who understands the link between their own work, the organization’s resilience, and its long-term success. Staff members are empowered and use their skills to solve problems.
- **Decision-Making:** Staff members have the appropriate authority to make decisions related to their work and authority is clearly delegated to enable a crisis response. Highly skilled staff are involved, or are able to make decisions where their specific knowledge adds significant value, or where their involvement will aid implementation.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- **Situation Awareness:** Staff are encouraged to be vigilant about the organization, its performance and potential problems. Staff are rewarded for sharing good and bad news about the organization including early warning signals and these are quickly reported to organizational leaders.
- **Innovation and Creativity:** Staff are encouraged and rewarded for using their knowledge in novel ways to solve new and existing problems, and for utilizing innovative and creative approaches to developing solutions.

Networks

- **Effective Partnerships:** An understanding of the relationships and resources the organization might need to access from other organizations during a crisis, and planning and management to ensure this access.
- **Internal Resources:** The management and mobilization of the organization's resources to ensure its ability to operate during business as usual, as well as being able to provide the extra capacity required during a crisis.
- **Leveraging Knowledge:** Critical information is stored in a number of formats and locations and staff have access to expert opinions when needed. Roles are shared and staff are trained so that someone will always be able to fill key roles.
- **Breaking Silos:** Minimization of divisive social, cultural and behavioral barriers, which are most often manifested as communication barriers creating disjointed, disconnected and detrimental ways of working.

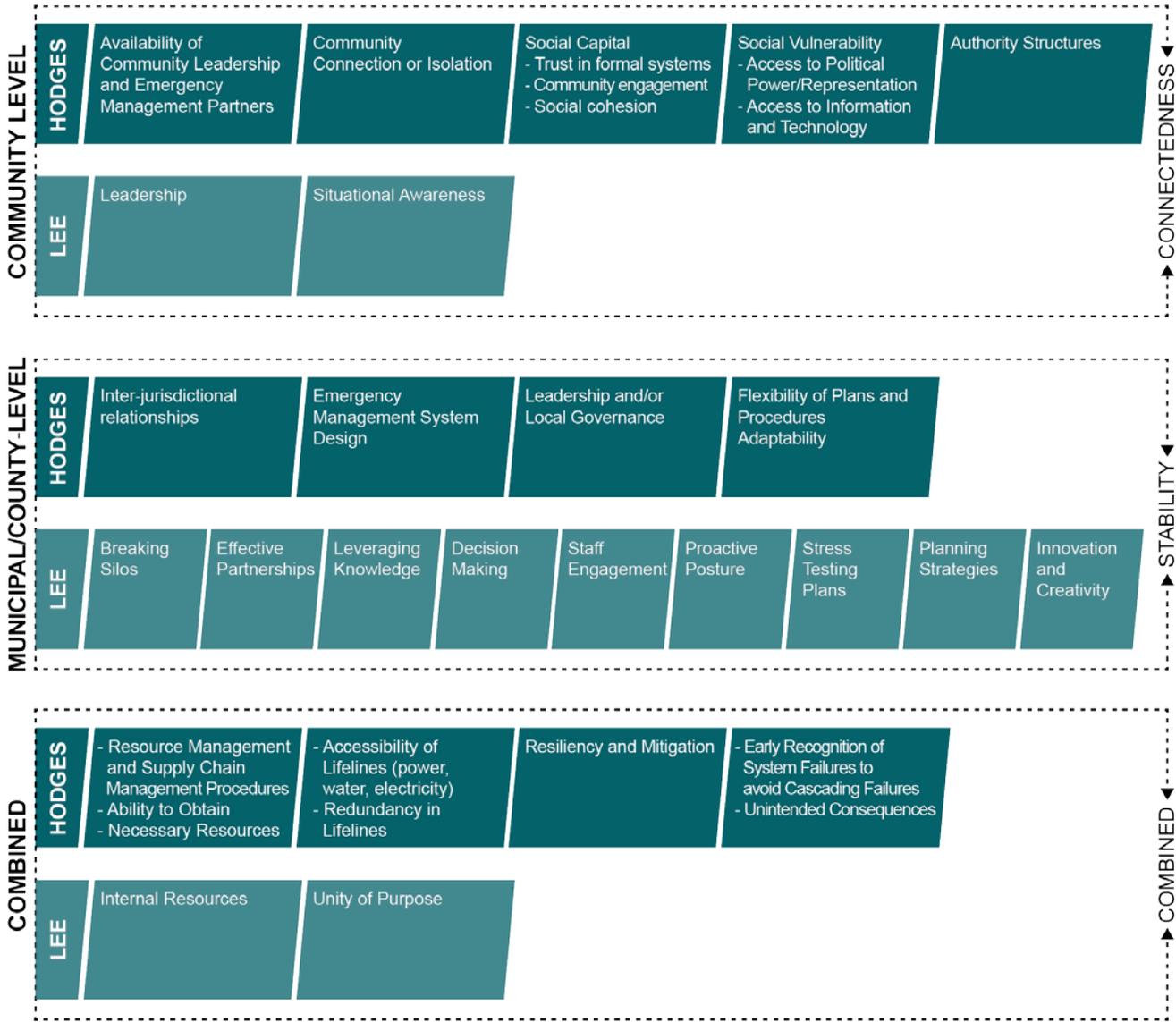
Change Ready

- **Stress Testing Plans:** The participation of staff in simulations or scenarios designed to practice response arrangements and validate plans.
- **Proactive Posture:** A strategic and behavioral readiness to respond to early warning signals of change in the organization's internal and external environment before they escalate into crisis.
- **Planning Strategies:** The development and evaluation of plans and strategies to manage vulnerabilities in relation to the business environment and its stakeholders.
- **Unity of Purpose:** An organization-wide awareness of what the organization's priorities would be following a crisis, clearly defined at the organization level, as well as an understanding of the organization's minimum operating requirements.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

COMMUNITY FRAGILITY FRAMEWORK



COMMUNITY FRAGILITY FRAMEWORK

For the purposes of this study, Hodges' (2015) and Lee et al.'s (2013) frameworks were combined to develop the joined Community Fragility Framework as illustrated above.



OVERVIEW OF THE DISASTER EVENTS

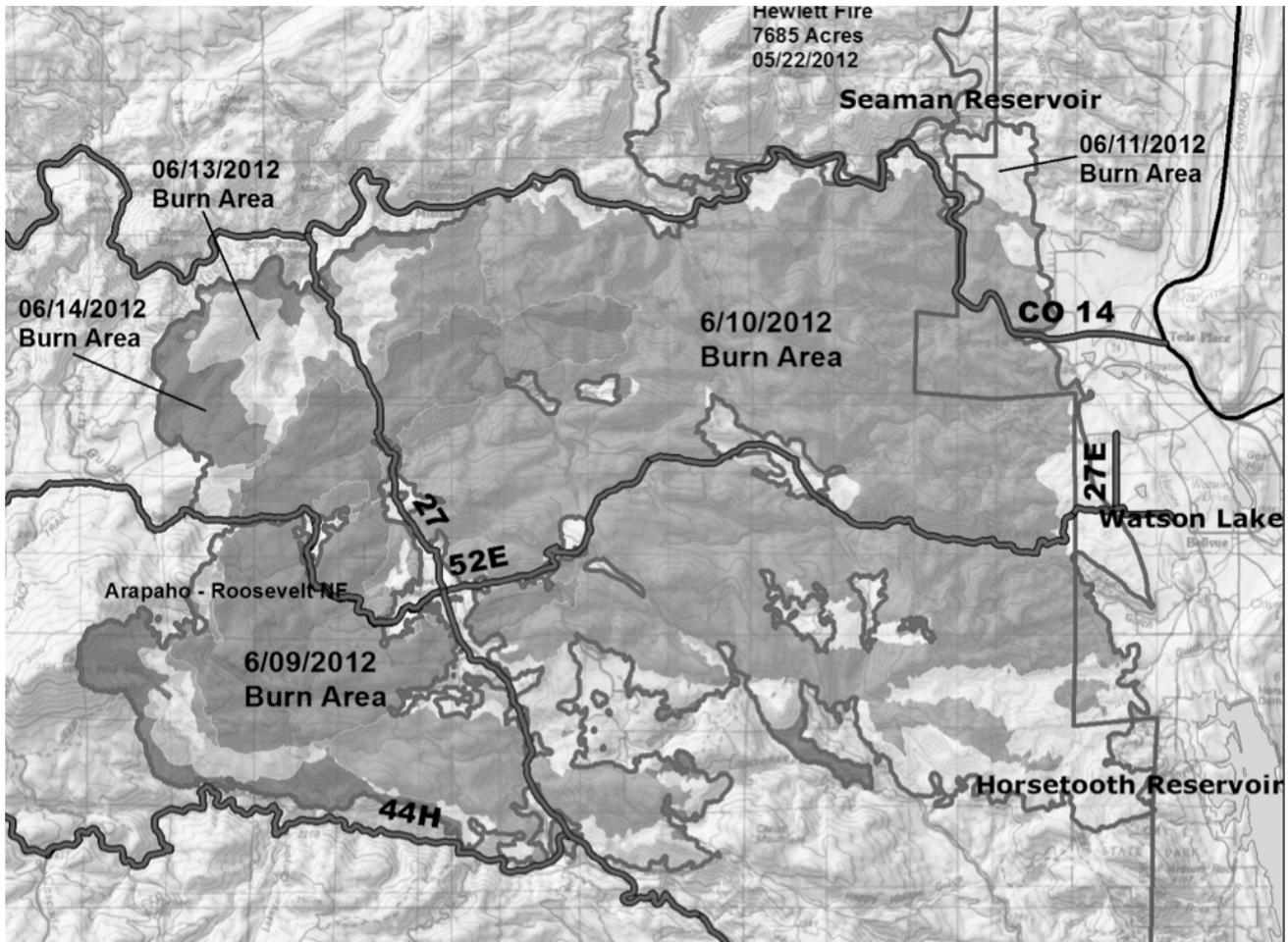


Figure 3: High Park Fire Burn Area June 3, 2012. www.blackicegeospatial.com

HIGH PARK FIRE 2012

On June 9, 2012, the High Park Wildfire ignited due to a lightning strike the night before. By June 30th, when the fire was declared 100% contained, the fire had killed one person, burned over 87,284 acres and destroyed 259 homes. As of this report, the High Park Wildfire is the second largest wildfire in the state by acreage behind the 2002 Hayman Fire and the third most destructive for property damage behind the Waldo Canyon Wildfire (2012) and the Black Forest Wildfire (2013).

UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

High Park Fire Federal Funding		
Description	Eligible Costs	Reimbursements
FMAG Reimbursement from FEMA	\$17,002,204	\$13,205,432
FEMA PA	\$558,517	\$418,888
Total	\$17,560,721	\$13,624,320

According to insurance estimates, over 1,239 insurance claims were filed for a total of \$217 million that included smoke damage, additional living expenses, damaged and destroyed homes, as well as personal belongings⁸ during the 2012 High Park Fire. The state paid over \$17 million in fire suppression costs, and received over \$13.2 million of Fire Management Assistance Grant (FMAG) Funds to help offset those costs. Larimer County submitted over \$558 thousand of eligible costs, and was reimbursed \$418 thousand dollars through FEMA’s Public Assistance (PA) program.

AFTER THE FIRE

According to the High Park BAER Report⁹, the High Park Wildfire burn scar could expect water flows in streams to be five to ten times pre-fire levels for any given rainfall. It was also expected that major flooding would occur with any significant rain event. Due to these dangers, aerial mulching operations began in the fall and concluded at the end of October 2012. Implementation of the BAER report on National Forest System lands was also conducted throughout the summer and fall. Mulching helped stabilize burned hills and reduced erosion in these areas.



Figure 4: House Destroyed by High Park Wildfire 2012. www.kvdr.com

⁸ Rocky Mountain Insurance Information Association

⁹ High Park Fire Burned Areas Emergency Response (BAER) Report, July 17, 2012



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Shortly after the fire, the Larimer County Public Works Division worked quickly to upgrade culverts in Rist Canyon to withstand debris and ensure increased post-fire flows would not cause further damage to roads and bridges. Other work continued throughout 2012 and into 2013, including noxious weed monitoring and treatment, additional erosion control and hazardous tree removal along roads and trails, trail stabilization, protection of archeological sites, and road stabilization. The post-disaster recovery work is believed to have been a significant factor in how well this area fared in the following year, when massive flooding occurred countywide.



Figure 5: Crew from Connell Resources places new culvert along Rist Canyon Road. Photo by Pamela Dickman/Herald Staff Writer

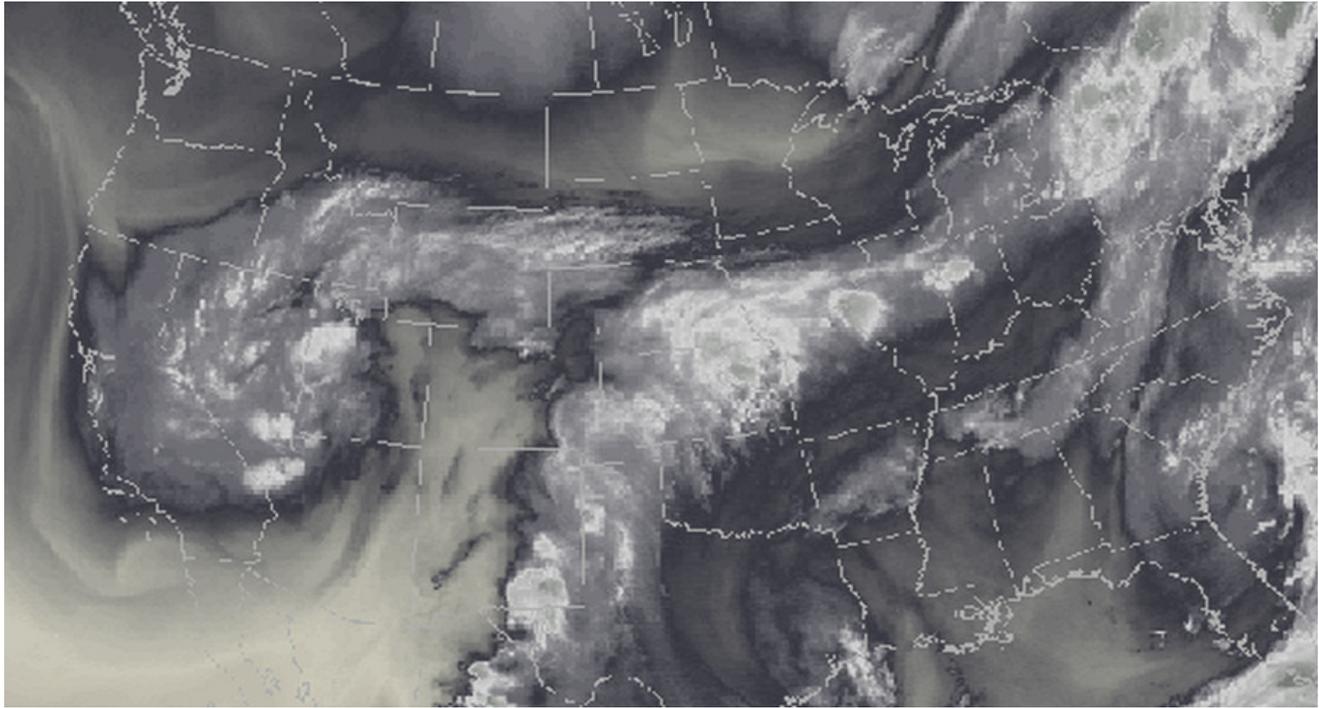


Figure 6: Plume of subtropical moisture streaming into Colorado September 2013. www.weather5280.com

SEPTEMBER 2013 FLOODS

Starting on September 9, 2013, a slow-moving storm stalled over Colorado resulting in heavy rains and catastrophic flooding along the Front Range. Over a five-day period, historic rainfall swept through the Front Range, with some areas receiving more than 17 inches of rain. Statewide, the flooding killed 10 people, destroyed 1,882 structures, and damaged at least 16,000 others. Some of the hardest hit communities included Jamestown, Lyons, Longmont, Glen Haven, Estes Park and Evans. At one point, more than 1,200 people were missing and more than 18,000 people were evacuated, making this disaster the largest domestic evacuation operation since Hurricane Katrina.¹⁰

In Larimer County, 1,120 square miles were affected by flooding, 47 homes and 7 businesses were destroyed, and another 338 homes and 25 businesses were damaged. Multiple dams failed and damaged sanitary sewer lines, dumping raw sewage down Fish Creek into the Big Thompson River. Extensive road damage isolated many communities and cut off access to approximately 2,000 residents in communities such as Drake, Glen Haven, Cedar Cove, Pinewood Springs and Estes Park. Sixty-five bridges and large culvert crossings were significantly

¹⁰ Larimer County Fire and Flood After Action Report, August 1, 2014.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

damaged or destroyed and approximately 25-30 miles of roadway were completely obliterated. Both Highway 36 and U.S Highway 34 were severely damaged as well.

Although financially devastating, Larimer County was in a good position to pay their share of disaster needs from undesignated project reserves. This allowed the county to take what they deemed as appropriate actions without the immediate concern of reimbursement. Unfortunately, due to the extent of the back-to-back disasters, the reserves now need replenishment to ensure readiness for the next event.

Infrastructure

(Flood Recovery Public Meeting 01.29.14)

- *65 bridges significantly damaged*
- *25-30 miles of roadway destroyed*
- *2,000 properties without access*
- *Repair estimate \$100m*

EXTENT OF THE DAMAGES CAUSED BY THE FLOOD



Figure 7: The River Forks Inn in Drake after September 2013 flood. www.coloradoan.com

Over the past two years, Larimer County and its surrounding communities have worked tirelessly to address damages caused by the September 2013 floods. They have completed and applied for countless federal disaster grant programs and have coordinated with the non-profit and non-governmental communities to address needs.

Most housing damages occurred to homes along the river corridor in unincorporated areas. Estes Park’s business community was heavily affected as its downtown is in the floodway, but did not sustain many damages to residences, only its utilities and water systems.

The major federal recovery grant programs available to public agencies include the following:

- Federal Emergency Management Agency’s (FEMA) Public Assistance (PA) Program
- Housing and Urban Development’s (HUD) Community Development Block Grant- Disaster Recovery (CDBG-DR)
- Federal Highway Administration’s (FHWA) Emergency Relief (ER) Program
- FEMA’s Hazard Mitigation Grant Program (HMGP)



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Natural Resources Conservation Service (NRCS) Emergency Watershed Protection (EWP) Program

The table below captures the extent of those damages and identifies the major federal programs involved in recovery efforts.

TOTAL PROJECT COSTS BY FEDERAL GRANT PROGRAM				
	Larimer	Loveland	Estes Park	Fort Collins
FEMA PA	\$ 68,168,903	\$ 25,467,735	\$ 5,125,214	\$ 690,586
CDBG-DR	\$ 10,436,075	\$ 955,045	\$ 3,142,350	\$ 188,028
FHWA	\$ 3,210,000	\$ 602,590	\$ 3,490,000	\$ -
HMGP	\$ 975,000	\$ 486,866	\$ -	\$ 3,121,916
NRCS	\$ 3,672,669	\$ -	\$ 780,035	\$ -
TOTAL	\$ 86,462,647	\$ 27,512,236	\$ 12,537,599	\$ 4,000,530

With over \$130 million in estimated damages, most permanent construction repairs have only just begun. Larimer County accounts for over 66.2% of the estimated countywide damages which includes many of the unincorporated areas covered in this report such as Glen Haven, Drake, and other communities along the Big Thompson and Little Thompson River Corridors.

TOTAL PROJECT COSTS BY LOCATION		
	Total Cost	% age of Total Cost
Larimer County	\$ 86,462,647	66.2%
Loveland	\$ 27,512,236	21.1%
Estes Park	\$ 12,537,599	9.6%
Fort Collins	\$ 4,000,530	3.1%
Total	\$ 130,513,012	100.0%

UNMET NEEDS DATA COLLECTION AND ANALYSIS

There were multiple benefits to conducting community meetings to assess Disaster Unmet Needs. First, these meetings helped to dispel any misinformation or rumors about the disaster and ongoing recovery needs. Secondly, it provided a venue for residents of a community to come together to discuss issues they were facing, address



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

those concerns with community leaders, and begin an open and constructive dialogue on what was being done to address those issues. This improved community communication and furthered the process of building trust. Third, it allowed community leaders to understand the issues residents were facing and what their priorities were, instead of trying to infer these needs from reports and damage assessments alone. These meetings allowed for insight to community needs that otherwise could have been overlooked.

The community meetings also presented a number of challenges. First, in allowing an open exchange, some topics were raised by residents that caused a heated debate and were sometimes unsuitable for the Unmet Needs conversation. Secondly, sensitive topics had the potential to put the organizer or community leader in a difficult position especially when there was no good solution to a problem raised.

The results of these meetings are reported in the following section and categorized into 9 separate categories. Each category is then broken out into a sub-topic and commented on directly to paint a picture of the issue at hand. The chart below summarizes the findings.

Summary of Unmet Needs

	Glen Haven, Drake, Waltonia	Loveland	Berthoud	Blue Mountain & Spring Gulch	Poudre Coalition	Sylvan Dale Ranch	Crystal Lakes, Glacier View Meadows, and Red Feather
PRIVATE PROPERTY	31.8%	18.1%	36.0%	13.7%	5.4%	29.6%	13.6%
HOUSING	5.3%	5.6%	5.0%	2.2%	0.0%	0.0%	2.3%
DEBRIS	3.8%	6.9%	23.0%	3.8%	2.7%	11.1%	4.5%
COMMUNICATION	14.4%	12.5%	3.0%	41.0%	37.8%	0.0%	27.3%
UTILITIES	0.8%	0.0%	1.0%	3.8%	0.0%	3.7%	11.4%
PLANS	33.3%	38.9%	27.0%	18.0%	45.9%	55.6%	9.1%
ECONOMIC	3.8%	8.3%	3.0%	1.1%	5.4%	0.0%	0.0%
SAFETY	0.0%	0.0%	0.0%	12.0%	0.0%	0.0%	29.5%
OTHER	6.8%	9.7%	2.0%	4.4%	2.7%	0.0%	2.3%
	100%	100%	100%	100%	100%	100%	100%

Most Responses
 2nd Most Responses
 3rd Most Responses

PRIVATE PROPERTY

Private property issues remained one of the primary unmet needs in all eight community meetings accounting for twenty two point two percent (22.2%) of the overall responses, second only to Planning and tied with Communication. This has been a common issue throughout the state and is not surprising when considering that most basic lifelines such as public infrastructure, shelter, and utilities have been restored and are no longer an unmet need priority in the community.



Figure 8: Big Thompson River damage to homes. Photograph: Handout/Reuters

Many residents expressed some frustration during the meetings at what they perceived to be a lack of assistance from the county and state to deal with private property issues. According to Colorado State Law, public funds cannot be used for private benefit, which led to several barriers to recovery.

Private property needs can be summarized into 5 sub-types:

- Roads and Crossings (9.9% of all responses)
- Buildings (1.2% of all responses)
- Land (2.7% of all responses)
- Property (6.7% of all responses)
- Equipment (1.7% of all responses)

The following sections take a closer look at each of these sub-categories. Specific unmet needs and potential solutions to meeting them are suggested where appropriate. Overall, many solutions can be resolved by proper maintenance of the road system, the use of improvement districts, and educating the public when it comes to private roads and crossings.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

ROADS AND CROSSINGS

Roads/crossings in Larimer County can either be public or private. Almost all major roads/crossings, such as interstates, highways, county roads, and city streets are public. However, there are many private roads/crossings in Larimer County. Just because a road/crossing is public does not mean it is publically maintained. Many county subdivision roads/crossings are public but are privately maintained.

Prior to 1994, Larimer County accepted subdivision roads for maintenance based on requests and good road conditions. The Board of County Commissioners (BCC) stopped accepting any new subdivision roads for county maintenance in 1994 due to a lack of resources, but left a provision that allowed non-county maintained, pre-1994 subdivisions to request maintenance if their improved roads met current county standards. Additional requests were also approved in 2001 and 2004. No unpaved subdivision roads have been accepted since the 1970s according to best available data.

The county has statutory limitations on the money it can spend on road and bridge improvements. It is illegal in Colorado for counties to use General Fund monies for roads and bridges. In some areas, we have been doing Deeds of Dedication to protect public right-of-ways on “private” roads, but the county did not assume responsibility for routine maintenance of the driving surface of those roads. ~Linda Hoffmann, Larimer

To correct deficiencies in road conditions or design, the county estimates that a significant investment (\$50k to \$400k per mile for unpaved gravel road and \$150k to \$800k per mile for paved roads) would be needed to upgrade road conditions up to current standards. Furthermore, to maintain these roads, it would add to an already maxed-out budget dedicated to maintaining mainline county roads.

I think there needs to be some help, some support for helping homeowners to find more sustainable options for private roads. ~ Laura Levy, Larimer County Long-Term Recovery Group Manager

The effects of the flood on the public infrastructure have been well documented. Towns such as Estes Park, Glen Haven, and Drake were essentially cut off from the rest of Larimer County with the complete destruction of Highways 34 and 36. CDOT and FHWA have jurisdiction over all state and federal roads. All other public roads/crossings are left to individual counties and communities.

During the Unmet Needs meetings conducted, Road and Crossing comments typically centered on issues relating to river crossings (not long enough or wide enough), private culverts, road conditions (fixing pot holes or paving), and maintenance (snow removal, mowing, etc.). The root issue identified is the lack of financial resources made available for roads designated as either privately-owned and/or maintained. Current disaster grant funding through FEMA and FHWA are only eligible for publicly maintained roadways and crossings and the CDBG-DR program has restrictions that make grant funding difficult, if not impossible, in most situations.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

ROADS NOT MAINTAINED BY THE COUNTY			
CATEGORY	PAVED	UNPAVED	TOTAL
Non-County Maintained (NCM) named local/subdivision roads	118.4 miles	237.4 miles	355.8 miles
Cost to upgrade roads to current codes and standards	(\$1.9M)	(\$4.1M)	(\$6.0M)
Non-County Maintained (NCM) numbered local/subdivision roads with County Road Number	0.5 miles	12.9 miles	13.4 miles
Cost to upgrade roads to current codes and standards	(\$8k)	(\$222k)	(\$230k)
Public Improvement Districts (PID) Roads	40.6	58.3	98.9
Total mileage of roads not maintained by the county	159.5	308.6	468.1

To address this need, the state has worked extensively with the Department of Housing and Urban Development (HUD) to include private roads and crossings in the CDBG-DR Home Access Program. In addition to that effort, the county is currently considering the following potential alternatives:

- Continuing its current policy, in which subdivision private road conditions remain the responsibility of private land owners.
- More actively promoting the improvement district process.
- Identifying roads having connector or community function and provide full maintenance.
- Increasing the level of maintenance for county-maintained paved subdivision roads to include more than surface maintenance (estimated cost of \$2-3 million per year).
- Accepting all subdivision roads for maintenance (estimated to cost \$5-6 million per year).

HOME ACCESS PROGRAM – PRIVATE ROADS AND CROSSINGS

The Home Access Program provides a resource for homeowners and renters who are unable to access their homes due to damage to roads and crossings that are non-county maintained. FEMA Public Assistance is not available to repair these roads due to their lack of public maintenance, even though they provide critical emergency



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

access to families and homeowners, especially considering the danger posed by forest fires. Without the reconstruction of the private roads and bridges, residents will be at a high risk when the next disaster occurs.

The CDBG-DR Home Access Program for private roads and crossings (Home Access) was specifically designed to meet the challenges presented in repairing privately owned and/or maintained roads and crossings in this disaster. Although policies and procedures are still being defined, the State of Colorado and HUD agree that this project is a considerable unmet need unique to this disaster. Larimer County, the Loveland Housing Authority, State of Colorado and HUD are currently working together to develop the program, which will be the first of its kind.



Figure 9: Glen Haven Private Crossing Damage

EARLY EFFORTS

Initially, Larimer County was uncertain whether the CDBG-DR program would be able to address the private property need since most federal programs exclude both private roads as well as secondary homes. The guidelines of the original program were too restrictive resulting in not enough projects qualifying and recovery dollars not being put to work. HUD and the State of Colorado worked with Larimer County for over a year and a half to determine eligibility options. The Home Access Program was the best fit for private homes, driveways and roadway damage, and because many of the private roads and bridges serve a mix of primary and secondary residences, a determination was made by local, state, and federal agencies to support primary residents in this program. Initially this was done by providing a pro-rata reduction in assistance based on the number of primary homes vs. secondary homes. However, this was still a serious barrier as most residents do not have the funds that would be required to make up the difference in the total amount of each project. The program also limited projects to roadways or crossings that were completely impassible or regarded inaccessible for emergency vehicles. As a result, many projects were deemed infeasible and the program did not qualify enough applicants.

Finally, after extensive work by all partners, program guidelines were modified to disallow penalties for projects where secondary homes would incidentally benefit as a result of serving primary homes. The roadway condition threshold was also lowered to allow for roads deemed as “unsafe for travel” to qualify, rather than the more restrictive term of “inaccessible”. In addition, allowing for crossings to be brought up to codes and standards and implementing mitigation measures was also allowed, making this program the only option for a large portion of private road and crossing needs.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

ADMINISTRATION OF THE PROGRAM

A multi-phased approach was used to identify damaged areas and assessments. The first pass of identifying sites came through county employees during their initial public damage assessments (PDAs) directly after the flood. Citizens were also encouraged to call in with damaged sites to Larimer County, regardless of whether the area was public or private. From these two items, a preliminary list of private roads and crossings was created. When the state received notice that there would be CDBG-DR funds available for private infrastructure, secondary site visits were performed in order to assess the damage remaining and provide a cost estimate. The county also notified its citizens via a press release, and a hotline had been set up to report additional sites that may have been previously missed. The resulting approach resulted in over 200 sites being identified and assessed.

Currently, unmet needs surpass funds allocated to the program and as a result, the county, in conjunction with Loveland Housing Authority, has developed a scoring matrix that will allow it to rank and prioritize projects based on the following measures:

1. Number of homes served
2. Cost per home
3. Severity of damage
4. Demographic
5. Urgency

As of December 2015, over 51 potential projects totaling over \$6.1 million dollars have been identified as eligible for this program. Larimer County and the Loveland Housing Authority continue to work with the state and federal partners to flush out logistical requirements of this new program, and to utilize all funding in the most efficient manner possible. One way this is being done is in partnership with the Long-Term Recovery Group (LTRG). The LTRG has been instrumental in supporting many of the smaller projects with volunteer assistance and unmet needs funding, allowing the county and the Housing Authority to serve more projects with available funding.

BUILDINGS

Comments categorized into “Buildings” related to assistance needed on private property that included repairs to barns, farm houses and community buildings.

Many of the issues relating to farming are being addressed through programs like the FEMA Individual Assistance Program, the SBA, the Farm Bureau, CDBG-DR and other non-profit organizations. A major challenge has been assisting applicants with navigation through the different eligibility requirements for each program, and education as to what assistance currently exists.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Another avenue that residents should explore in the future is proper insurance coverage. Many residents either had no coverage or were unaware of the gaps that existed in the current policies. More should be done to educate the public on proper insurance coverage as it is typically the best line of defense.

LAND

Land issues typically dealt with restoring land lost to the shifting river beds and the need for top soil and fill to restore damaged property. The issue of reclaiming lost land to the river is one that will be addressed in the Planning Section. Other options include:

- Many private property rehab and restoration activities may be eligible under the Home Access Program through the Loveland Housing Authority. The website for more information into the programs and assistance available is: <http://lovelandhousing.org/cdbg-dr-flood-recovery-funding>.
- During permanent repairs, CDOT will be producing a large amount of fill dirt and rock that will be available to private property owners to restore land. CDOT has a public information hotline for the US 34 project to provide CDOT comments and concerns. This hotline number is (720) 263-1589. Additionally, the Big Thompson Coalition is working closely with Larimer County and can provide support to this effort.

PROPERTY

Property concerns dealt with issues relating to driveways, water pumps and irrigation and surveying needs. Some driveways are being considered potential projects through the Home Access Program. The burden of lost water pumps, irrigation lines, etc. currently falls back on the individual to properly insure their property, or seek philanthropic assistance through non-profit and volunteer organizations. Although frustrating to the community, the county, by law, cannot spend public tax dollars for private benefit.

Property owners are also having to deal with surveying property lines as a result of the damage inflicted by the floods. Private property owners must go through a surveyor to survey the property. The county surveyor is responsible for representing the county in boundary disputes only and does not do initial surveys of property.

EQUIPMENT

One of the major obstacles in recovery is the ability to access and operate heavy machinery to clean up private property. For those individuals who are willing to accept responsibility for cleaning up their own lands, the need for heavy equipment is a challenge.

Leasing such equipment or engaging a contractor for a township or community, whereby citizens can pool their resources may be an option to consider.

Another option for equipment purchase assistance is through the non-profit community. A non-profit organization (community association, fire department, homeowners association, etc.) could

apply on behalf of the group and manage the asset. Additionally, private property owners could combine funds for the purchase of equipment to be used by the area residents for this purpose as well as in the future.



Figure 10: Heavy equipment used to clear debris from road covered in 20 ft banks of mud. Photograph: Reuters

LESSONS LEARNED AND RECOMMENDATIONS

Private property issues remain one of the top three priority areas according to area residents. The lessons learned during these disasters and the ongoing recovery efforts specific to private property concerns are as follows:

- Many residents and communities were unprepared for how long the recovery process would take. In the future, expectations should be managed through strong public outreach and education directly following the disaster. A Public Information Officer with emergency management and recovery experience is essential.
- Funding through the Hazard Mitigation Grant Program (HMGP) has been very challenging. Larimer County chose to abandon their Home Buy Back program utilizing these funds because of the number of restrictions and added requirements that delayed the program. Instead, Larimer County is looking at other options to meet this need. Estes Park had challenges upgrading five major bridges in their community to add resiliency, because these particular bridges were not found to have significant damages, and the town was forced to work through alternative projects so that they would not lose grant dollars.
- Misunderstandings occurred regarding federal programs and eligible options. For example, Estes Park had two dams that failed. They were initially told that FEMA would only pay to have them restored to their



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

original condition, not allowing for any resiliency measures, however HMGP and CBDG-DR funds could have been utilized to address these needs. The difference in cost was \$720k (\$90k vs. \$800k). Better understanding of each federal program as well as how the programs work together is needed to fully utilize these programs.

- The county had a healthy reserve fund, allowing Larimer to implement recovery efforts without immediate concern over fast reimbursement. Many other communities were not as fortunate leading to difficulty in funding of necessary projects. By ensuring that a healthy reserve exists for the community for unintended emergencies, or by creating a Disaster Fund specific to this purpose, each community will be better able to manage crises and emergencies as they occur.
- Bridges in Larimer County are a priority for the Road and Bridge Department. Many of the county's current crossings are old and undersized, but until all the floodplains are remapped and reanalyzed, it will be difficult to know the required capacity. Some areas of concern include County Roads 3, 4, 6, 9, 15, and 17. Because this is such a high priority, the Engineering Department has created a plan that will bring all bridges to sufficient status by 2020.
- A method to help prioritize the environmental permitting process is needed, with certain emergency exemptions being allowed to assist in immediate recovery efforts. This is one of the reasons that permanent repair projects have taken longer than expected, and it prevents people from getting back to their homes and trying to rebuild their lives.
- Maintenance of critical infrastructure remains a concern throughout Larimer County. There are more Improvement Districts in Larimer County than any other county, and the Improvement Districts are very effective, but they do not cover all areas, leaving many roads or bridges in deteriorating conditions without proper maintenance or care. A detailed assessment of infrastructure and access issues would provide a clearer picture of the need and available options in each community.
- Having pre-disaster contracts in place and establishing relationships with local contractors for recovery efforts are critical to recovery efforts. Larimer County learned this lesson early in the disaster and has since worked through the procurement process for several on-call contracts for essential recovery functions, including Debris Removal and Public Assistance Administration.
- Mitigation and Recovery projects often require permission from multiple land owners to implement. This can become a large barrier in getting necessary work completed. If one land owner refuses to participate, the entire project may fail. This occurred after both the wildfire and the flood. In the future, community



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

meetings and informational bulletins may provide residents with the necessary data to make informed decisions and possibly move projects forward.

- After Action Reports categorizing and identifying impacts and damages after a disaster are beneficial in ongoing recovery efforts. A specific example of this was the proactive work done in Rist Canyon to upsize culverts as a result of burn conditions and the anticipated flooding risk as a result of the High Park Wildfire. These culverts allowed the one access route out of Rist Canyon to survive when the flood followed one year later, while the other 2 routes were completely destroyed. After Action Reviews and formal Improvement Plans should continue at various phases throughout the disaster response and recovery process to capture lessons as they are learned and ensure the county is better prepared for the next event.
- Due to the limited number of federal declarations in Colorado in the past, there was a lack of experience at the local, state and federal levels in working through disasters of this magnitude. This led to frustration at all levels since relationships had not been formed and due to a lack of familiarity in programs. It is recommended that Larimer County continue to foster relationships with state and federal disaster agencies to ensure understanding of programs. Additionally, Larimer County has the unique opportunity to work with other communities affected by disaster to share lessons learned.
- Communities or residents constructing any private access road should consult with Larimer County's Engineering Department for proper permitting, planning and maintenance. A document titled "The Landowner's Guide to Private Access Road Construction in Larimer County, Colorado" was created in July, 1999 and is available to the public for reference.



HOUSING

Housing needs were a subject discussed during five of the eight public needs assessment meetings, which included stakeholders from: Berthoud, Blue Mountain, Crystal Lakes, Drake, Glacier View, Loveland, Spring Gulch, and Red Feather Lakes. Although this topic came up in over half of the meetings, housing needs only accounted for three and a half percent (3.5%) of overall community needs that were collected. Housing needs can be classified into 3 sub-types:

- Housing Repairs
- Building Codes
- Mitigation

2013 Colorado Floods Individual Assistance Fact Sheet – FEMA IA Assistance:

- *3,874 applicants; \$13,982,702*

SBA Loans:

- *377 applicants; \$20,318,400*



Figure 11: Loveland home destroyed



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

The following sections take a closer look at these sub-categories. Specific unmet needs and potential solutions to meeting these needs are suggested where appropriate. Overall, many solutions can be resolved through proper insurance coverage and by connecting individuals with the housing assisting programs currently being administered.

As in most disasters, the need for individual housing assistance far exceeds the resources available. This is why individual insurance is often a recommended solution to addressing this gap. Funds typically available to assist with housing recovery include FEMA, HUD, SBA and private insurance and non-profit assistance. During the short-term recovery phase, over \$13M of assistance was provided through FEMA's Individual Assistance Program and \$20M through the SBA, in addition to countless volunteer hours spent in assisting individuals clean the mud out of their homes in Larimer County alone. Long-Term Recovery needs typically fall under the CDBG-DR Program, a federal grant administered by HUD, which is discussed in greater detail below.

CDBG-DR PROGRAM

As in any disaster, implementing the funds allocated through CDBG-DR Housing programs can be challenging due to the complexity of the program. Below is a list of the different programs available for Housing, as well as some of the challenges encountered by the Loveland Housing Authority in implementation in Larimer County:

Temporary Rental Assistance and Relocation - Provides relocation costs and a temporary rent subsidy for low-income flood impacted households. This program has been difficult to implement because of the low vacancy rates in the county which are about 1.5%. As a result, some people have had to move outside of the county.

Housing Purchase (Down Payment Assistance) – Provides a form of a deferred loan or a grant based on eligibility to low-income flood impacted households. The down payment assistance program has not been used to its fullest extent because there is a lack of affordable homes in Larimer County as well as skyrocketing costs in Northern Colorado. A number of reasons have been given for this including, the 2008 economic downturn pushing a lot of developers out, construction defects law discouraging the building of condominiums, and the physical time it takes to actually construct affordable housing even once a location is selected. As a result, most individuals who were in need of new housing may have left the immediate community in search of finding a permanent home.

Housing Repairs (Single-Family Rehabilitation) - Provides for rehabilitation and/or structural relocation for homeowners in the form of a deferred loan or grant based on eligibility. This program has been successful. Typically, an 8 week turn-around time is expected with building permits, but people rebuilding from the flood are getting fast-tracked, and on average the time has been cut down to a week or so. The county has also assisted in the process by working to provide discounts to residents. The two biggest challenges encountered were the environmental review process and finding contractors to do the work.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Clearance and Demolition – Provides for clearance and demolition of structures where concentrated damage to groups of housing structures are unsound and pose health and safety risks to the surrounding community and must be removed in order to promote comprehensive recovery. Most damages in the county were not concentrated in a group as defined by this program, and instead were spread out throughout the river corridor posing a difficult challenge for meeting the eligibility criteria of this program area.

Home Access - Provides a resource for homeowners and renters who are unable to access their homes due to damage to roads that are non-county maintained. This program is discussed in great detail under the Private Property/Roads and Crossings section.

Housing Construction – Provides construction activities for both single-family housing projects as well as multi-family housing construction. It can include new construction and land acquisition. The state offers preference for new construction multi-family projects serving the homeless, domestic violence, and other special needs. There are few new housing development projects that are currently underway including Falcon Ridge (Estes Park), The Edge (Loveland), and Phase II of Windsor Meadows (Weld County) that gives priority to flood survivors and individuals affected by the flood.

NON-PROFIT SECTOR



Figure 12: Samaritan's Purse assisting High Park Fire survivor.

Photo by Samaritan's Purse

An important element that came to light while completing the research on this report was the importance of having both governmental and non-governmental support. Although the state and federal governments provide more support in the form of dollars dedicated to recovery efforts, the non-profit and non-governmental sectors not only connect individuals with governmental programs, but also fill the gap when individuals do not qualify under certain program guidelines. They also provide assistance with less restrictions on access and use of funding.

Two groups that highlight the importance of the non-governmental sector working together are the Loveland Housing Authority and the Long-Term Recovery Group (LTRG). By working with each other, both groups were able to facilitate community outreach and made it easier for individuals to find the assistance they needed. The Loveland Housing Authority provides grant administration



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

support, while the LTRG provides case management, volunteers and construction assistance funding for unmet recovery needs, and continues to work with individuals to gather information and documentation to apply for funds.

One particular challenge to note for the non-governmental sector is that most of the funds allocated are to be spent for the direct benefit of survivors and not the staff required to administer them. This presents a serious challenge especially when recovery efforts go beyond the initial 2 years that federal assistance is available.

Donated dollars go to clients, faith based funds typically go to fund staff. ~Phyllis Kane, Case Manager, Larimer County Long Term Recovery Group.

The county itself spent \$100k to extend the funding for the work done by the Mountain Outreach Team, which among other tasks, provided emotional support to people who had lost their homes. County Manager Linda Hoffmann supported their work and commented, “They were trained counselors, and they provided emotional support, but in reality they did far more. They became trusted confidants of these people, and they were able to provide connections to programs for people who had been impacted.” In addition, the county also spent additional funds to support the work of the Long Term Recovery Group by providing additional funds for volunteer, construction, and LTRG coordination positions.

HOME DEMOLITIONS – ABATEMENT PROGRAM AND PURCHASE PROGRAM

In an effort to deal with the cost of removing damaged structures from the floodway, the county launched the Larimer County Abatement of Dangerous Buildings Program (aka Abatement Program.) The county pursued the abatement of the dangerous buildings through demolition if the property owner is unable or unwilling to resolve the issue. Property owner participation in the Abatement Program is essential for a successful outcome, especially when attempting to receive federal grant assistance for the program.

In 2014, Larimer County utilized federal funding to demolish structures in the floodway that posed a risk to public health and safety. This was a limited program through the Private Property Debris Removal policy through FEMA. Additionally, the county applied for Hazard Mitigation Grant funding through FEMA in January 2014 to acquire properties destroyed in the 2013 flood. After a year and a half of waiting for the funding to be approved, the Board of Commissioners decided to move forward with a county Home Acquisition Program instead. There are currently approximately 80 properties on a list for this program. It is a voluntary program where the county will acquire properties at post-flood values if the property owner agrees. Under this program the county would buy and receive title to a property to decrease future risk in flood-prone areas of the county.

SECOND HOMES

What makes this disaster unique is the amount of secondary homes affected. As an example, about 42% of the homes in Estes Park, one of the hardest hit communities, are secondary homes. By definition, a secondary home is a home not dedicated as a primary residence, often times used as either a vacation home or rental. By design,



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

federal disaster grant programs are focused on primary homes. This philosophy stems from the understanding that those affected still have a place to live in their primary residence. In addition, many assume that secondary home-owners have the financial reserves needed to repair these properties. Therefore, secondary home-owners are often not considered severely impacted.

Although concerned by the economic impact of lost rental income, there are other needs in the community that often rank higher than secondary home repair. The insurance market should be considered as primary resource for these homeowners.

INSURANCE

For future disasters, proper insurance should be considered as the best way for individuals to mitigate against financial risk. Over \$11 million was provided through the National Flood Insurance Program for the September 2013 floods, and over \$113 million of claims were made as a result of the High Park fire.

CDBG-DR Action Plan Amendment #2 Larimer County

- *NFIP Claims: \$11,623,196.*
- *Housing Insurance Claims for Fire: 259 homes, \$113,700,000*

With that said, insurance is often misunderstood and underutilized by individual homeowners. More in the form of education and public outreach has to be done to inform people of the National Flood Insurance Program (NFIP). What became evident during this disaster was that the county as a whole was underinsured for flood insurance, but those who had insurance recovered more quickly.

Throughout the state, there are only about 22,000 flood insurance policies in force, or about 1 percent of the total number of households. One reason for the very small percentage is that people mistakenly think flood insurance is unnecessary because they do not live in a high-risk flood zone and will not be adversely affected. That certain areas have very low probabilities of severe flooding does not mean this type of occurrence will never happen – indeed, the Front Range is a prime example that such a horrendous event can take place. Another reason for the pervasive lack of flood coverage is the common misconception that it is already part of standard property insurance policies issued throughout the county. This is not the case – unlike hail or fire damage, flood damage is excluded from standard residential policies and most business insurance policies in the private market.¹¹

LAND USE CODE AND BUILDING CODES

One of the unintended consequences of the flood is that individuals became familiar with many land use and building codes that have existed in the county for a number of years. As Eric Fried, Larimer County Chief Building

¹¹ "Property Casualty Insurers Association of America, Rocky Mountain Insurance Information Association



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Official, stated, “We hadn’t had to deal with a flood of that magnitude for 40 years, so a lot had been forgotten. Memories fade over the years.”

Some codes are based on state-law that many in the county believe may do more harm than good like the restriction of not being able to collect rainwater on your own property. Others are politically sensitive such as the restriction of rebuilding a substantially flood damaged home in the floodway. County officials need to balance the individual needs of property owners and their ability to sell or rebuild their own homes, with the responsibility of ceasing to perpetuate building in the floodway that can have devastating effects on a community in the future. These issues are currently being debated today at County Commission meetings.

Capacity issues in dealing with codes and permitting has been a challenge. Enforcement of codes over the years has been difficult because of limited resources and budget cuts. The county estimates that they have 2.5 more staff than they did prior to the floods which should help with capacity. There is a worry, however, that with time staff will decrease again leading to capacity issues in the future.

The county took proactive measures in preparation for the next disaster in updating their Land Use Code to include Section 11 (Disaster Rebuild Program) so that Board of Commissioners can invoke rules following a local disaster declaration allowing for a quicker recovery. These provisions include flexibility on setbacks and nonconforming issues, and the ability to speed up the emergency repair permitting process. Additionally, all emergency management codes and ordinances have been updated and an Office of Emergency Management has been formed to continue the work started after the disasters.

LESSONS LEARNED AND RECOMMENDATIONS

Housing unmet needs accounted for only three and half percent (3.5%) of the total overall responses. The lessons learned during these disasters and the ongoing recovery efforts are as follows:

- The Long-Term Recovery Group is a vital partner in short- and long-term recovery. Their staffing was limited trying to cover the entire county with two large-scale disasters and therefore had to have people come to them. In the future, they may be more effective if they have more people with the ability to go out in the field with the county, state and FEMA personnel.
- Larimer Voluntary Organizations Active in Disaster (VOAD) reformed after the 2013 flood and remains strong today. They have also partnered with the county as part of EOC operations and have formalized procedures for the structure and function of the LTRG in recovery to continue to provide assistance to individuals.
- Unlicensed contractors and criminals came into recovery areas offering services, which required the county’s Building Department to write a media advisory alerting people to misinformation that was being spread. A



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

continued effort to provide public information about scams and illegal activities will assist community members with difficult decisions after disasters.

- Coordination between the county and the Loveland Housing Authority during the early stages of recovery may have improved overall communications and may have sped up assistance to individuals. With the development of the Recovery Coordination Center, this coordination will most likely improve.
- This was the first time Larimer County utilized the full CDBG-DR program through HUD for disaster recovery. This led to several misunderstandings regarding timelines, eligibility and process. Initially, the county attempted to follow the same regulations and guidelines for CDBG-DR as they used for FEMA and FHWA programs, but learned that each has its own set of rules, sometimes conflicting, leading to confusion and delay. In the initial stages of any disaster, staff should be assigned to learn all of the available programs and program requirements. This will lead to better decisions as the recovery moves from short-term to long-term.
- Several lessons were learned from the damage assessment process, and improvements were implemented from the wildfire to the flood. Many of the people who came to assist the county from FEMA were from out of the state and the region. They didn't know the local area, or local politics, and many of the initial assessments had to be conducted again later due to errors in data collection. Larimer County is currently undergoing a comprehensive damage assessment evaluation and is implementing tools and procedures to conduct damage assessments more thoroughly at the local level. This has the potential to lead to less errors and an improved process overall.
- Larimer County Building Department had to develop an Emergency Repair Permit process following these disasters since one did not exist previously. They worked with the Engineering Department to come up with emergency repair permits while they conducted short-term fixes. The Building Department now has this process in place to utilize at the next disaster. This has the potential to save months of time for residents seeking permits that have been affected by a disaster.

DEBRIS



Figure 13: Ford Bronco and other debris piled up against Glen Haven Town Hall

Debris concerns were still prevalent in all community meetings held 18 months after the disaster, accounting for almost eight (8%) of responses and ranking fourth overall in community unmet needs. In Larimer County alone, over 45,000 cubic yards of debris was collected, enough to fill over 25 football fields 1 foot deep. Many debris issues overlapped Private Property needs. As an example, the need to have large boulders removed from a person's property fell under both categories: Private Property/Equipment and Debris.

The following section takes a closer look at areas related to debris, specifically:

- Debris on Private Property
- Debris in the Floodway
- Landfill Use

DEBRIS ON PRIVATE PROPERTY

Debris removal, management and monitoring is an expensive post-disaster process in recovery operations. The major source of funding for recovery efforts comes from the FEMA Public Assistance Program, but it is typically



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

restricted to debris on publicly-owned/maintained roads or removal that is in the “public’s interest” as defined by FEMA.

As a result, the cost and actual operation of removing debris from private property typically falls on the property owner. Most of the debris that currently remains are trees, boulders, silt, fencing and other large items that are very difficult and costly to remove. Removal of this debris typically requires heavy equipment, dumpsters, hauling, and disposal fees. The work is also labor intensive. For these reasons, many landowners cannot afford to do the work and as a result, debris removal continues to be an unmet need.

The volunteer community has been instrumental in assisting property owners with these needs. For example, the Larimer County Conservation Corps was able to provide volunteers through the Big Thompson Conservation District to assist with the removal of hazard trees. Close to \$500k worth of grants were awarded through the Community Foundation to directly assist property owners through the Serve 6.8 organization and different Fire Protection Districts. The Long-Term Recovery Group volunteer management effort has led to over 100,000 hours of volunteer time by groups from throughout the United States. Despite these efforts, many property owners are still requiring assistance as they simply do not have the resources to fill this need.

DEBRIS IN THE FLOODWAY

A large need identified by community members was the debris remaining in the floodway. Following a catastrophic flood, large volumes of wood, sediment, debris, and trash can be deposited along stream corridors. It is important to classify this debris into two separate categories – natural debris (e.g., trees, logs, rocks) and non-natural debris (e.g., household appliances, drywall). Natural debris that does not pose a significant public hazard and is considered part of the natural ecosystem may be left in place. Woody debris such as trees, branches, and rootwads are an important part of natural and healthy stream systems. According to the U.S. Forest Service¹², woody debris increases channel roughness, slows down floodwaters by dissipating flow energy, helps stabilize the stream, and reduces the potential for future floods to cause erosion and flood damage downstream. Woody debris that poses little risk to infrastructure is best left in place, thereby saving time and money for more critical work at other locations. Trees and logs that bridge the channel, trees and logs wedged into banks, and large, stable wood within a stream is most often best left alone.

Non-natural debris, especially hazardous debris, should be identified and reported with exact site location. This can be difficult to do as some of this debris may still be buried under silt deposited as a result of the flood.

¹² Brown, Reinhardt, Kramer, 2003



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

LANDFILL USE

One of the unintended consequences of the flood was the fact that Larimer County lost years of lifespan on its landfill because of the amount of debris deposited into the county's landfill from outside communities. Communities like Boulder County, who did not have their own landfills were instructed to drop off their debris into Larimer's landfill. Although the county was not the only landfill available, it was the least expensive since most others are privately-owned. As a result, the county lost 3 years of lifespan on its landfill and only has 10 years remaining.

There were a number of options that could have resulted in using less space, and should be considered for the next disaster, including:

1. Grinding debris. This was not done because the community around the landfill would not accept the additional noise and dust generated.
2. Burning debris. This is a politically sensitive topic in communities that makes it difficult for landfill management.
3. Composting was not an option because public opinion felt debris was tainted.
4. Recycling proved difficult since no sites could be identified to separate debris.

LESSONS LEARNED AND RECOMMENDATIONS

In interviewing the County's Solid Waste Department, the following issues were noted during debris recovery operations:

- The county did not have an on-call hauler on contract to speed up operations. This has since been rectified through the use of an on-call debris contract.
- Identifying site locations to stage debris efforts continues to be challenging for a number of reasons. First, the most feasible site locations are privately-owned requiring their cooperation and permission for use. Second, the amount of available suitable land is limited.

“The challenge was that FEMA kept changing their staff, and therefore, the interpretation of their rules. We would have been paralyzed to make decisions we needed to make if not for having our consultant there to give us a good enough reason on why we could do this, and fight it later if we had to.” ~ Steven Gillette, Larimer County Solid Waste

- Cell phone communication in the mountains was so poor that often times there was no way to get in touch with a hauler until they reported back at the end of the day. As a result, sites that a hauler missed on a run, or ones that were found after a driver was sent out, could not be completed.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- There was no debris management plan in place at the time of the floods. This has since been corrected with the addition of a Debris Management Plan as part of the County Disaster Recovery Plan.
- Having a consultant on staff was critical and valuable to assist in the debris efforts due to their subject-matter expertise and knowledge of available assistance programs.
- The public lacked the education on how to appropriately dispose of debris on their property.
- The timeliness of grant dollars to assist with debris cleanup was discouraging and resulted in a disenchanted public as they saw debris piles still there months after the event.
- Gaining access to private property to remove debris required homeowner's approval which proved challenging.
- CDBG-DR Clearance and Demolition was an available program for areas where concentrated damage to groups of housing structures are unsound and pose health and safety risks to the surrounding community and must be removed in order to promote comprehensive recovery. The county should look at other programs in the future since the terrain in Larimer County does not typically align with this program's requirements.



COMMUNICATION

Community and individual needs focusing on Communication were widespread throughout the county. These types of needs were brought up in six of the eight public meetings and accounted for twenty-two percent (22%) of all collected needs, making Communication one of the top three overall need categories. Communities where this was discussed included: Berthoud, Blue Mountain, Crystal Lakes, Drake, Glacier View, Loveland, Poudre River Coalition, Spring Gulch, and Red Feather Lakes. These Communication needs can be summarized into four (4) sub-types:

- Communication Networks (4% of all responses)
- Phone/Internet Service (7% of all responses)
- Public Education (8% of all responses)
- Warning Systems (2% of all responses)

The following sections take a closer look at these sub-categories. Specific unmet needs and potential solutions to meeting them are suggested where appropriate. Overall, many solutions can be resolved by informing citizens of existing county programs and information services and urging residents to actively participate in community-focused organizations.

COMMUNICATION NETWORKS

The sub-category of communication networks related to individuals that felt their communities did not have appropriate structures in place for either internal or external communications.

Many of these perceived needs related to these communities' lack of internal mechanisms for communicating amongst themselves. Some comments focused on the fact that there was no true leadership amongst the community (formal or informal). Other comments acknowledged that in many of these mountain communities, residents have chosen to live in these disconnected areas for a reason, but that does not necessarily mean those residents do not value the benefits of having a community. Other identified needs touched on the lack of simple community phone trees or contact lists.

“Communications within the community requires a grass roots effort. Many alerting and notification mechanisms can be worked out through community discussions.”

*~Lori Hodges, Larimer County
Director of Emergency Management*

A second group of these Communication Network needs were directed at external communications between the community residents and Larimer County. Overall, it is clear that there are a number of residents that did not feel there are adequate or consistent outreach tools utilized by Larimer County.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

During the unmet needs meeting with the Coalition for the Poudre River Watershed, there were a few needs raised concerning issues that the coalition was having simply trying to communicate with private landowners relating to post-disaster recovery and wildfire mitigation projects.

I think down the road the community would benefit from shared Emergency Management resources. I think instead of Larimer County staffing up, and Fort Collins and Loveland staffing up, I think it would be wise to work toward a model where we would have formal cooperation among our emergency management professionals, perhaps with a formal shared EOC. In the event of an incident we can leverage the expertise and knowledge of all of the professionals.

~Linda Hoffmann, Larimer County Manager

Larimer County and its jurisdictions have pointed out that there were instances during the recovery process where communications between the state and locals could have been improved for the benefit of all. One example to cite dealt with the state highway recovery command center that was set up in Loveland. County staff felt that it wasn't a fully coordinated emergency response, from an infrastructure perspective; as there were three different EOCs located across the county in Fort Collins, Loveland, and Larimer County. Centralizing EOC efforts in the future may alleviate this challenge.

Another example was an unfamiliarity with utilizing CDBG-DR funding. Local staff basically had to learn as they went. Attempts were made to align processes off of existing programs, but there were too many differences between the programs for this process to run smoothly. It was also frustrating to have to go back to homeowners for additional information that local staff were not asked to collect initially by the state. This delayed getting necessary funds to the public.

PHONE/INTERNET SERVICE

Issues relating to phone and internet service were brought up a number of times across these community meetings. Many complaints related to a lack of cellular phone service and cellular towers, especially in rural areas of the county. Other comments related to a lack of available or quality high-speed internet access. Still others commented on the need to have back-up systems in place for times of disaster. It is important to stress that cellular, internet, satellite, and landline communication services are all provided through the private sector. The best course of action is for residents and communities to work with the private sector on solutions for their specific areas of the county. Senate Bill 152 in 2005 prohibited

“In many of the unincorporated portions of the county, it is too rural to attract commercial service providers without basic infrastructure to tie into. The County understands the desire for broadband service throughout the County but the level of public investment that would be required needs to be weighed against recipients' ability to reimburse the county for providing it. The financial feasibility is something we are actively exploring, but it is a problem of financial feasibility in low-density areas.” ~Linda Hoffmann, Larimer County Manager



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

cities and counties from spending monies on improving broadband service without a public vote. Some communities have already voted to reclaim local authority over broadband, such as Estes Park and the City of Fort Collins. Community members should also research other solutions to see if other providers are available to solve problems with communications infrastructure and access.

Some needs focused on the electricity network and potential upgrades or mitigation actions (e.g., burying lines). As mentioned above, these services are in the hands of the private sector.

Some communities also identified the fact that these needs are not only tied to disaster events, but also other emergencies such as automobile accidents. One suggestion was to see if CDOT or the county would be able to consider installing emergency phones along some of these mountain canyon roads.

VHF, 800 MHz and HAM radio were also the subjects of these identified needs. There was a discussion at one meeting about both VHF and 800 MHz emergency radio networks. Residents and fire personnel in some areas had heard that the VHF system would be going away and replaced with 800 MHz. This rumor was dispelled by Lori Hodges, Director of Emergency Management, after speaking with communications officials from the county. The Dead Man Radio Site and several old VHF channels will be discontinued, however a newer site, Kilpecker, will be up and running before this happens, leading to better overall VHF coverage. Due to the wildfire danger in Larimer County, VHF systems will remain a priority as well as the 800 MHz systems in place that allow for communications with regional and state partners.

Larimer County also has a longstanding relationship with Amateur Radio Emergency Services (ARES) to provide redundant backup public communications. ARES provided extensive communications support during the 2013 flood to cut-off mountain communities while working in the Loveland EOC.

“We also lost all communications with the exception of internet...we lost phone, we lost 911. That was one of the biggest problems.” ~Frank Lancaster, Town Manager of Estes Park

It should also be noted for this study that the Town of Estes Park lost all phone communications during the flood event, both landline and cellular services. This shut down all 911 communications and left the town isolated from the rest of the county. Luckily for some town residents, some internet services were not disrupted. This allowed for the use of emergency email messaging as well as phone use for those with VOIP phones. Once communications were up, coordination with the county went well. A majority of town staff could not commute to Estes Park because of the road damages. The Estes Park Medical Center had 30% of their nurses unable to commute, as they lived outside of town. The town staff did assist with emergency response outside of the town limits, due to the fact that they were the only persons that could get to some of the isolated areas of the county.

Another item to document is that the county does not currently track communication disruptions. This would be beneficial in the future as a way to track potential emergency events and would be vital information to know for county field personnel.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

PUBLIC EDUCATION

Education needs are a subcategory that relate to many different topics, but in general illustrate that residents do not have the information they need to obtain necessary assistance following a disaster. In many of the public meetings held as part of this process, residents were unaware of programs available to them for needs. This led to increased frustration and a feeling that the county was not providing assistance, when in actuality it was a lack of understanding about available programs. The county has extensive information about programs on its website and provides updates to residents through quarterly newsletters and community meetings. This effort can be enhanced, however, to provide better overall understanding of programs. A few of these resources are listed below:

- In the Red Feather and Crystal Lakes areas, these needs related primarily to medical or health care accessibility. The Larimer County Department of Health and Environment's Community Health Services Department is probably the best source to start with for many of these questions. A lot of valuable information can be found on their website @ <http://www.larimer.org/health/chs/index.asp>.
- A number of other questions related to information pertaining to natural hazards and hazard mitigation activities. Larimer County has recently updated its Multi-Jurisdictional Hazard Mitigation Plan, which has a wealth of useful information related to this subject. The county's Office of Emergency Management is the primary department to direct these types of questions. Their website can be found @ <http://www.larimer.org/emergency/>.
- The Office of Emergency Management has also setup disaster recovery webpages specific to recent disaster events in the county:
 - 2012 High Park Wildfire (<http://www.larimer.org/highparkfire/>).
 - 2013 Flood (<http://www.larimer.org/flooding2013/>).
- Information relating to wildfire and wildfire mitigation should be directed to the fire department that covers each community. The county has created a map for citizens to use to identify the district that serves each area, which is available @ http://www.co.larimer.co.us/wildfire/wildfire_maps.htm.
- Specific information relating to floodplain mapping and building regulations should be addressed to the county's Flood Plain Manager. Contact information and additional details can be found on their website @ <http://www.larimer.org/engineering>.

UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

WARNINGS

Warning-related unmet needs focused on a few main topics. The need to install stream/flood gauges was the need heard the most in this sub-category. This is a subject that is receiving a lot of attention by the county, its jurisdictions, the watershed coalitions, and the public. Residents should coordinate with their watershed coalitions or local jurisdictions for updates on these efforts. Citizens without a coalition or jurisdictional representation can contact the Community Development Division www.larimer.org/planning at the county. It also needs to be noted that after the High Park Wildfire, funds were made available for the installation of stream gauges, but there were property owners who would not allow the county onto their land to install these critical warning monitors.

Emergency alerts were the second largest type of need in this category. All Larimer County residents have access



Figure 14: Flood monitoring system

to emergency notification if they have a cell phone or landline phone. Weather alerts are not automatically sent out through the county system unless the National Weather Service sends a notice. Therefore, if members of the public wish to receive emergency notifications regarding weather (Tornado Warning, Flash Flood Warning, etc.) they must opt-in for those notifications through www.leta911.org to sign up for both emergency alerts and weather notifications. The county also has an opt-in for emergency event updates. This includes information about existing emergencies in the county for those who wish to remain informed. Larimer County was also among the first



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

counties in the state to implement Text to 911, allowing people to text in emergency information instead of having to speak to a dispatcher.

Remaining unmet needs focused on dam releases and notifications, specific to the Olympus Dam (aka Estes Dam). This dam is operated by the Bureau of Reclamation, who determines when water should be released from the dam. The Olympus Dam is not a flood control dam, therefore it was not designed to hold back flood waters. Dams in Larimer County are typically water storage dams. In the event of a flood, water must be released to ensure the integrity of the dam. If water is not released, the dam could become compromised, leading to failure, which would be a more catastrophic event. For the Olympus Dam in particular, the Bureau of Reclamation has set up both a website and a Facebook page to notify residents in the area of any changes in flow or conditions.

Website: http://www.usbr.gov/projects/Facility.jsp?fac_Name=Olympus+Dam&groupName=Overview

Facebook page: <https://www.facebook.com/LakeEstesandOlyDam>

LESSONS LEARNED AND RECOMMENDATIONS

The lessons learned during these disasters and the ongoing recovery efforts for communication are as follows:

- As one resident pointed out, community organizations or co-ops would help to strengthen community communications. Residents are encouraged to develop and coordinate community organizations to help improve communication throughout their community.
- Cellular, internet and landline phones are provided through the private sector. The best course of action is to work with the private sector on solutions for this area of the county. The Office of Emergency Management can attempt to facilitate a conversation amongst the residents and providers to see if solutions are available.
- Larimer County has an excellent website (<http://www.co.larimer.co.us/>) which contains very clear and transparent information relating to all county services. Focused public outreach educational efforts concerning these services should be marketed to county citizens so that these valuable tools can be better utilized by the general population.
- Following the flood event, representatives from east coast communities that experienced the impacts of Hurricane Irene were brought in to consult with the state. County and jurisdictional entities feel that they could have benefitted from these lessons learned, but they were not provided an opportunity from the state to do so. In the future, improved information sharing between locals and the state would be beneficial.

“I have never done any kind of lessons learned analysis where the bottom line doesn’t boil down to communication and trust, so I think that is something we need to be constantly vigilant about and working on.” ~Linda Hoffmann, Larimer County Manager



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- 800 MHz is the primary emergency radio communication system in Larimer County. Public safety agencies are urged to consider this when upgrading old systems.
- Increased communication with county offices would benefit some of Larimer County's smaller communities. The County Commissioners should continue their community meetings and their yearly County Seat sessions to reach out to communities that feel disconnected to county government.
- The county realized through these disasters that tracking of communication disruptions is important and that remote areas of the county may be affected while other portions of the county are not. It is recommended that the Sheriff's Office or Office of Emergency Management take on this task.
- Continue to work with volunteers from Amateur Radio Emergency Services (ARES) to enhance non-emergent radio communications between communities.



UTILITIES

Utility concerns accounted for 3% of the overall responses and fell into one of three categories: Power, fuel and water. An overwhelming majority of the responses relating to power and fuel dealt with having backup systems available, and although water concerns were discussed in over half of the meetings, the responses were typically limited to one or two responses per community.

WATER AND WASTE WATER

Water and waste water issues were discussed at more than half of the unmet needs meetings. The primary concerns were safe drinking water, sewer systems and the removal of waste water, and emergency water supplies for firefighting.

1) ACCESS

Access to water was important for a variety of reasons, ranging from drinking water to fighting fires. Unfortunately, this access was hindered by both state and federal regulations and events.

Just weeks after the 2013 floods, the federal government shut down due to the lack of a continuing resolution for the national budget. The National Park Service and federal agencies like the U.S. Forest Service and Bureau of Reclamation were therefore unable to function. Many of the county's water lines (and electric lines) run through National Forest Service lands, requiring permits for any work initiated and completed. This provided difficult circumstances for returning post-flood utility services. In some cases, 24-hour boil periods were implemented.

In addition, one of the unmet needs meetings illustrated concern for water to fight fires. Specifically, it was reported that the ability to collect rainwater could provide needed resources to maintain firefighting efforts. Currently, it is illegal to collect rainwater in the state of Colorado. It should be noted, though, that House Bill 15-1259 passed the Colorado House of Representatives earlier in the year, and though the bill was killed in the Senate, it is expected to return to the legislative calendar during the upcoming session. If approved, the bill would rescind some of the prior appropriations and allow residents to collect up to 110 gallons of rainwater in two, 55-gallon barrels. In addition to irrigation and outdoor use, it was suggested this could be used by firefighters. Residents and the county should keep a close eye on the upcoming legislative session and the progress of this water collection legislation as it could have wider county implications.

2) REMOVAL

The removal of waste water and the use of municipal sewer systems were a concern for those within incorporated areas. Outside of these areas, residents utilized septic systems, but in many cases, those were also overloaded or destroyed during the flooding.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

One of the hardest hit areas was the Fish Creek corridor. As a result of the damage sustained, approximately one-third of the town of Estes Park and roughly 2,500 homes experienced an outage in sewer services. As a result, portable toilet facilities were brought in until services could be restored.

"Up to 3,000 homes were in a "no flush zone" for about three months." ~ Frank Lancaster, Town Manager of Estes Park

POWER

An overwhelming majority of responses related to power fluctuations and the existence of backup systems. In best-case scenarios, power was supported with generators, often supplying resources to a full range of municipal functionality. Glen Haven, for example, was one of the hardest hit areas in terms of power and water outages. The fire station generators doubled as the community center and the base of operations.

By and large, residents were pleased with the restoration of power services. Estes Park Light and Power crews received good reports for their quick response, but there were some places within the county that took several months to receive electricity. Many power lines were lost along washed-out roadways such as U.S. 34, further complicating utility restoration.

People off the grid at times are more resilient with their own power sources, but lack of planning can be devastating. We had a family that had their own power system, but lost their battery. ~ Phyllis Kane, LTRG Case Manager

Residents with solar power or the ability to provide their own electricity were often at an advantage, though there were some exceptions. Even people living "off the grid" need resiliency plans, and this was not always the case. For example, someone might have their own power system, but if they lose their battery, the power system is rendered useless.

FUEL

The most important issue with fuel was the ability to power generators for electricity. The problem with fuel was created by the lack of ability to move fuel into mountainous areas. Towns like Estes Park had major difficulties receiving food and gas supplies for about a week after the floods.

As State Highway 7 was opened, it was easier to receive needed materials, but only slightly. Many members of the Estes Park Police Department live in Loveland, requiring an eight-hour commute just to get to work. These commutes require refueling, further impacting the scarcity of fuel in some of these mountain communities. Pre-planning and staging of equipment or necessary supplies at the community level will assist in any emergency.



Figure 15: Fish Creek damage after September 2013 floods

A CLOSER LOOK: FISH CREEK

Of all the utility concerns within Larimer County following the 2013 floods, the most centralized issues were along the Fish Creek corridor. Restoration efforts are continuing today, and the Fish Creek Public Infrastructure Project is one of the most costly and involved projects in the entire county.

A joint effort between the Town of Estes Park and Larimer County, this infrastructure project includes the design and replacement of 1,500 feet of water line and crossings, installation of concrete encased electric lines at the stream crossing, and the replacement or relocation of nearly 23 sewer manholes and as much as 6,000 feet of sewer line. Utilities will exist beneath the roadway, therefore, they must be completed during phase one of the project with phase two consisting of roadway repairs themselves.

LESSONS LEARNED AND RECOMMENDATIONS

In summary, the unmet needs report showed that Larimer County is fragmented in terms of its utility services with services coming from as many as 20 different sources. This allowed for needed redundancies but also made it difficult for assessment and coordination of the response. For example, even with unincorporated residents using propane tanks or septic systems, those were often lost in flooded areas and weren't included in initial assessments



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

or responses. Likewise, reporting to FEMA was not always accurate in terms of power outages because there are so many small providers.

- Moving forward, these communication gaps should be considered and repaired. Residents need to be educated on resiliency plans before an event, and they need the ability to provide important assessment information after an event.
 - law against collecting water
 - the benefits of providing your own electricity
- Community supplies, gasoline, generators, and other items can be obtained locally through a community effort and maintained within the area. This would need to be done as a grass roots effort and/or in conjunction with local first response organizations. In an emergency situation, emergency response organizations will order necessary resources to manage the event. These resources sometimes take time to get to the needed areas so having a community plan is essential.
- Current technology is highly dependent upon the electrical grid and with our interconnected world, many other systems will fail once the grid is lost. For example, private wells will not operate without electricity unless a back-up system has been implemented. Larimer County should continue current efforts toward resilient infrastructure and lifelines, including redundancies and back-ups so that when one failure occurs, another system will work in its place.



PLANNING

A large number of documented needs focus on the diverse subject of community Planning. Overall, Planning-related needs made up twenty-eight point two percent (28.2%) of all needs collected at the community meetings, making this subject one of the top three overall need-types. These types of needs were discussed in all eight public meetings.

Planning is a very broad topic that can be focused on any number of subjects, communities, and geographic areas. For the purpose of this study, planning needs were categorized into six (6) distinct sub-categories:

- Vegetation (4% of all responses)
- Pests/Insects (1% of all responses)
- Flood (16% of all responses)
- Wildfire (2% of all responses)
- Multi-Hazard (1% of all responses)
- Road / Transportation (2% of all responses)
- Recreation (2% of all responses)

The following sections take a closer look at these sub-categories. Specific unmet needs and the potential solutions to meeting them are suggested where appropriate. Overall, many solutions can be resolved by informing citizens of existing county programs and information sources.

VEGETATION

A large portion of Larimer County is covered by the Roosevelt National Forest (NF) and Rocky Mountain National Park (NP), and thus management activities in these forests are tasked to other entities. Roosevelt NF is administered by the U.S. Forest Service and is divided into two ranger districts (Canyon Lakes and Boulder Ranger). Several volunteer groups also help to manage the NF, including the Poudre Wilderness Volunteers (through Canyon Lakes). The Cache la Poudre Wilderness is a federally-protected area within Roosevelt National Forest that is administered by the U.S. Forest Service and is located on the Canyon Lakes Ranger District. Rocky Mountain NP is administered by the U.S. National Park Service.

Following the devastating wildfires and floods experienced by Larimer County and its landscape, it is not surprising that vegetation-related planning needs have been identified. In some cases, these can be seen as a sub component to the hazard sub-categories (i.e., flood, wildfire, multi-hazard) and it will also be touched on in those subsequent sections.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Noxious weed identification and management was mentioned during a few of the public meetings. As mentioned in the New Code of the West, Section 5.8, noxious weeds are expensive to control and some plants are poisonous to horses and other livestock. The main things pointed out are that citizens are looking for information and education relating to identifying and mitigating weeds on their lands. The State of Colorado's Department of Agriculture does have a Noxious Weeds program focused on these topics, found at <https://www.colorado.gov/pacific/agconservation/noxiousweeds>:

"The aim of the Noxious Weed program is to control noxious weeds, the non-native aggressive invaders that replace native vegetation, reduce agricultural productivity, cause wind and water erosion and pose an increased threat to communities from wildfire. We do this by preventing the introduction of new invasive species; eradicating species with isolated or limited populations; and containing and managing those invasive species that are well-established and widespread. To accomplish these goals the program coordinates the efforts of local, state and federal noxious weed managers; provides funding for local entities to carry out on-the-ground weed management projects; conducts education and outreach activities and supports similar local activities; and maintains close contact with neighboring states and counties to prevent the interstate spread of noxious weeds."

The state works closely with all 64 counties to help manage noxious weeds. Larimer County's contact is Tim D'Amato, District Manager for the Larimer County Natural Resources Department – Weed District. He can be reached at 970.498.5768 or e-mailed at damatotj@co.larimer.co.us.

The state Noxious Weed Act directs the Department of Agriculture to develop and implement management plans for all List A and List B species. For List B species, these plans identify management objectives that specify timelines for elimination and strategies for managing populations that will result in stopping the spread of List B plant populations.

Management Objectives:

"Elimination" means the removal or destruction of all emerged, growing plants of a population of List A or List B species designated for eradication by the Commissioner. It is the first step in achieving eradication and is succeeded by efforts to detect and destroy newly emerged plants arising from seed, reproductive propagule, or remaining root stock for the duration of the seed longevity for the particular species.

"Containment" means maintaining an intensively managed buffer zone that separates infested regions, where suppression activities prevail, from largely uninfested regions, where eradication activities prevail. Containment map figures.

"Suppression" means reducing the vigor of noxious weed populations within an infested region, decreasing the propensity of noxious weed species to spread to surrounding lands, and mitigating the negative effects of noxious weed populations on infested lands. Suppression efforts may employ a wide variety of integrated management techniques.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

The Larimer County management plan for 'List B' species can be found at the following link: <https://docs.google.com/spreadsheets/d/1h-i3ZScIETyir45s60j06hn9mmQcVgmbPxDntT8o-iU/edit#gid=1952377539>

Revegetation and Erosion Control was also a need identified by multiple citizens. This is not surprising given the damages the county's landscape faced as a result of recent disasters. As many of these activities relate to stream channels and flooding, it should be noted that these topics are being championed by the watershed coalitions. Details regarding these coalitions are found in the Flood category later on in this document. Activities related to forest management and post wildfire recovery can be found in the following Forest Management section and later on in this document when the Wildfire Planning category is discussed.

There were also a number of needs focused on private property landscaping. As is noted throughout this report, Larimer County is legally not permitted to spend money for private benefit.

Forest Management was the third focus of needs identified in this category. Larimer County's Forestry Program within the Natural Resources Department is tasked with assisting with these types of topics on private and county lands. Additional information can be found at the following link: <http://www.larimer.org/forestry/>

The mission of these watershed coalitions is to restore and maintain the resilience and ecological health of rivers for the benefit of economic, agricultural, private lands, recreation, and water resources. These coalitions were created to help serve property owners and other stakeholders with long-term flood recovery efforts within their respective planning areas.

The county is currently looking to improve landowner education relating to private forest management. Some of the watershed coalitions are in current discussions with state agencies to see if grants can be made available for these types of efforts. The Natural Resources Conservation Service (NRCS), which is located under the U.S. Department of Agriculture, is helping to champion these activities.

PESTS/INSECTS

A few unmet needs concerns focused on pests. These touched on mosquitos, prairie dogs, and invasive species. Larimer County does not perform any type of mosquito control. Some jurisdictions do have their own managed programs, some of which may impact unincorporated areas surrounding those jurisdictions. Additional information can be found at the following link: <http://larimer.org/health/cd/mosquitocontrol.htm> . Prairie dogs are a localized problem left up to landowners to manage. While black-tailed prairie dogs are not directly protected through regulations, population control measures may need to be coordinated through the State Division of Parks and Wildlife (DPW), due to the fact that prairie dogs are a primary prey species for the protected black-foot ferret. The DPW is also the best resource to direct invasive species inquiries.



FLOOD

Following the 2013 floods, four watershed coalitions were formed across Larimer County to help organize citizens impacted by the flood event and to provide a mechanism to route and track recovery needs. Listed below are details for these coalitions:

- Big Thompson Watershed Coalition (BTWC)
 - <http://www.bigthompson.co/>
- Little Thompson Watershed Coalition (LTWC)
 - <http://ltwrc.org/>
- Estes Valley Watershed Coalition (EVWC)
 - <http://www.evwatershed.org/>
- Coalition for the Poudre River Watershed (CPRW)
 - <http://www.poudrewatershed.org/>

Unmet needs in the sub-category of flood relate to any needs focused on stream corridors. These are also the exact same types of needs identified in the existing watershed coalition reports referenced below. Going forward, any stream corridor-related needs should be coordinated through the respective watershed coalitions since much of the land involves private property. A mechanism should also be considered for providing ways to append additional identified needs to these reports after they are produced.

A high level summary of the types of needs documented in these reports include, but are not limited to: aquatic restoration, riparian restoration, bank stabilization, roadway walls/elevations, channel re-alignments and modifications, and floodplain benching.

An issue that still needs to be addressed is what to do for areas that are currently not covered/represented by one of these existing watershed coalitions. Larimer County believes these coalitions are a valuable resource for both residents and the county itself. The county strongly encourages communities without current representation to consider organizing new grass root efforts to provide the necessary community voice and organizational leadership for residents to collectively plan for their current and future needs.

“The watershed coalitions need to be viewed as a key partner for the county. These coalitions could have better served the county following the flood if they were better involved.”

~John Giordanengo, Thompson Watershed Alliance

Listed below are any existing plans relating to specific rivers across Larimer County.

- The Big Thompson Watershed Coalition (BTWC) led development of a Master Plan for that river. The report can be found @ <http://www.bigthompson.co/master-planning>

UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- The Little Thompson Watershed Restoration Coalition (LTWRC) led development of a Master Plan for that watershed. The report can be found @ <http://cwcbweblink.state.co.us/WebLink/0/doc/196309/Electronic.aspx?searchid=d00be47f-263c-46f5-8f56-b51c7cc767db>
- The Fish Creek Coalition led development of a Resiliency Plan for the Fish Creek Corridor. The plan can be found @ <http://cwcbweblink.state.co.us/WebLink/0/doc/196319/Electronic.aspx?searchid=d00be47f-263c-46f5-8f56-b51c7cc767db>
- The NRCS performed a Flood Hazard Assessment Report for the Buckhorn Creek Area in relation to potential flooding that could be expected from the Watershed after the High Park Fire. The report can be found @ <https://www.larimer.org/highparkfire/BuckhornCreekMitigationReport.pdf>

WILDFIRE

While not as fresh in some minds as the hazard of flooding, there are still a number of unmet needs that fit in this wildfire sub-category. All of these needs focus on various mitigation planning needs. Examples of some ideas that individuals want considered involve: prescribed burns/fuel reduction, roadside grass maintenance, project prioritization, and water storage/access.

Wildfire mitigation planning is something that should be addressed at multiple-levels. At the county level, the Office of Emergency Management recently invited all



Figure 16: Post-fire mulching for runoff and erosion mitigation

“The plan for Larimer’s conservation districts is to leverage some of the work already done in Jefferson County, where they had a targeted plan of thinning forests to take them back to density levels that existed 100 years ago. These ideal density types produce healthier forests and make it less likely for fires to spread to large areas and avoids crowning.”

~Gordon Gilstrap, President of Big Thompson Conservation District

fire departments to participate in the updated Hazard Mitigation Plan. Through this process, these departments will be eligible to apply for future post-disaster grant monies for mitigation projects that they have identified through this planning process. These fire departments are the best resource for individuals with wildfire mitigation questions and needs.

At the community level, Community Wildfire Protection Plans (CWPPs) are where this local hazard mitigation planning should and does occur. Currently, there are twenty-three (23) CWPPs across Larimer County. These documents can be accessed @ <http://csfs.colostate.edu/wildfire->



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

[mitigation/colorado-community-wildfire-protection-plans/](#). While some of these plans have been updated recently, a number are getting close to the 8-10 year old range and should be considered for an update. During this planning process is when communities come together to identify and prioritize wildfire mitigation needs.

During interviews with the watershed coalitions, some pointed out the fact that once flood recovery efforts begin to taper off, forest management and wildfire mitigation activities will be one of their primary focuses due to the interconnected nature of wildfire effects with watershed health.

A Burn Area Emergency Response (BAER) report was produced following the High Park fire to help categorize and identify impacts and damages in that area of the county. A copy of this report can be found @ <http://www.larimer.org/highparkfire/bearreport.pdf>.

Following the fire, limited federal funding was provided and the County Commissioners approved additional funds. Some of the recommendations were implemented, but funding levels could not meet all of the identified needs. Lack of landowner permission to conduct project work was also a hindrance. Most of these funds went to aerial mulching efforts and culvert improvements.

“\$2.8M was allocated to culvert-type improvements, of which \$1.8M was spent on projects in Rist Canyon. Fortunately, the project’s expedited schedule allowed for project completion before the 2013 flood event. If those upgrades had not occurred, the flood would have taken out all of Rist Canyon. Unfortunately, known needs in Buckhorn and Redstone are still in need of funding.”

~Rusty McDaniel & Mark Peterson, Larimer County Engineering

MULTI-HAZARD

As is evident throughout this report, it is oftentimes difficult to fully isolate individual natural hazards from one another, as they oftentimes intersect or cascade from one hazard to the next. The Unmet Needs documented in this Planning subcategory deal with multiple hazards and thus have been categorized as such.

One of these documented needs requested a community master plan for one of the watershed coalitions, similar to recent plans produced by some of the other watershed coalitions. Potential funding sources and grant programs should be reviewed to see how best and most quickly funding can be acquired.

Other needs include planning for emergency supplies and equipment for post disaster recovery. While county, state, and federal resources may be available to assist individuals and communities following disaster events, it should be stressed that individuals need to be prepared to deal with the effects of all hazards on their own. This is especially true during the initial hours/days following a hazard event. As was learned during these recent disasters in Larimer County, communities with strong bonds and leadership tend to fare the best following disaster



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

events. Larimer County encourages individuals to participate in existing coalitions and neighborhood organizations to be better prepared when the next disaster strikes. Collectively identifying necessary resources and equipment beforehand is a great way for communities to be prepared to respond to disasters.

ROAD

Road-related planning needs covered a broad range of topics. Examples of which deal with: signage, vehicle traffic, road changes since post-disaster rebuilding, and traffic volumes. Larimer County's Road and Bridge Department and Engineering Department are working collectively on many of these needs now through planning efforts. This will remain a primary concern in Larimer County for many years to come.

RECREATION

Unmet needs relating to the planning sub-category of recreation fell into two categories, fish habitat/stocking and parks and trails. Many fish habitat improvement requests have been identified in the watershed master plans mentioned previously, so requests for areas that those plans cover are best routed through those channels. Another option to consider is reaching out to local Trout Unlimited chapters, who perform these types of volunteer projects throughout Colorado and the United States.

LESSONS LEARNED AND RECOMMENDATIONS

Many planning needs came to light in lieu of these disaster events. While major efforts have since been directed at planning at various levels, many planning needs remain. The lessons learned during these disasters and the ongoing recovery efforts regarding planning are as follows:

- Larimer County and its jurisdictions, communities, and citizens need to continue to work together to ensure they are prepared for future disaster events and have plans in place for how best to recover, both in the short, mid and long-term.
- Although there were a lot of resources made available post event, citizens should understand that private property is the responsibility of each individual owner. Strong, localized, and organized communities are a good way to lessen the burden experienced by individuals following disaster events. The public must understand that the county is restrained legally in that a public entity cannot spend money for private benefit.
- Larimer County needs to consider the implementation of an emergency fund, to be used to fund machinery, equipment, and coordination resources for the short and mid-term work that needs to be done following a disaster event. These monies need to be available through an efficient methodology.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Larimer County should continue to develop its new emergency management program to ensure preparedness, mitigation, response and recovery plans are complete and regularly exercised.
- Some areas in the county that incurred damages from these disasters did not receive grants for master planning nor did they have a coalition to assist stakeholders. Residents in these areas are urged to work together to organize a stakeholder group that could help to lead efforts for planning and project funding.
- Hazard mitigation planning and projects saved the City of Fort Collins from experiencing major damages during the 2013 flood. This is a testament to the benefits of hazard mitigation. Funding needs are still delaying the implementation of many mitigation projects that will help to reduce or eliminate the risks posed by natural hazards.
- A number of Community Wildfire Protection Plans are close to ten years (10) old and should be updated to reflect changing conditions.

Larimer County was completely unprepared for a holistic Emergency Management program. We have excellent Emergency Response that has lived in the sheriff's office for the last several decades. But we had isolated Emergency Management, and we were not well prepared with the long term recovery aspect of emergency management. That is absolutely a lesson learned.

Due to the High Park Fire, we had identified Emergency Management as a need in our five-year strategic plan. The Strategic Plan goal and objectives to address Emergency Management were adopted by the County Commissioners in spring 2013, just prior to the flood in September 2013. ~Linda Hoffmann, Larimer County Manager



ECONOMIC

Economic needs accounted for 3% of the overall responses and were found in more than 5 of the 8 communities. These needs typically fell into one of three areas - repairs, income or property. Most of these responses involved individuals or businesses looking for reimbursement for funds already expended or to protect against future business losses.

Businesses were greatly impacted by the 2013 floods, particularly in mountain communities. Decreased tourism, displaced workers, and long commute times all contributed to economic impacts, particularly in the mountainous areas and in tourism-centric municipalities like Estes Park.

According to the United Way of Larimer County Small Business Recovery report, over 350 businesses in Larimer County were affected by the flood, 49 businesses received funding, and over \$1.24 million in assistance provided to Estes Park, Drake, Loveland and Glen Haven alone through non-profits.

The agricultural and ranching community was also hard hit by the 2013 flood when flood waters damaged many ranches and fields bringing significant challenges. Over \$1.396 million dollars in CDBG-DR grant funds have been awarded to 24 farmers and ranchers statewide who are working to recover their losses. Despite these efforts, the agricultural and ranching community is still struggling to get back on its feet as the state continues to work with HUD to administer CDBG-DR funds.

LARIMER COUNTY SMALL BUSINESS DEVELOPMENT CENTER (SBDC)

The Small Business Development Center (SBDC) worked to administer funds provided through the Small Business Administration (SBA). SBA loans were available immediately after the storms as FEMA moved teams into the area in impressive time. The SBDC worked seamlessly with FEMA at times processing loans in a couple of hours, and had all business applications by late fall, before the roads were even open. According to Mike O'Connell from the SBDC this could be thought of as Wave 1 of the economic recovery funds.

Wave 2 began on or about December 2013 and ran through January 2014 with a serious push from the philanthropic, non-profit groups. These groups, including the United Way, Community Foundation of Northern Colorado and Otter Box to name a few, partnered up to raise more than \$1.2 million¹³ that was available to businesses by February 2014. The SBDC was involved in providing community outreach and making sure business owners knew this assistance was available.

¹³ United Way of Larimer County, 2015



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Wave 3 began in March 2014 and ran through April 2014 with the state requesting HUD assistance. \$60 million in initial Round 1 funding was made available to disaster survivors covering a range of programs from business recovery to infrastructure. SBDC partnered up with the Estes Park Economic Development Corporation to get the word out to the business community and began assisting business owners in gathering the information needed for the application process.

Wave 3 was probably the most challenging to administer. From a processing standpoint, the SBDC worked to gather information from business owners and submit applications. The applications were then sent to an organization in Greeley called Upstate Colorado that conducted an initial analysis, before sending it to the Office of Economic Development and International Trade (OEDIT) for the state's final approval.

One challenge was the HUD Low to Moderate Income (LMI) requirement, which was very unusual for businesses. Applicants had difficulty finding ways to qualify. Another challenge was the speed in which the funds were disbursed. Although the application process started in March, funds were not disbursed until November causing a lot of frustration in the business community.

LARIMER WORKFORCE CENTER

Prior to the September 2013 floods, the Larimer County Workforce Center was focused on providing assistance to job seekers, not business owners. One of the silver linings to the disaster was that the Workforce Center had a much stronger presence and connection to the business community and job seekers as a result, especially in Estes Park. Working with the SBDC, and building upon each other's strengths, the Workforce Center and SBDC have developed a memorandum of understanding (MOU) that allows them to provide the business community with a broader array of services without overlapping functions. The SBDC focuses more on assisting businesses with financial issues, while the Workforce Center focuses on other business support functions like posting jobs and HR/Management training.



Figure 17: Larimer County Workforce Center Conservation Corps



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

From a recovery perspective, the majority of the work the Workforce Center provided revolved around a federal grant that allowed them to supply a workforce to work on public lands to assist in debris cleanup.

SMALL BUSINESS RECOVERY FUND (SBRF)

Following the floods, a group of partners led by the United Way of Larimer County established the Small Business Recovery Fund (SBRF) initiative with the goal of supporting communities through the support of their small businesses. The United Way, Blue Ocean Enterprises, the Richardson Foundation, and the Bohemian Foundation – along with corporate partners like OtterBox, First National Bank, SupportEstesPark.com, Estes Valley Partners for Commerce, Woodward Inc., and Kaiser Permanente – provided more than \$1.24 million in grants to 49 different small businesses in Estes Park, Drake, Loveland, and Glen Haven.

Requirements for consideration included:

- being headquartered and/or operating within the county prior to September 12, 2013
- having greater than two and less than 100 employees
- operating as a viable business for at least six months prior to September 12, 2013
- being in good standing with state and federal tax liabilities
- demonstrating need in order to return to viability

Following review of the applications by an independent volunteer panel of local business leaders, the SBRF issued three official rounds of lump-sum recoverable grants, and one final round, ranging from \$5,000 to \$50,000 per disbursement.

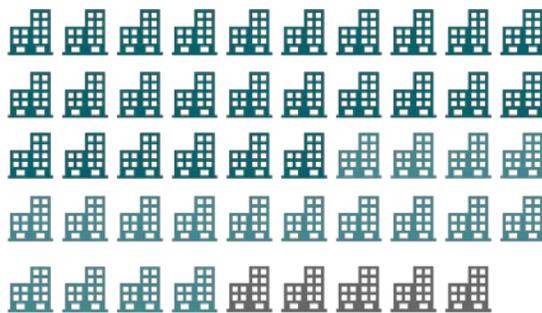


UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

PROGRAM RESULTS

The SBRF initiative proved vital for businesses within Larimer County. Of the businesses that received grants, 90 percent of them were still operational two years after the floods. Many businesses that received funding cited the program as the only reason they were still operational. This was the first time this approach has been used in the state of Colorado but can be used as a model for future disasters.

FUNDING



49 businesses received funding

44 businesses are still open

5 businesses closed

SURVEY FINDING

Based 31 businesses that completed the survey

329 jobs were retained



71 jobs were retained



 = 10 people

Figure 18: Graphic from Small Business Recovery Report as presented by the United Way of Larimer County

UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

ECONOMIC IMPACT IN ESTES PARK



Figure 18: Downtown Estes Park during September 2013 floods

Estes Park experienced the most economic impact following the 2013 floods for two main reasons. First, road destruction served to isolate the community, and second, the government shutdown of the National Park System in the days that followed the floods further impacted tourism in and around Rocky Mountain National Park (RMNP).

The flood occurred during peak visitation periods at RMNP. According to the National Park Service, September is one of the busiest months in the park. In fact, in 2012, five of the top 10 busiest days were in the month of September, and this level of visitation is consistent from year to year.

In a town where 49 percent of jobs are in the tourism and hospitality industry, which is by far the largest employment sector, these two events had major impacts that rippled across other employment sectors and revenue streams in Estes Park. For example, as families moved out in the coming months, the school district's ability to receive state funding was impacted. In healthcare, hospitals suffered from a lack of patients.

Overall, initial reports from the Regional Economics Institute's Center for Disaster and Risk Analysis at Colorado State University showed that a 30 percent reduction in out-of-state tourism expenditures in 2014 would result in a loss of \$31.4 million, 335 lost jobs (mostly in Estes Park), \$1.8 million in state tax revenue, and a decrease in local tax revenues of \$1.3 million.

Resulting Considerations



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

By many accounts, the post-flood impact and government shutdown served to inspire the Town of Estes Park to reevaluate its economic situation and consider necessary changes. The most important result was the need to diversify the local economy.

As such, the U.S. Department of Commerce's Economic Development Association (EDA) granted money to the Town of Estes Park to boost post-flood marketing efforts and to diversify its job base. The Town received a total of \$300,000 to assist with these changes. Economic diversification efforts are taking place to attract industries and organizations like education, call centers, environmental-oriented companies, and maybe even publishing companies. In addition, new development in Estes Park will take diversification into consideration.

ECONOMIC IMPACT TO AGRICULTURAL AND RANCHING COMMUNITIES

There are currently two programs being offered through the CBDG-DR program to address agricultural and ranching considerations:

Agriculture Business Grant Program

This grant program is intended to assist agriculture related businesses. Based on documented damages, farmers can receive grant assistance to help them to stay in business and retain employment in the impacted areas.

Privately-Owned and Non-Profit Ditch Company Grants

The program provides assistance to private and non-profit ditch utilities for urgent repair and implementation of resilience measures. These utilities are vital to the economic recovery effort of agricultural businesses because of the dependence on ditch-delivered water in the semi-arid farming environment of Colorado, the economic impacts from damaged ditches are passed down to the low- and moderate-income farming demographic.

Although these programs have already paid out more than \$1.396 million in assistance, many farmers and ranchers are still finding it difficult to qualify as the SBA definition of a small business. As a result, HUD has just removed this requirement and is transitioning instead to eligibility requirements for programs under the U.S. Department of Agriculture, enabling the state to provide additional assistance to farmers and ranchers and also provide consistent eligibility criteria across federal programs.

“Prior to this clarification, we found ourselves unable to assist some Colorado farmers and ranchers due to restrictive language in the definitions. This change will enable us to provide assistance to a greater number of rural Coloradans.” ~Molly Urbina, State of Colorado Chief Recovery Officer

Agriculture is the second largest economic contributor in Colorado, after tourism; agricultural losses from the 2013 floods were \$55 million.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

A recent unmet needs survey conducted by Colorado State University, titled “2013 NOCO Flood Unmet Needs Survey: Landowners, Farmers and Ranchers”, documents the unmet needs still being experienced by the agricultural and ranching community. Over 54 responses were received from Feb 20, 2014 thru April 2, 2014, for this survey.

The survey found:

- Of the total 3,879.5 acres affected in the region on farms, ranches and non-commercial agricultural land, 66% are in commercial agriculture (intend to sell more than \$1000 annually in agricultural or horticultural products).
- 79% of respondents in Boulder, Larimer, Weld and Morgan counties think ditch assessments will go up \$100 - \$6000 per year.
- Debris removal, soil work and fencing remain issues for both commercial and non-commercial respondents. The estimated costs of removing/repairing remaining flood recovery issues are \$2,164,455 for commercial agriculture and \$2,297,000 for non-commercial agriculture (landowners).
- Regarding headgates and/or diversion boxes needing repair, 8 remain for commercial agriculture at an estimated \$301,000 (this amount is included in the \$2.16M) and 5 remain in non-commercial agriculture at an unestimated cost.
- Incurred expenses for landowners, farmers and ranchers are dominated by debris removal followed by fencing and soil work at \$732,300 for commercial agriculture and \$930,000 for non-commercial agriculture.

ECONOMIC RESILIENCY

As part of the recovery efforts, the Economic Recovery Support Function (RSF) of the National Disaster Recovery Framework (NDRF) was activated. Through the examination of economic impact survey findings and input received through the economic recovery roundtable meetings held in Colorado, several important economic recovery issues emerged. Among them was a desire to learn from the disaster and integrate resilience into the economic sector. To that end, EDA conducted a study to establish a baseline of current economic resilience planning efforts in the area, identify trends and current resiliency practices, and develop recommendations to assist communities, state, and regional economic development organizations, and federal agencies in stimulating resiliency planning. Fifty-two unique metrics are used to evaluate each community's economic resilience.¹⁴

¹⁴ Economic Development Administration, October 2014



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Since the county did not have an economic development plan or organizing document for the economy, the tool could not be fully utilized. The county has since elected to retain the services of a private consultant to develop a Long Term Economic Strategic Plan that will assist them in building a more resilient economy. The initial financial study was completed by the end of 2015, with the next section expected to be complete the first quarter of 2016.

LESSONS LEARNED AND RECOMMENDATIONS

- The economic impact to Larimer County following the floods and the untimely government shutdown had major impacts, particularly to Estes Park, because the local economy was predominantly focused on the tourism industry. This lack of diversification must be remedied with future development.
- Despite the impact, many businesses are still in operation because of programs like the Small Business Recovery Fund. These important funds supported small businesses when they needed them the most, with 90 percent of businesses that received funds still in operation today. Despite the floods, sales tax revenues were up through the first half of 2014 in Estes Park when compared to the previous year, in part because of recovery efforts like the SBRF. These initiatives should be replicated in future emergencies and disasters.
- Another important consideration was federal flood insurance. Many businesses that sustained damages did not have federal flood coverage, and some of them turned to the U.S. Small Business Association (SBA) for low interest loans. According to records, the SBA lent 2,519 loans to Colorado flood victims totaling \$110 million dollars.
- Moving forward, it's important to lessen the economic impact caused by natural and human-caused disasters with the following steps:
 - Diversify the economy so it is not so dependent on travel and tourism.
 - Educate and encourage businesses to consider necessary insurance.
 - Facilitate private initiatives to help fund small businesses.
 - Establish effective channels to communicate these important initiatives.
- Continue working with the Small Business Development Center (SBDC) to provide technical and financial assistance to businesses post-disaster and also to administer the Community Development Block Grant Disaster Recovery (CDBG-DR) funds for economic development and business needs.
- The county should continue their efforts to develop a long-term economic strategic plan.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Additionally, the following recommendations came from the CSU Survey¹⁵ for the farming and ranching community and should be considered:

- Since the range of remaining expenses and incurred expenses started below \$30,000, lower the CDBG minimum award to \$2,500.
- Consider funding structures to provide for debris removal, soil work and fencing repair.
- Extensive outreach on CDBG-DR funds is needed (public meetings, assistance with application process, and timely follow up from granting agency on status).

¹⁵ Colorado State University, 2014



SAFETY

Safety concerns accounted for 6% of the overall responses recorded but were limited to two communities: Blue Mountain/Spring Gulch and Red Feather/Crystal Lakes. Many of these responses overlapped both Private Property concerns (second egresses) and Communication (warning systems), but others dealt with public health and safety concerns such as ambulatory care, vulnerable populations and access to medical clinics.

SECOND EGRESS/SINGLE POINT OF ACCESS

A major problem for the county is that there are many areas that are only served by a single point of access, and when that single point of access is compromised, people can become isolated. By far the most cited safety concern is the need to identify and improve secondary access points for isolated communities. Sometimes communities can identify their own secondary access. Other times, a secondary access point exists, but requires improvements to be useable, or requires identification and coordination with the land owner (forest service or property owner). Evacuation planning at a community level is critical. This should include coordination with emergency service agencies.

“Lack of second access is a problem in some areas. We have heard repeatedly from residents in Crystal Lakes that they need a second point of access (73C). We have put in for funding from several sources but have not gotten any. Storm Mountain had to evacuate for the Bobcat Fire, and they don’t have a second evacuation route either.”

*~Rusty McDaniel & Mark Peterson,
Larimer County Engineering*

Areas that have been identified at potential communities at risk include:

- Big Elk Meadows
- Buckhorn
- Blue Mountain
- Pinewood Springs
- Glen Haven (Retreat)

AMBULATORY CARE AND MEDICAL CLINICS

There were two community meetings that identified ambulatory care and lack of medical clinics as an unmet need: Blue Mountain/Spring Gulch and Red Feather/Crystal Lakes.

The two main issues cited were:

- Ability to get access to residences and buildings during major storms or snow events.
- No medical clinic exists in these remote areas.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Getting all-terrain or snow vehicles for areas with difficult terrain and access issues is a possible solution. Grant programs to assist in these efforts may include:

- Regional Emergency and Trauma Advisory Council (RETAC) Grants – Announced annually for Emergency Medical Services agencies and often fund vehicles and equipment. There is typically a 50% match involved but it is possible to get the match lowered or eliminated based upon need. Contact information can be found in the following document:
https://www.colorado.gov/pacific/sites/default/files/EMTS_RETAC-Contact-List-Brochure_8.11.15.pdf
- Colorado Foundational Grants – Provides grants to Colorado non-profits and often assists local fire agencies with projects. A county grants administrator has been hired since the 2013 flood to seek grant opportunities for the county and cooperating agencies.

There is also a lack of medical clinics in these areas because of their remote locations and small populations which make it difficult for medical clinics to succeed financially. One option is to identify areas that could service multiple isolated communities to save on drive time, as is currently being explored in the Glacier View area which would include Red Feather Lakes. Another possible solution raised at a Resiliency Charrette for the Larimer Resiliency Framework, was the idea of a Mobile Health Clinic. This idea received a lot of excitement and will be written into the Larimer Resiliency Strategy as a possible future project. A third alternative might be allowing EMTs and paramedics to provide basic healthcare maintenance and welfare checks as needed for the community. This is being discussed at the state and national level now as an addition to core EMS functions.

Communities can also look into The Caring for Colorado Foundation which is an organization that provides assistance regarding rural health care. A few of their eligible criteria include: access to healthcare, underserved rural populations, removing (post-disaster) infrastructure (transport and response) barriers to healthcare with an emphasis on rural communities. The website for this foundation is at: <http://www.caringforcolorado.org/funding-priorities/community-health>

VULNERABLE POPULATIONS

The county has created a web page with resources for people with access and/or functional needs and people with disabilities. It provides resources from a variety of services and can be found at: www.larimer.org/wcen. This site is also tied to the United Way 2-1-1 database for a wide range of possible resources.

LESSONS LEARNED AND RECOMMENDATIONS

- Investigating the use of mobile health clinics and re-establishing another medical care facility in remote areas will benefit many communities.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Continue working with local communities to identify secondary egress routes and work with private land owners to secure access to private roads during emergencies.
- Apply for grants to assist in providing rural health care assistance.
- Evacuation planning at a community level is critical. This should involve coordination with emergency service agencies.



COMMUNITY FRAGILITY DATA COLLECTION AND ANALYSIS

COMMUNITY SURVEY DESCRIPTION

The public community survey consisted of multiple open-ended questions and a series of 28 statements that respondents were asked to select one response from a list of six options: Strongly Disagree, Disagree, Neither Disagree nor Agree, Agree, Strongly Agree, or I don't know. The full public survey is included in Appendix 3. The public community survey was distributed in paper copy at locations such as local libraries and at community meetings and a link to the online survey was widely distributed via listserves, community emails, via Twitter and Facebook, and on the county webpage. Responses to the survey were collected for three weeks, after which the data analysis process began.

COMMUNITY SURVEY RESULTS

Over the three weeks of data collection, 474 survey responses were received via online and paper surveys. Of all collected responses, 13 were not used due to respondents' communities of residence being located outside of Larimer County. The remaining 461 surveys were analyzed by community of residence, as displayed below.

COMMUNITY	NO. OF RESPONSES
Blue Mountain, Spring Gulch, Lyons	16
Loveland	49
Fort Collins, Timnath, Windsor	159
Buckeye, Wellington, Waverly	16
LaPorte, Bellvue, Livermore	21
Berthoud	19
Red Feather, Crystal Lakes	48
Glen Haven, Drake	57
Estes Park, Estes Valley	30
Pinewood Springs	15
Larimer County	31



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Within each community, survey responses were analyzed based on which component of the joint Community Fragility Framework the question related to, Connectedness, Stability, or Sustainability. Question responses were ranked using a Likert scale (1-5) with 1 correlating to “Strongly Disagree” and 5 correlating to “Strongly Agree” with the survey’s statements. After all responses were divided by category, the mean and standard deviation of all responses were calculated. The following table displays the results by category and community.

COMMUNITY	CONNECTEDNESS		STABILITY		SUSTAINABILITY	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Blue Mountain, Spring Gulch, Lyons	3.31	0.84	2.81	0.63	2.7	0.53
Loveland	3.56	0.29	3.43	0.29	3.46	0.31
Fort Collins, Windsor, Timnath	3.5	0.31	3.27	0.24	3.35	0.27
Buckeye, Wellington, Waverly	3.38	0.48	3.19	0.38	3.05	0.34
LaPorte, Bellvue, Livermore	3.12	0.64	2.92	0.31	2.69	0.4
Berthoud	2.96	0.61	2.69	0.23	2.54	0.26
Red Feather, Crystal Lakes	3.37	0.62	3.03	0.54	2.91	0.58
Glen Haven, Drake	3.64	0.61	3.43	0.44	3.33	0.58
Estes Park, Estes Valley	3.57	0.43	3.49	0.38	3.39	0.37
Pinewood Springs	3.4	0.53	3.22	0.49	3.25	0.59
Larimer County	3.01	0.31	2.92	0.22	2.98	0.28

All results with a mean above 3.00 indicate that the respondents agreed more than they disagreed with statements, while a mean below 3.00 indicate that they disagreed more than they agreed. Communities with higher levels of agreement indicate lower levels of fragility, while low levels of agreement indicate a more fragile community.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

AGENCY SURVEY DESCRIPTION

The agency survey consisted of a series of 22 open-ended qualitative questions addressing 5 different topics: Organization and Leadership, Interjurisdictional Relationships, Emergency Planning, Supply Chain Management and Lifelines, and Complexity. The agency survey was distributed online to individuals working in county agencies, non-governmental organizations, municipal governments, fire departments, and other agencies and organizations working in Larimer County. Surveys were sent out to individuals and leaders from 10 separate communities to assess Community Fragility factors from a leadership perspective.

AGENCY SURVEY RESULTS

A total of 28 agency survey responses were collected from a wide variety of agencies and organizations. Survey respondents consisted of the following:

SURVEY RESPONSES	ORGANIZATION	SUB-ORGANIZATION
1	Colorado State University	
3	Town of Estes Park	Recreation and Park District Estes Park Medical Center
5	Fire Districts / Departments	Crystal Lakes Fire Department Big Elk Volunteer Fire Department Loveland Fire Rescue Authority Pinewood Springs Fire Protection District
6	City of Fort Collins	Office of Emergency Management Utilities Stormwater
1	Town of Johnstown	
1	Larimer County	Office of Emergency Management
4	City of Loveland	Community Partnership
1	Northern CO Water Conservancy District	
1	Upper Thompson Sanitation District	
4	Watershed Coalitions	Estes Valley Watershed Coalition Big Thompson River Restoration Coalition Little Thompson Watershed Restoration Coalition
1	Town of Wellington	

Answers to the survey questions provided valuable information about how agencies and organizations in the county are organized, what their leadership structure is like, how interjurisdictional relationships are maintained, their level of involvement with emergency planning, how they manage supply chains and lifelines (such as water and power), and how flexible and adaptable the agencies and organizations are.



SOCIAL VULNERABILITY ANALYSIS

While addressing unmet needs and Community Fragility, a need exists to analyze the social vulnerability of each community. Social vulnerability asks the question of which social groups across the county are more or less likely to have access to, and control over, the key assets and resources that help people “anticipate, cope with, resist, and recover from the impact of a natural hazard”.¹⁶ This highlights three key factors:

- People as members of groups with a shared social status
- Assets and resources that are available to the group
- The possibility of increasing these assets before an emergency

This study utilized publicly available data from the 2010 Census and the 2006-2010 American Community Survey to assess the social vulnerability of the focus study communities in Larimer County. This Unmet Needs and Community Fragility Study coordinated with the Larimer Multi-Jurisdictional Hazard Mitigation Plan Update, which conducted a risk and vulnerability assessment including online maps available at <http://www.larimerhmp2016.com/home/risk-assessment>. The census data used in this assessment contained the same information needed for the social vulnerability assessment in the Unmet Needs and Community Fragility Study.

Analysis of this data within the Larimer County focus communities provides information on the social vulnerability of each community as measured by the mean of the census tract scores. In the table on the next page, positive mean social vulnerability scores have a medium to high ranking, indicating communities that have less social vulnerability. Negative mean scores indicate higher social vulnerability within the community as measured by the above listed indicators.

¹⁶ William Waugh and Kathleen Tierney



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

COMMUNITY	VULNERABILITY RANK	MEAN SCORE
Loveland, Johnstown, Sylvan Dale	Medium to High	0.19
Fort Collins, Timnath, Windsor	Medium to High	1.55
Buckeye, Wellington, Waverly	Medium-Low, Low	-7.43
LaPorte, Bellvue, Livermore	Medium-Low, Low	-7.9
Berthoud	Medium-Low	-4.63
Red Feather, Crystal Lakes	Medium-Low	-4.88
Glen Haven, Drake	Low (Bottom 20%)	-12.39
Estes Park, Estes Valley	Medium	-3.98
Pinewood Springs	Low (Bottom 20%)	-12.39
Blue Mountain, Spring Gulch, Lyons	Low (Bottom 20%)	-12.39

As can be seen from the graph above, rural areas with greater isolation have higher social vulnerability, where dense urban areas have lower social vulnerability. This data makes sense since the majority of services exist in urban areas. It is also indicative of the challenge of getting resources into each of these rural areas before, during and after a disaster.

Social vulnerability is a key piece of Community Fragility and is outlined in more detail in sections detailing resource management, egress concerns, and community cohesiveness.

FRAGILITY DATA ANALYSIS CONCLUSION

The next section will begin the community analysis portion of this study, taking all of the data available on unmet needs and Community Fragility and analyzing it to determine specific community needs.



COMMUNITY ANALYSIS

Ten different groups of communities were studied in this report. These communities were grouped by geographic location, and then further separated out by available unmet needs data and public surveys. This Community Analysis is broken out into two sections. The first involves communities with both fragility surveys and an unmet needs analysis. In the second, only public surveys are utilized.

SECTION 1 - COMMUNITIES WITH BOTH FRAGILITY SURVEY AND UNMET NEEDS ANALYSIS

LAPORTE, BELLVUE, LIVERMORE, POUUDRE RIVER

The unincorporated communities of LaPorte, Bellvue, and Livermore are located along the foothills in the central to northern central portions of Larimer County, northwest of the City of Fort Collins.

LaPorte is situated just below the foothills, along the Cache La Poudre River and just off of U.S. Route 287. The 2014 population estimate for LaPorte was 2,498. Bellvue is located upstream of LaPorte in an area known as Pleasant Valley at the mouth of Rist Canyon. Livermore is located further north on U.S. 287, just below the foothills. Livermore is not located along the Poudre or any other major watercourses. Population estimates for Bellvue and Livermore are not available.

“We decided to be proactive in Rist Canyon following the 2012 fire. Culvert upgrades that we performed quickly after the High Park fire were vital to avoiding major losses and damages during the 2013 flood event.”
~ Larimer County Engineering Department

These communities were impacted by the September 2013 flooding and also experienced large consequences from the 2012 High Park & Hewlett Gulch wildfires. An Unmet Needs community meeting was held for these areas in July of 2015. Twenty-one (21) residents also participated in the Fragility Survey. The following sections present the results of those community interactions.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

In analysing the results of the Fragility survey, the communities of LaPorte, Bellvue, and Livermore had a high amount of Connectedness. Community Stability however showed to be relatively low across participants of this study. Sustainability, the third Fragility element, tallied the 2nd lowest score across all other study participants.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

KEY AREAS OF FRAGILITY

LaPorte, Bellvue, Livermore, Poudre River						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
21	3.12	0.64	2.92	0.31	2.69	0.4

The following survey responses received high scores across the communities. A high score means that survey participants agreed with the statement. It should be noted however that the deviation of responses was rather varied which means there were some differing opinions across respondents. Both of these questions related to community Connectedness.

- People in my community help each other.
- People in my community are committed to the well-being of the community.

Survey results that received low scores across the survey respondents are listed below. A low score means that the survey participants disagreed with these statements. In these cases, the deviation of responses was also smaller, meaning there was more agreement with these answers across the communities. These survey questions below impacted the scoring of all three Fragility elements.

“During the summers after the High Park fire, every time we had a summer thunderstorm, major access routes would be closed due to safety concerns and flooding.”
 ~CPRW

- People in my community are able to get the services they need.
- My community supports programs for children and families.
- My community has the resources it needs to take care of community problems (resources can include: money, information, technology, tools, and services).
- People in my community know where to go to get things done.
- My community has effective leaders.
- People in my community communicate with leaders who can help improve the community.
- My community has services and programs to help people after a disaster.
- My community has priorities and sets goals for the future.
- People in my community trust county leaders.
- People in my community trust community leaders.
- People in my community trust public officials.
- My community looks at its successes and failures so it can learn from the past.
- I feel that I am represented in local politics.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

These communities should continue to work toward reducing overall Fragility by focusing at all three components: Connectedness, Stability, and Sustainability. They should also continue to foster their beneficial Connectedness attributes.

UNMET NEEDS RESULTS

Overall, only six percent (6%) of the unmet needs identified across the county came from these communities. This equates to 37 categorized needs. This was the second lowest tally for any study area, which could point to the fact that these communities were not as heavily impacted by recent disaster events as other areas of the county. It could also speak to the fact that these communities have been able to find the resources and have the resiliency to recover more quickly from past disaster events.

Poudre Coalition		
Unmet Needs Category	Responses	
	Percentage	No.
PRIVATE PROPERTY	5.4%	2
HOUSING	0.0%	0
DEBRIS	2.7%	1
COMMUNICATION	37.8%	14
UTILITIES	0.0%	0
PLANS	45.9%	17
ECONOMIC	5.4%	2
SAFETY	0.0%	0
OTHER	2.7%	1
TOTAL	100.0%	37

Most Responses
 2nd Most Responses
 3rd Most Responses

The Unmet Needs summary table above shows that these communities’ largest needs fell in the category of Planning, which was the focus of forty-five point nine percent (45.9%) of these communities’ comments. The category of Communication came in 2nd in terms of the number of identified needs, encompassing thirty-seven point eight percent (37.8%) of comments. There was no clear final top-three need category. All other identified community needs were spread out amongst the following categories: Debris, Economic, and Other. The percentages of needs in each of these categories ranged from two to five percent (2-5%).

Below are some of the larger needs to highlight as part of this report:

- Private Property



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Private roads and bridges
- Communication
 - Disaster assistance information and education
 - Hazard mitigation education
 - Stream gauges
- Planning
 - Watershed master planning
 - Wildfire mitigation
- Economic
 - Small business and agriculture assistance

KEY FRAGILITY AND UNMET NEEDS FACTORS

Overall the communities of Laporte, Bellvue, and Livermore rated high in Connectedness, and low in Sustainability and Stability. A review of their unmet needs supports the results of the Fragility study. These needs are focused in two main categories, Communications and Planning, which would allow for focused actions that can help to improve Fragility and reduce remaining needs.

Key Factors in Community Fragility

The three lowest scores for the public survey on Community Fragility include:

- My community has the resources it needs to take care of community problems (2.05).
- People in my community trust public officials (2.29).
- My community has priorities and sets goals for the future (2.48).

Key Factors in Unmet Needs

- Planning
 - Watershed and flood management planning
 - Weed control
- Communication
 - Education on funding, stream systems, fire and flood mitigation
 - Post event communication

“A lot of construction has occurred in the past 40 years and some of the codes were not necessarily enforced because of capacity issues and time lapse. Following the 2013 flood, some residents found out their homes were in the floodplain and they couldn’t get loans or grant funding to rebuild.”

~Eric Fried, Larimer County Chief Building Official



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

RECOMMENDATIONS

Resulting recommended actions identified as part of this UNCF Study are as follows:

- Although seemingly well connected as a community, community planning efforts would benefit these communities and would allow them to jointly plan for their own futures and clearly define their preferred future selves.
- There appears to be a lack of trust and understanding in local politics. These communities would benefit from programs aimed at building public trust, such as education and outreach efforts.
- These communities indicate they are not adequately represented or connected to the county and thus feel isolated. These communities should consider organizing some type of neighborhood organization or entity to increase their collective voices.
- Continue coordination with the Coalition for the Poudre River Watershed and collective planning efforts. The Coalition can serve a vital role as a voice for community residents.
- Improved stream monitoring would be beneficial for a number of reasons. Install stream gauges to improve flood monitoring and notifications.
- For wild fire mitigation – analyze the BAER Report (<http://www.larimer.org/highparkfire/bearreport.pdf>); it is estimated that there are approximately \$24M in unmet needs for stabilization treatments to address impacts of the High Park Fire. Roughly \$17M would be for public roads and private lands. Approximately \$9.9M out of the \$17M is eligible for 75% federal funding match through EWP but federal funding currently available for Colorado falls short of this amount. No source for these local funds has been identified as of the time of this report for some of the projects listed below:
 - Aerial mulching and seeding.
 - Include barriers and other measures to reduce damage from sediment and debris.
 - Clearing channels and drainage ways.
 - Warning signs.
 - Increasing the size of culverts on county roads and providing some protection from erosion to reduce the risk of flood flows overtopping and washing out portions of roads.



LOVELAND, JOHNSTOWN, CAMPION, SYLVAN DALE RANCH

The City of Loveland, Town of Johnstown, unincorporated community of Campion, and the Sylvan Dale Ranch are all located in the southern portion of Larimer County.

The City of Loveland is the 15th most populated city in the state, with an estimated 72,651 citizens in 2014. This city is growing as can be seen by its 2010 Census population count of 50,608. The median age of its residents is 44.1 years. The city boundary includes portions of the Interstate 25 corridor and stretches west from there, with the Big Thompson River winding its way through portions of the city.

The Town of Johnstown has an estimated 13,306 residents as of 2014, with a median age of 31.5 years. It is located southeast of Loveland and is a bi-county jurisdiction located in both Larimer and Weld Counties.

Campion is located south of Loveland and in 2010 had a population of 1,832 people. Sylvan Dale Ranch is a functioning dude ranch situated along the Big Thompson River, west of Loveland.

These communities were impacted by the September 2013 flooding. In response to those events, an Unmet Needs community meeting was held in Loveland on August 6, 2015. Forty-nine (49) residents also participated in the Fragility survey. The following sections present the results of those community interactions.

“Loveland funds its own small business development center. The floods forced us to quickly migrate to a more healthy balance of support to both job seekers and businesses”.

~Dena Jardine, Associate Director at Larimer County Workforce Center

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

In analysing the results of the Fragility survey, the communities of Loveland, Johnstown, Campion, and Sylvan Dale Ranch illustrated they have the highest amount of Community Sustainability across all communities in the study. They also ranked in the top 3 highest rankings for Community Stability. In regards to the third Fragility element, Connectedness, these communities scored higher than average.

KEY AREAS OF FRAGILITY

Loveland						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
49	3.56	0.29	3.43	0.29	3.46	0.31



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

The results of this Fragility study clearly indicate that communities of Loveland, Johnstown, Campion, and Sylvan Dale Ranch have a strong and healthy community which will benefit their citizens when the next disaster occurs. This underlying theme is consistent with the information that came from interviews conducted across county divisions, departments, and other related organizations.

The following survey responses received high scores across the communities and responses were found to be rather consistent between survey respondents. A high score equates to agreement with these particular statements. These questions related to all three Community Fragility components.

- People in my community help each other.
- My community can provide emergency services during a disaster.

These communities were the only ones in this study that did not receive any low scores across any of the survey questions. A low score indicated disagreement with the survey statements.

Of the three major Fragility components, there is not one that stands out as needing specific focus. These communities should continue to work towards reducing fragility by continuing down the path that they are on and focusing on all three components going forward.

UNMET NEEDS RESULTS

Overall, twelve percent (12%) of the unmet needs identified across the county came from these communities. This equates to 72 categorized needs. The Unmet Needs summary table presented shows that these communities' largest needs fell in the category of Planning, which was the focus of thirty-nine percent (55.6%) of these communities' comments. The category of Private Property came in at 2nd in terms of the number of identified needs, encompassing eighteen percent (29.6%) of comments. Debris needs round out the final top-three needs categories, covering twelve percent (11.1%) of the community needs. All other identified community needs were spread out amongst all but two of the remaining need type categories, which included: Housing, Debris, Recreation, Economic, and Other. The percentages of needs in each of these categories ranged from one to eight percent (1-8%).



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Unmet Needs Category	Loveland		Sylvan Dale Ranch	
	Responses		Responses	
	Percentage	No	Percentage	No
PRIVATE PROPERTY	18.1%	13	29.6%	8
HOUSING	5.6%	4	0.0%	0
DEBRIS	6.9%	5	11.1%	3
COMMUNICATION	12.5%	9	0.0%	0
UTILITIES	0.0%	0	3.7%	1
PLANS	38.9%	28	55.6%	15
ECONOMIC	8.3%	6	0.0%	0
SAFETY	0.0%	0	0.0%	0
OTHER	9.7%	7	0.0%	0
TOTAL	100.0%	72	100.0%	27

Most Responses
 2nd Most Responses
 3rd Most Responses

Below are some of the larger needs to highlight as part of this report, captured during the community meetings held on August 6th, 2015:

- Private Property
 - Private road and bridge repair
 - Property access
 - Erosion / landscaping
 - Irrigation ditches
- Housing
 - Mitigation and regulatory education
- Debris
 - Removal
- Communication
 - Flood education and awareness
- Planning
 - Watershed master planning
 - Wildfire mitigation
- Economic
 - Assistance for future crop losses

KEY FRAGILITY AND UNMET NEEDS FACTORS

The communities of Loveland, Johnstown, Campion, and Sylvan Dale Ranch appear to have much less Fragility than most others included in this study. However, all communities can improve upon certain aspects of their collective selves to continue towards a path of resiliency. It should also be noted that communities can become



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

more fragile surprisingly quickly, based upon hazard events and unexpected or unforeseen changes to the community itself.

Key Factors in Community Fragility

- There were no scores recorded under 3.0.
- The three lowest scores for the public survey on Community Fragility include:
 - People in my community trust public officials (3.02)
 - I know who my county leader(s) is/are (3.04)
 - People in my community trust county leaders (3.08)

Key Factors in Unmet Needs

- Planning
 - Watershed and flood management planning
 - Recreation – fish habitat and stocking
- Private Property
 - Remove Hummingbird Lane Houses
 - Repairing water lines, cisterns and irrigation lines
- Debris
 - Debris removal from grounds and river channel

RECOMMENDATIONS

The recommended actions identified by this UNCF Study are as follows:

- Community residents need to understand the risks that they face by choosing to reside in and around floodplains. Private property will continue to be at risk and residents should understand that replacement and repair of these properties is the responsibility of themselves.
- Continue coordination with the Big Thompson Watershed Coalition. The Coalition can serve a vital role as a voice for community residents.
- Identify community projects that residents can participate in year-round, to help foster the sense of community (e.g., river restoration).
- Continued participation with the Larimer Multi-Jurisdictional Hazard Mitigation Plan and continued coordination with the City of Loveland and Larimer County to implement mitigation actions from that plan.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

BERTHOUD

The Town of Berthoud, Colorado is centrally located in the northern Front Range Urban Corridor four miles west of I-25 on Highway 56. According to the 2010 United States Census, the population of Berthoud was 5,105. It is a small town surrounded largely by farmland, situated north of the Little Thompson River, approximately halfway between the cities of Fort Collins and Denver.

Situated along the Little Thompson River, the Town of Berthoud did sustain damage during the September 2013 floods. An Unmet Needs community meeting was held in the area on June 3, 2015 that produced 100 comments (16.8%) and concerns. 19 residents of the area also participated in the public Fragility Study that was conducted in September 2015.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

The results of this Community Fragility Study indicate that the Town of Berthoud scored the lowest of all communities studied in every area of Fragility: Connectedness (2.96), Stability (2.69) and Sustainability (2.54).

KEY AREAS OF FRAGILITY

Berthoud						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
19	2.96	0.61	2.69	0.23	2.54	0.26

Respondents from Berthoud received high scores for the following survey statement, indicating that they agreed or strongly agreed with the statement:

- People in my community help each other.

Survey responses that received low scores are listed below, but the deviation within responses to these statements was significantly greater than the high scoring statements listed previously. This indicates disagreement among residents about the answers to the questions.

- My community has the resources it needs to take care of community problems.
- My community has effective leaders.
- People in my community are able to get the services they need.
- People in my community know where to go to get things done.
- People in my community communicate with leaders who can help improve the community.
- My community looks at its successes and failures so it can learn from the past.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- My community has priorities and sets goals for the future.
- My community tries to prevent disasters.
- My community actively prepares for future disasters.
- My community can provide emergency services during a disaster.
- My community has services and programs to help people after a disaster.
- My community keeps people informed about issues that are relevant to them.
- If a disaster occurs, my community provides information about what to do.
- People in my community trust public officials.
- People in my community trust community leaders.
- People in my community trust county leaders.
- I feel that I am represented in local politics.
- I know who my community leader(s) is/are.
- I know who my county leader(s) is/are.

Given the results of this survey, it is recommended that this community focus on trying to improve all 3 fragility factors.

UNMET NEEDS RESULTS

During the Unmet Needs meeting held in Berthoud on June 3, 2015, a total of 100 comments and issues were recorded, indicating that the community was interested in contributing to the Unmet Needs meeting and engaging in the information exchange. It may also indicate the level of damages and impacts sustained by these communities during the 2013 flood.

Berthoud		
Unmet Needs Category	Responses	
	Percentage	No.
PRIVATE PROPERTY	36.0%	36
HOUSING	5.0%	5
DEBRIS	23.0%	23
COMMUNICATION	3.0%	3
UTILITIES	1.0%	1
PLANS	27.0%	27
ECONOMIC	3.0%	3
SAFETY	0.0%	0
OTHER	2.0%	2
TOTAL	100.0%	100

Most Responses
 2nd Most Responses
 3rd Most Responses



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

The Unmet Needs summary table illustrated that these communities' greatest unmet needs are in the category of Private Property (36.0%), followed by Planning (27.0%), and issues related to Debris (23.0%). The remaining comments related to Housing (5.0%), Communication (3.0%), Utilities (1.0%), Economic (3.0%) and Other (2.0%).

Some of the greatest needs that received the most comments during the meeting are listed below:

- Private Property
 - "Green Bridge" crossing
 - Private roads and crossings
 - Financial assistance for irrigation lines, private driveways, drain repairs, fences and corrals, pressure tanks
- Plans
 - Watershed and flood management planning
 - Weed and pest control
- Debris
 - Need for heavy equipment and dumpsters for debris clean up
 - Debris clean up along the Little Thompson
 - Silt and tree removal

KEY FRAGILITY AND UNMET NEEDS FACTORS

The Town of Berthoud scored low in all areas of Fragility demonstrating a strong need for community engagement in order to reduce Fragility. The following recommendations may be considered as steps toward improving Berthoud's ability to successfully survive future impacts from disasters.

Key Factors in Community Fragility

The four lowest scores for the public survey on Community Fragility include:

- My community has the resources it needs to take care of community problems (2.21)
- My community has services and programs to help people after a disaster (2.21)
- People in my community trust public officials (2.32)
- My community looks at its successes and failures so it can learn from the past (2.32)

Key Factors in Unmet Needs

- Private Property
 - "Green Bridge" crossing
 - Private roads and crossings



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Financial assistance for swathers, irrigation lines, private driveways, drain repairs, fences and corrals, pressure tanks
- Plans
 - Watershed and flood management planning
 - Weed and pest control
- Debris
 - Need for heavy equipment and dumpsters for debris clean up
 - Debris clean up along the Little Thompson
 - Silt and tree removal

RECOMMENDATIONS

The recommended actions identified by this UNCF Study are as follows:

- Community planning efforts would benefit these communities and would allow them to jointly plan for their own futures and clearly define their preferred future.
- These communities would greatly benefit from programs aimed at building public trust, such as education and outreach efforts.
- Great impacts have been realized with the formation of the Little Thompson Watershed Coalition (LTWC). Continue coordination with the LTWC as the Coalition can serve a vital role as a voice for community residents. The LTWC has finished development of a watershed master plan. Continue watershed planning activities, outreach, and implementation of proposed projects.
- Debris clean-up efforts must start as a grassroots effort. However, some programs exist to assist private property owners, such as the Little Thompson Coalition and the Workforce Center. Developing relationships with community organizations will help to educate and inform members of this community about available programs.
- Identify community projects that residents can participate in year-round, to help foster the sense of community (e.g., river restoration, wildfire mitigation).
- Private property issues were heard throughout this study, but few resolutions seem plausible in the near future due to the disconnected nature of this community. Berthoud should consider establishing formal community structures (i.e., home/road associations) for private road funding collection and maintenance.
- Grassroots efforts are the most effective mechanism for local community preparedness. Several agencies, including county OEM, can assist in this process.
- Continue to foster relationships with county departments regarding community needs and to ensure that issues such as sediment and debris flows around county-owned and maintained infrastructure are adequately resolved.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Continued participation with the Larimer Multi-Jurisdictional Hazard Mitigation Plan and ongoing efforts to implement the Town of Berthoud and Berthoud Fire mitigation actions is essential.
- The Town of Berthoud and Berthoud Fire should continue their current planning response and recovery efforts for emergencies and disasters to increase awareness and readiness for these events.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

RED FEATHER LAKES, CRYSTAL LAKES, GLACIER VIEW

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

Red Feather Lakes is an unincorporated community nestled high in the upper northwest part of the county, south of the Wyoming state line. This mountain village is located about 45 miles northwest of Fort Collins at about 8,300 feet elevation, and is home to a total population of 525 people according to the 2000 census.

Crystal Lakes is a private mountain subdivision located in Larimer County, Colorado near Red Feather Lakes Village approximately 50 miles northwest of Fort Collins.

Glacier View Meadows is a private mountain subdivision located in Larimer County, Colorado approximately 35 miles northwest of Fort Collins. Developed in the early 1970's, the community today contains 967 home sites on approximately 3,000 acres at elevations ranging from 6,900 to 7,800 feet. Nearly 6,000 homes have been built up to date, the majority of which are primary residences for retirees or commuters to nearby Fort Collins.

Although not directly impacted by the September 2013 floods, the Red Feather Lakes, Crystal Lakes, and Glacier View Meadows communities were impacted by the wildfires of 2012. An Unmet Needs community meeting was held in the area on September 18, 2015 that produced 44 comments (7%) and concerns. 48 residents of the area also participated in the public Fragility Study that was conducted in September 2015.

KEY AREAS OF FRAGILITY

Red Feather, Crystal Lakes, Glacier View Meadows						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
48	3.37	0.62	3.03	0.54	2.91	0.58

The results of the Community Fragility study indicate that these communities scored relatively high in the areas of Connectedness (3.37), above average in Stability (3.03), and low in the area of Sustainability (2.91 – fourth lowest of all study communities).

Respondents from Red Feather, Crystal Lakes and Glacier View received high scores for the following survey statements, indicating that they agreed or strongly agreed with the statement:

Connectedness

- People in my community help each other.
- People in my community feel like they belong to the community.
- People in my community are committed to the well-being of the community.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

It is also important to note that the deviation for these three statements was relatively small, indicating that all community members who responded were in agreement on their answers.

Survey results that received low scores (less than 3) are listed below, but the deviation within responses to these statements was significantly greater than to the high scoring statements listed previously.

Connectedness

- My community has the resources and programs to help people after a disaster.
- People in my community are able to get the services they need.
- People in my community know where to go to get things done.
- People in my community trust public officials.

Stability

- My community has services and programs to help people after a disaster.
- People in my community trust community leaders.
- People in my community trust county leaders.
- I feel that I am represented in local politics.
- I feel that my community has access to political representation.

Sustainability

- My community has the resources it needs to take care of community problems (resources can include money, information, technology, tools, and services).
- People in my community are able to get the services they need.
- My community looks at its success and failures so it can learn from the past
- People in my community trust community leaders

Given these results, it is recommended that these communities continue to foster the high scoring Connectedness and Stability factors, while working toward improving the factors contributing to Sustainability.

UNMET NEEDS RESULTS

During the Unmet Needs meetings held in the area on September 18, 2015, a total of 44 comments (7%) and issues were recorded, indicating that the community was interested in contributing to the Unmet Needs meeting and engaging in the information exchange. Given the fact that these communities were not necessarily directly affected by the flood, this could indicate a high level of concern on certain issues and the desire to be heard.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Red Feather, Crystal Lakes and Glacier View Meadows		
Unmet Needs Category	Responses	
	Percentage	No.
PRIVATE PROPERTY	13.6%	6
HOUSING	2.3%	1
DEBRIS	4.5%	2
COMMUNICATION	27.3%	12
UTILITIES	11.4%	5
PLANS	9.1%	4
ECONOMIC	0.0%	0
SAFETY	29.5%	13
OTHER	2.3%	1
TOTAL	100.0%	44

Most Responses
 2nd Most Responses
 3rd Most Responses

The Unmet Needs summary table illustrates that these communities’ greatest Unmet Needs are in the category of Safety (29.5%), followed by Communication (27.3%), and issues related to Private Property (13.6%). The remaining comments related to Housing (2.3%), Debris (4.5%), Utilities (11.4%), Planning (9.1%) and Other (3%).

Some of the greatest needs that received the most comments during the meeting are listed below:

- Safety
 - Lack of medical/health clinic in the area
 - Access to homes for emergency responders
 - Emergency evacuation routes
- Communication
 - Emergency Radio Communication and HAM radios
- Private Property
 - Road maintenance and paving

KEY FRAGILITY AND UNMET NEEDS FACTORS

The communities of Red Feather Lakes, Crystal Lakes, and Glacier View Meadows have strong Community Connectedness, above average Stability, and scored low in Sustainability, indicating that future efforts to decrease Community Fragility may be focused on sustainability.

Key Factors in Community Fragility

The three lowest scores for the public survey on Community Fragility include:

- My community has services and programs to help people after a disaster (2.06)



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- People in my community trust public officials (2.04)
- I feel that I am represented in local politics (2.19)

Key Factors in Unmet Needs

- Safety
 - Lack of medical/health clinic in the area
 - Access to homes for emergency responders
 - Emergency evacuation routes
- Communication
 - Emergency Radio Communication and HAM radios
- Private Property
 - Road maintenance and paving

RECOMMENDATIONS

The following recommendations may be considered as steps toward improving these communities' ability to successfully survive future impacts from disasters.

- Investigate the use of mobile health clinics and re-establish another medical care facility in the area (potential site in Glacier View Area).
 - Under the Safety Section of this study, opportunities are listed for healthcare access and grant funding.
 - Additionally, the county has just completed a Local Resiliency Framework that identifies a Mobile Health Clinic as a priority area.
- Work with neighbors to form home/road associations to deal with private road maintenance issues
- Ranking low in sustainability is an indication that adequate lifelines and resource management may not be available to these communities.
 - Having community supplies and resources on hand will assist these communities when cut off from the rest of the county. This can be done through a community effort, with support from Larimer OEM.
 - The residents spoke about establishing key community locations for generator power to allow all residents access to emergency power when needed. Continue these discussions to develop concrete plans and actions items to make this a reality.
- Although there were some concerns with the communications structure and the loss of VHF and 800 MHz, these concerns will actually be improving with the construction of the Kilpecker Communications tower that is currently out to bid. Continue to work with the county to ensure that this site meets the needs of the area.
- Due to the rural nature of the three communities, enhancing the capability of the Amateur Radio Emergency Services (ARES) Network will greatly improve communications, specifically when primary systems are not



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

functioning. ARES is a group of volunteers that are trained to provide radio communications throughout the county, state and nation.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

GLEN HAVEN, DRAKE, WALTONIA

The unincorporated communities of Glen Haven, Drake, and Waltonia are located in the southern-central foothills of Larimer County, due west of the City of Loveland and generally northeast of the Town of Estes Park.

Glen Haven is situated near and along the North Fork of the Big Thomson River and can only be accessed via Larimer County Road 43, which runs from Estes Park to Drake. A 2014 estimate of the zip code's (80532) population was 165 residents, however a high degree of second home owners also own property in this area.

Drake and Waltonia are located along and within the Big Thompson River Canyon. Drake is situated where County Road 43 intersects U.S. Route 34 (Big Thompson Canyon Road). Waltonia is also located along and within the Big Thompson River Canyon, west of Drake. Their collective population was estimated at 1,010 during the 2010 census and a 2014 estimate showed a shrinking population of an estimated 746 residents.

These communities were one of the most heavily impacted by the September 2013 flooding. Because of this fact, two separate Unmet Needs community meetings were held in these areas in the summer of 2015. Fifty-seven (57) residents also participated in the Fragility Survey. The following sections present the results of those community interactions.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

In analysing the results of the Fragility survey, the communities of Glen Haven, Drake, and Waltonia showed to have the highest amount of community Connectedness across all communities in the study. Community Stability also showed to be extremely high, as shown by these communities having the 2nd highest score in this category across the study participants. In regards to the third Fragility element, Sustainability, these communities scored higher than average.

KEY AREAS OF FRAGILITY

Glen Haven, Drake						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
57	3.64	0.61	3.43	0.44	3.33	0.58

The results of this Fragility study illustrate that the communities of Glen Haven, Drake, and Waltonia rank high in all three components of fragility: Connectedness, Sustainability and Stability. This underlying theme is consistent with the information that came from interviews conducted across county divisions, departments, and other related organizations. Some members of the community commented that they believe that the impacts from the 2013



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

flood directly contributed to the strengths in this study, and that these results would have been significantly different if the study was conducted before the 2013 flood.

The following survey responses received high scores across the communities and responses were found to be rather consistent between survey respondents. A high score equates to agreement with survey statements. All of these questions related to community Connectedness.

- People in my community help each other.
- People in my community feel like they belong to the community.
- People in my community are committed to the well-being of the community.
- People in my community work together to improve the community.
- People in my community have hope.

Survey results that received lower scores across the survey respondents are listed below. A low score indicates disagreement with survey statements. It should be noted that the deviation of responses was rather high for all of these questions, indicating a variation of responses to each question.

The survey questions below impacted the scoring of all three Fragility components:

- People in my community are able to get the services they need.
- My community supports programs for children and families.
- People in my community trust county leaders.
- I feel that my community has access to political representation.
- I know who my county leader(s) is/are.
- I feel that I am represented in local politics.
- People in my community trust public officials.
- My community has the resources it needs to take care of community problems (resources can include money, information, technology, tools, and services).

“There are many areas of the county that are served by only a single point of road access and when that single line of access is compromised people are stranded. Making the effort to develop multiple points of access for these isolated communities is important.”

~Eric Fried, Larimer County Chief Building Official



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

With regard to the three major Fragility components, these communities should continue to work towards reducing Fragility by continuing down the path that they are on and focusing on all three components. Of the three, the subject of Sustainability seems to be an area where the greatest improvement could be realized.

“Glen Haven was probably the most impacted community with electrical and water. Housing damages and the need for temporary housing was a big problem for this community.”
~Frank Lancaster, Town Manager for Estes Park

Glen Haven, Drake, Waltonia		
Unmet Needs Category	Responses	
	Percentage	No.
PRIVATE PROPERTY	31.8%	42
HOUSING	5.3%	7
DEBRIS	3.8%	5
COMMUNICATION	14.4%	19
UTILITIES	0.8%	1
PLANS	33.3%	44
ECONOMIC	3.8%	5
SAFETY	0.0%	0
OTHER	6.8%	9
TOTAL	100.0%	132

Most Responses
 2nd Most Responses
 3rd Most Responses

UNMET NEEDS RESULTS

Overall, twenty-two percent (22%) of the unmet needs identified across the county came from these communities. This equates to 132 categorized needs. The Unmet Needs summary table illustrates that these communities’ largest needs fell in the category of Planning, which was the focus of thirty-three percent (33%) of these communities’ comments. The category of Private Property came in a close 2nd in terms of the number of identified needs, encompassing thirty-two percent (32%) of comments. Communication needs round out the final top-three needs category, covering fourteen percent (14%) of the community needs. All other identified community needs were spread out amongst all but one of the remaining needs categories, which included: Housing (5.3%), Debris (3.8%), Utilities (0.8%), Economic (3.8%), and Other (6.8%).



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Below are some of the larger needs to highlight as part of this report, captured during the community meetings held on July 25th and July 26th, 2015:

- Planning
 - Traffic / road planning
 - Needs identified as part of watershed master planning
 - Hazard mitigation
- Private Property
 - Private road and bridge repair
 - Property access
 - Erosion / Landscaping

“The challenge of community development in Drake is that the community is not well-defined and spreads along a 16 mile canyon. Seven miles of which are served by Estes Park Utilities and Fire, the rest by Loveland Utilities and Fire. What is missing is the glue to bring these parts together, and some residents feel that Larimer County could have served this role.”

~Laura Emerson, Resident of Drake, Colorado & Big Thompson Watershed Coalition Member

KEY FRAGILITY AND UNMET NEEDS FACTORS

The communities of Glen Haven, Drake, and Waltonia appear to have much less Fragility than most others included in this study.

However, all communities can improve upon certain aspects of their collective selves to continue towards a path of resiliency. It should also be noted that communities can become more Fragile surprisingly quickly, based upon hazard events and unexpected or unforeseen changes to the community itself.

Key Factors in Community Fragility

The three lowest scores for the public survey on Community Fragility include:

- My community has the resources it needs to take care of community problems (2.42)
- People in my community trust public officials (2.63)
- I know who my county leader(s) is/are (2.79)

“Community engagement and development is much easier to talk about than it is to accomplish on the ground. Without a sense of community, residents will continue to feel fragile and lack resilience to respond to hazards and disasters.”

~ Laura Emerson, Resident of Drake, Colorado & Big Thompson Watershed Coalition Member

Key Factors in Unmet Needs

- Planning
 - Traffic / road planning
 - Needs identified as part of watershed master planning
 - Hazard mitigation



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Private Property
 - Private road and bridge repair
 - Property access
 - Erosion / Landscaping
- Communication
 - Stream gauges
 - Cell phone and internet network upgrades
 - Public education

“The Electric Company in Estes Park is interested in moving lines underground between Estes Park and Glen Haven, in working towards a more resilient infrastructure system.”

~Terry Gilbert, Larimer County Community Development Director

RECOMMENDATIONS

Recommended actions identified by this UNCF study are as follows:

- The study indicates a lack of trust and understanding in local politics. These communities would benefit from programs aimed at building public trust, such as education and outreach efforts.
- These communities do not feel represented or connected to the county and thusly feel isolated. The Glen Haven Association and the Big Thompson Association both provide a strong connection point between community members as well as to outside organizations and the county. The associations should continue efforts to work with organizations and individuals to build community connectedness and improve sustainability.
- Due to the fact that the Glen Haven Association is not an officially recognized entity, many of the assistance programs available to other communities were not available after the flood. By working to establish a more formal structure, such as a 501C3 organization or a Title 32 Special District, the community will have better access to assistance pre- and post-disaster.
- Community planning efforts would benefit these communities and would allow them to jointly plan for their own futures and clearly define their preferred future selves.
- Great impacts have been realized with the formation of the Big Thompson Watershed Coalition (BTWC). Continue coordination with the BTWC as the Coalition can serve a vital role as a voice for community residents.

“The Drake Post Office did not reopen until March 2014, so the community lacked a central information point that could serve both the residents and agencies/organizations trying to reach them.” ~ Laura Emerson, Resident of Drake, Colorado & Big Thompson Watershed Coalition Member



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Communication gaps were identified as a major limiting communication factor. Coordinate with cell phone service providers to identify potential solutions for expanding and improving cellular networks in these communities. Additionally, consider other possible sources to connect the community to neighboring areas and the county. These types of communication networks are vital during times of disaster but can also be difficult along the Big Thompson Canyon.

“Larimer County has helped us out more than once. I consider us as surrogates for the county...working with individual landowners, coordinating volunteers. The county would have to hire many people, which they cannot afford, to handle the coordination and work that we do.”

~Gordon Gilstrap, President of the Big Thompson Conservation District

- Develop relationships with both formal and informal leaders in each community, whether through the fire departments or associations, to improve community coordination.
- The BTWC has finished development of a watershed master plan. Continue watershed planning activities, outreach, and implementation of proposed projects.
- Secondary modes of egress are needed for some areas throughout these communities. Continue work towards the identification and development of secondary access routes where available.
- Improved stream monitoring would be beneficial for a number of reasons. Install stream gauges to improve flood monitoring and notifications.
- Work with Larimer County to identify key mitigation actions that may be addressed and implemented in future mitigation efforts as part of the Larimer Multi-Jurisdictional Hazard Mitigation Plan.
- Ranking lower in the sustainability factor is an indication that adequate lifelines and resource management may not be available to these communities. Having community supplies and resources on hand will assist these communities when cut off from the rest of the county. This can be done through a community effort.



BLUE MOUNTAIN, SPRING GULCH (LYONS AREA), X BAR 7

Blue Mountain and Spring Gulch are rural unincorporated communities in southern Larimer County located north of Lyons between Routes 36 and 34. These communities sustained impacts and damages from the September 2013 flooding. An Unmet Needs community meeting was held in Blue Mountain on June 1, 2015 that produced 200 comments and concerns. Sixteen (16) residents of Blue Mountain and Spring Gulch also participated in the public Fragility Study that was conducted in September 2015.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

The results of this Community Fragility Study indicate that the Blue Mountain and Spring Gulch communities scored relatively high in the area of Connectedness. However, these communities scored low in the areas of Stability (2nd lowest of all study communities) and Sustainability (3rd lowest of all study communities). This variety of results highlights areas where these communities can focus their efforts in order to reduce fragility prior to the next disaster.

KEY AREAS OF FRAGILITY

Blue Mountain, Spring Gulch, Lyons						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
16	3.31	0.84	2.81	0.63	2.7	0.53

Respondents from Blue Mountain and Spring Gulch received high scores for the following survey statements, indicating that they agreed or strongly agreed with the statement:

- People in my community feel like they belong to the community.
- People in my community are committed to the well-being of the community.
- People in my community help each.
- People in my community work together to improve the community.

All four of these statements correlate with the Connectedness factor of Fragility. It is also important to note that the deviation of responses for these four statements was relatively small, indicating that all community members who responded were in agreement on their answers.

Survey responses that received low scores are listed next, but the deviation within responses to these statements was significantly greater than to the high scoring statements listed previously, indicating disagreement in the answers.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- My community supports programs for children and families.
- My community has the resources it needs to take care of community problems (resources can include money, information, technology, tools, and services).
- People in my community are able to get the services they need.
- People in my community know where to go to get things done.
- My community can provide emergency services during a disaster.
- My community works with organizations and agencies outside the community to get things done.
- My community can provide emergency services during a disaster.
- My community has services and programs to help people after a disaster.
- My community keeps people informed (for example, via television, radio, newspaper, internet, phone, neighbors) about issues that are relevant to them.
- People in my community trust county leaders.
- I feel that I am represented in local politics.
- I feel that my community has access to political representation.
- I know who my county leader(s) is/are.

Of the low-scoring statements listed above, five of the statements are correlated with the Connectedness factor, eight of the statements are correlated with Stability, and four statements are correlated with Sustainability.

Given these results, it is recommended that these communities continue to foster the high scoring Connectedness factors while working toward improving the factors contributing to Stability and Sustainability.

UNMET NEEDS RESULTS

During the Unmet Needs meeting held in Blue Mountain on June 1, 2015 a total of 200 comments and issues were recorded, indicating that the community was interested in contributing to the Unmet Needs meeting and engaging in the information gathering. It may also indicate the level of damages and impacts sustained by these communities during the 2013 flood.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Blue Mountain & Spring Gulch		
Unmet Needs Category	Responses	
	Percentage	No.
PRIVATE PROPERTY	13.7%	25
HOUSING	2.2%	4
DEBRIS	3.8%	7
COMMUNICATION	41.0%	75
UTILITIES	3.8%	7
PLANS	18.0%	33
ECONOMIC	1.1%	2
SAFETY	12.0%	22
OTHER	4.4%	8
TOTAL	100.0%	183

■ Most Responses
 ■ 2nd Most Responses
 ■ 3rd Most Responses

The Unmet Needs summary table illustrates that these communities’ greatest unmet needs are in the category of Communication (41%), followed by Planning (17.5%), and issues related to Private Property (13.7%). The remaining comments related to Housing (2.2%), Debris issues (3.8%), Utilities (3.8%), Recreation (0.5%), Economic concerns (1.1%), Safety (12%), and Other (4.4%).

Some of the greatest needs that received the most comments during the meeting are listed below:

- Communication
 - Improved phone and internet access
 - Education regarding hazard mitigation and disaster preparedness
 - Disaster assistance information and education
 - Stream gauges and improved warning systems
- Planning
 - Watershed and flood management planning
 - Wildfire mitigation management and planning
- Private Property
 - Private roads repairs

KEY FRAGILITY AND UNMET NEEDS FACTORS

Future efforts to decrease Community Fragility in these areas should include measures to enhance Stability and Sustainability components. Additionally, while community connectedness is high, the connectedness with Larimer County and other formal structures is limited, leading to a need to increase connectedness overall. The following



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

recommendations may be considered as steps toward improving these communities' ability to successfully survive future impacts from disasters.

Key Factors in Community Fragility

- People in my community trust community leaders (1.88)
- People in my community trust county leaders (1.63)
- I feel that my community has access to political representation (1.88)

Key Factors in Unmet Needs

- Communication
 - Improved phone and internet access
 - Education regarding hazard mitigation and disaster preparedness
 - Disaster assistance information and education
 - Stream gauges and improved warning systems
- Planning
 - Watershed and flood management planning
 - Wildfire mitigation management and planning
- Private Property
 - Private roads repairs

RECOMMENDATIONS

Recommended actions identified by this UNCF study are as follows:

- The results indicate that there is a lack of trust and understanding in local politics and local community leaders. These communities would benefit from programs focused on building public trust and engagement in local politics, such as education and outreach efforts.
- These communities do not feel adequately represented or connected to the county and thusly feel isolated. These communities should consider organizing neighborhood groups or organizations that would allow them to feel better represented in local and county politics.
- Isolated rural communities will not have the same services and resources as urban environments. Understanding these limitations and developing plans to counter limitations to services will serve the community well. See Code of the West in the Appendix.
- Identify community projects that residents can participate in year-round, to help foster the sense of community (e.g., river restoration, wildfire mitigation).



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Organize community planning efforts that would both engage community members and allow them to develop a better plan for the future of their community. Such planning efforts may include detailed emergency plans for future evacuations, floods, or other disasters.
- Engage Larimer County officials in community planning efforts and community outreach to ensure strong relationships and connection.
- Host educational programs or events in the community to teach community members about the services and programs that are available to them and help familiarize residents with emergency plans and operations in the local area.
- Invite local, county and state leaders to community events to ensure resident concerns are heard and relationships are developed.
- Improve community preparedness by creating community-focused preparedness activities, whether it is through an association or through the yearly meetings of community members. Grassroots efforts are the most effective mechanism for local community preparedness. Several agencies, including the County Office of Emergency Management, can assist in this process.
- Emergency supplies of water, food, medical supplies, gasoline, generators, and other items can be stored locally within the community and maintained so that the community may be self-supporting for the first few days following a disaster. Local fire departments or other emergency response organizations should be involved in this effort and can help train community members and assist in a leadership capacity during a disaster.



SECTION 2 - COMMUNITIES WITH FRAGILITY SURVEYS ONLY

BUCKEYE, WELLINGTON, WAVERLY

Buckeye, Wellington, Waverly						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
16	3.38	0.48	3.19	0.38	3.05	0.34

Buckeye is a rural unincorporated farming and ranching community in north-central Larimer County. Wellington, a small town in east-central Larimer County, is located in the I-25 corridor and has a population of 6,289 according to the 2010 census. Waverly is a small unincorporated town in rural eastern Larimer County. Primarily an agricultural community, Waverly has experienced recent rapid population growth due to subdivision development along County Road 15. While the September 2013 floods did not significantly impact these communities, it is still important to look at their fragility and disaster preparedness.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

The results of this Community Fragility Study indicate that the communities of Buckeye, Wellington, and Waverly scored very consistently in the middle in all three categories. These three communities ranked 6th out of the 11 communities included in this study in the areas of Connectedness, Stability, and Sustainability.

KEY AREAS OF FRAGILITY

The results of this Community Fragility assessment indicate that the communities of Buckeye, Wellington, and Waverly show medium amounts of Connectedness, Stability and Sustainability compared to other study communities in the county. Respondents from these communities received high scores for the statement “people in my community have hope,” indicating that they agree or strongly agreed with this statement that correlated with the Connectedness factor of Fragility.

Survey responses that received low scores are listed below, indicating that community members disagreed with the listed statements:

- My community has the resources it needs to take care of community problems (resources can include money, information, technology, tools, and services).
- My community looks at its successes and failures so it can learn from the past.
- My community has services and programs to help people after a disaster.
- People in my community trust public officials.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- People in my community trust community leaders.
- People in my community trust county leaders.

Of the low-scoring statements listed above, two of the statements are correlated with the Connectedness factor, three of the statements are correlated with Stability, and three statements are correlated with sustainability (note that a statement may correlate with more than one factor).

Given these survey results, it is recommended that the communities of Buckeye, Wellington, and Waverly support efforts to improve factors contributing to Connectedness, Stability, and Sustainability. Some recommended actions are listed in the following section.

KEY FRAGILITY AND UNMET NEEDS FACTORS

Results of the public survey indicate that Buckeye, Wellington, and Waverly should consider focusing future efforts on improving community preparedness and reducing Community Fragility by focusing on all three factors of Connectedness, Stability and Fragility.

RECOMMENDATIONS

The following recommendations may be considered as steps toward improving these communities' ability to successfully survive future impacts from disasters.

- Building public trust is essential in every community. Although these communities did not rank low in connectedness, and trust was not a primary factor in the surveys, these communities would continue to benefit from programs focused on building public trust and engagement in local politics, such as education and outreach efforts.
- Community meetings are held in these areas with County Commissioners each month. It is recommended that residents engage in these meetings to ensure their voices are heard.
- County agencies and offices, such as the Office of Emergency Management, may consider partnering with leaders within the communities in order to foster closer communication and connection.
- Organize community planning efforts that would both engage community members and allow them to develop a better plan for the future of their community.
- Emergency supplies of water, food, medical supplies, gasoline, generators, and other items can be stored locally within the community and maintained so that the community may be self-supporting for the first few days following a disaster. Local fire departments or other emergency response organizations should be involved in this effort and can help train community members and assist in a leadership capacity during a disaster.
- Work with local utilities companies and other lifeline providers on long-term strategies for sustainability of systems.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

FORT COLLINS, WINDSOR, TIMNATH

Fort Collins, Windsor, Timnath						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
159	3.5	0.31	3.27	0.24	3.35	0.27

The municipality of Fort Collins is the county seat and most populated municipality in Larimer County. With an estimated population of 156,480 in 2014, it is the fourth largest city in Colorado. Fort Collins is the home of Colorado State University and includes a large student population. The town is also home to numerous breweries, shops, and restaurants with a busy city center in Old Town as well as many shopping malls, businesses, and hospitals.

The neighboring community of Timnath is a small agricultural community that is experiencing rapid growth and development due to its close proximity to Fort Collins. The community’s population rose to 1,983 in 2014 from 625 in the 2010 census. The town of Windsor, to the south of Fort Collins and Timnath, is located in Larimer and Weld counties. The town population was 18,644 in the 2010 census. Due to its central location between Denver and Fort Collins, Windsor is experiencing rapid population growth and development as a commuter community.

The September 2013 floods did not significantly impact the communities of Fort Collins, Timnath, and Windsor, however it is important to assess their fragility and disaster preparedness.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

The results of this Community Fragility Study indicate that the Fort Collins, Timnath, and Windsor communities scored relatively high in the areas of Connectedness, Stability and Sustainability. These communities ranked 4th out of the 11 study communities in Connectedness, 4th in Stability, and 3rd in Sustainability.

KEY AREAS OF FRAGILITY

The results of this Community Fragility assessment show relatively high levels of Connectedness, Stability, and Sustainability in the communities of Fort Collins, Timnath, and Windsor.

Respondents from these communities received high scores for the survey statement: “People in my community are committed to the well-being of the community” indicating that they agreed or strongly agreed with the statement. This statement correlates with the Connectedness factor.

Survey responses that received low scores, indicating that respondents disagreed with the following statements, correlated with the Connectedness and Stability factors.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- People in my community know where to go to get things done.
- People in my community trust county leaders.

It is important to note that there was only one high-ranking statement and two low ranking statements, indicating that the majority of respondents did not rank statements either very high or very low. Overall, survey results indicate that most respondents ranked Connectedness, Stability, and Sustainability factors positively, but they only “agreed” with statements or selected “neither agree nor disagree,” and did not “strongly agree” with the statements.

Given these results, it is recommended that these communities continue to support efforts to build community Connectedness, Stability and Sustainability in order to decrease overall Community Fragility.

KEY FRAGILITY-REDUCTION RECOMMENDATIONS

Respondents in the communities of Fort Collins, Timnath, and Windsor indicated that they did not trust city and county leaders and did not know “where to go to get things done,” suggesting several recommendations that may be considered as steps toward improving these communities’ preparedness for future disasters.

RECOMMENDATIONS

- If there is a lack of trust between community members and leaders, establish avenues to obtain necessary information and resources through community-led programs.
- Continue to develop and improve alternative energy sources and redundant lifelines to enhance sustainability of this area.
- Continue to partner with Colorado State University on innovative solutions to complex issues affecting the City and its surrounding area.
- City agencies and offices, such as the Office of Emergency Management, may consider partnering with leaders within neighborhoods and communities to offer informational meetings or seminars in order to foster closer communication and connection with county leadership.
- Organize community planning efforts that would both engage community members and allow them to develop a better plan for the future of their community. Such planning efforts may include detailed Emergency Plans for future evacuations, floods, or other disasters.



ESTES PARK, ESTES VALLEY

Estes Park, Estes Valley						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
30	3.57	0.43	3.49	0.38	3.39	0.37

The town of Estes Park is a popular summer resort destination and is the headquarters for Rocky Mountain National Park. The town lies along the Big Thompson River and was severely affected by the September 2013 flood. The town’s population was 5,858 in the 2010 census but is also visited by nearly 3 million tourists every year, many of whom use Estes Park as their base during visits to Rocky Mountain National Park.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

The community of Estes Park, including Estes Valley, ranked very high in Connectedness, Stability and Sustainability. Of the 11 communities assessed during this study, Estes Park ranked 2nd in Connectedness, 1st in Stability, and 2nd in Sustainability. As a community that suffered severe damages during the 2013 floods, it is possible that the extensive response and repair work conducted in the two years since the floods has positively influenced residents’ survey responses.

KEY AREAS OF FRAGILITY

The results of this Community Fragility assessment shows high levels of Connectedness, Stability, and Sustainability in the community of Estes Park. Respondents from Estes Park received high scores for the following survey statements, indicating that they agreed or strongly agreed with the statement:

- People in my community feel like they belong to the community.
- People in my community help each other.
- I know who my community leader(s) is/are.

The first two of these statements correlated with the Connectedness factor. It is also important to note that the deviation of responses for these two statements was relatively small, indicating that most community members who responded were in agreement on their answers.

Survey responses that received low scores are listed below, with the low scores indicating survey respondents disagreed with the statements. The deviation within responses to these statements was significantly greater than to the high scoring statements listed previously, indicating that there was more disagreement between respondents.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- People in my community are able to get the services they need.
- People in my community know where to go to get things done.
- People in my community trust public officials.
- People in my community trust county leaders.
- I feel that I am represented in local politics.
- I know who my county leader(s) is/are.

Of the low-scoring statements listed above, three of the statements are correlated with the Connectedness factor, three of the statements are correlated with Stability, and two statements are correlated with Sustainability. Statements may be correlated with more than one factor.

Given these results, it is recommended that the community of Estes Park continue to foster Connectedness, Stability, and Sustainability within the town while working towards improving aspects of the factors that received low scores, such as trust in public officials and access to information and services.

KEY FRAGILITY-REDUCTION RECOMMENDATIONS

The community of Estes Park has strong Connectedness, Stability, and Sustainability, however the survey identified some areas for future improvements:

- Town agencies and offices may consider partnering with leaders within smaller communities to offer informational meetings or seminars in order to foster closer communication and connection with county leadership.
- Improve community preparedness by creating community-focused preparedness activities, whether it is through an association or through the yearly meetings of community members. Grassroots efforts are the most effective mechanism for local community preparedness. Several agencies, including the County Office of Emergency Management, can assist in this process.
- Due to the isolated nature of Estes Park, and the fact that they were cut off after the 2013 flood, having stores of supplies available locally is essential. Emergency supplies of water, food, medical supplies, gasoline, generators, and other items should be acquired and supply-chain management procedures should be developed to get resources most needed after disaster.



PINEWOOD SPRINGS

Pinewood Springs						
No.	Connectedness		Stability		Sustainability	
Responses	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
15	3.4	0.53	3.22	0.49	3.25	0.59

Pinewood Springs is a small rural community in southern Larimer County located on US Highway 36 approximately 13 miles southeast of Estes Park. The community of Pinewood Springs sustained damages from the September 2013 flood.

COMMUNITY FRAGILITY RESULTS FROM SURVEYS AND COLLECTED DATA

The results of this Community Fragility Study indicate that the Pinewood Springs community scored in the middle on all three Fragility factors, Connectedness, Stability, and Fragility. Of the 11 communities assessed in this study, Pinewood Springs ranked 5th of the 11 in all three factors.

KEY AREAS OF FRAGILITY

The results of this survey show that residents of Pinewood Springs hold strong opinions about the statements included in the survey. Respondents from Pinewood Springs gave high scores for the following survey questions, indicating that they agreed or strongly agreed with the statement:

- People in my community feel like they belong to the community.
- People in my community help each other.
- People in my community work together to improve the community.
- My community can provide emergency services during a disaster.
- My community keeps people informed (for example, via television, radio, newspaper, internet, phone, neighbors) about issues that are relevant to them.

Four of these statements are correlated with the Connectedness factor of Fragility, two are correlated with Stability, and two are correlated with Sustainability. Note that statements may be correlated with more than one factor.

Survey responses that received low scores, indicating that respondents disagreed or strongly disagreed with the statement, are listed below:

- My community has the resources it needs to take care of community problems (resources can include money, information, technology, tools, and services).
- People in my community are able to get the services they need.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- People in my community know where to go to get things done.
- My community looks at its successes and failures so it can learn from the past.
- My community has services and programs to help people after a disaster.
- People in my community trust public officials.
- People in my community trust community leaders
- People in my community trust county leaders
- I feel that I am represented in local politics
- I know who my county leader(s) is/are

Of the low-scoring statements, four are correlated with Connectedness, five with Stability, and four with Sustainability. Given these results, it is clear that there are numerous topics that may be focused on in future efforts to improve Connectedness, Stability, and Sustainability in Pinewood Springs in order to reduce Community Fragility.

KEY FRAGILITY-REDUCTION RECOMMENDATIONS

The following recommendations may be considered as steps toward improving the community's ability to successfully survive future impacts from disasters.

- Pinewood Springs has a strong community culture. Continue to foster this connectedness through local community programs and events.
- Due to the rural nature of the community, host educational programs or events in the community to teach community members about the services and programs that are available to them and help familiarize residents with emergency plans and operations in the local area, including evacuation planning.
- Much like many other communities in Larimer County, there will be limited supplies and resources during large-scale emergencies. Storing emergency supplies of water, food, medical supplies, gasoline, generators, and other items locally within the community will allow the community to be self-supporting for the first few days following a disaster. The Pinewood Springs Fire Department and other emergency response organizations should be involved in this effort and can help train community members and assist in a leadership capacity during a disaster.
- Work with local utilities providers and other lifeline providers to develop redundancies and back-up systems in case primary lifelines are disrupted or destroyed.



PUTTING IT ALL TOGETHER

The final piece of this study is to take the analysis of the data and information provided from numerous sources and synthesize it into actionable recommendations. This includes information provided in unmet needs meetings throughout the county, community survey information, and agency-specific surveys from formal and informal leaders.

This section is organized using the three primary components that make a community able to withstand shocks and stresses during day-to-day operations as well as disaster events: Connectedness, Stability and Sustainability. Within each factor, both broad and specific recommendations are made that pertain to all communities as they work to strengthen systems overall.

CONNECTEDNESS (Community-level)					
COMMUNICATIONS	SOCIAL VULNERABILITY	COMMUNITY LEADERSHIP	SOCIAL CAPITAL	DECISION MAKING APPROACH	SITUATIONAL AWARENESS
Connection or isolation - internally or externally	Access to political power and representation	Access to community leadership and emergency management partners	Trust in formal systems	Utilization of a hybrid approach of both a vertical hierarchy for decision-making, as well as a horizontal collaborative network of partners	Ability to get necessary information at appropriate times to make critical decisions
Strong plan for disaster events	Access to Information Technology		Strong community engagement		
Structures			Strong social cohesion		

Connectedness has been shown to be a primary factor in how a community prepares, responds and recovers after a disaster. When the factors of community connectedness are weak, the area struggles through crisis and community members individually respond instead of rallying as a group to solve problems. For the purposes of this study, a high standard deviation (more than 1) indicates that community member opinions varied greatly in that response. This could mean that some feel very connected while others feel no connection at all. For those communities that ranked low in Connectedness or had a high variation in responses, the following recommendations are given:

Communications – A key finding in the Unmet Needs meetings was that the majority of the communities believe that communications can be improved – either within their community or between their community and others. Some potential opportunities to improve communications include:

- Community members should get involved in community activities, even if the only activity is an annual picnic.
- Community leaders should identify community projects that residents can participate in year-round, to help foster sense of community (e.g., river restoration, wildfire mitigation).
- Encourage community members to remain informed about governmental activities and decisions as well as to make their voice heard to ensure these decisions are made with community input.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- The most prepared communities often create their own preparedness activities, whether it is through an association or through the yearly meetings of community members.
- Grassroots efforts are the most effective mechanism for local community preparedness. Several agencies including county OEM can assist in this process.
- If the community only has one means of communicating internally and/or externally, measures should be taken to create redundancies in the event of failure of the primary system.

Social Vulnerability – Cultural, economic or social factors may contribute to an individual’s ability to effectively react and respond following an emergency or crisis. Many times, these individuals remain unknown to the greater community pre-disaster, but through community connectedness, these individuals become part of the whole community. Some potential opportunities to reduce social vulnerability include:

- Encourage community members to introduce themselves to neighbors and determine if anyone in the neighborhood may need additional assistance in crisis such as mobility challenges, a lack of transportation, communications technology, or the need for someone to help with pets or service animals
- Community planning should be encouraged to determine if there are any cultural, social or economic factors that would contribute to how individuals are able to respond in a disaster.
- The results of the surveys indicated that social vulnerability was higher in rural areas and lower in urban areas. This makes sense due to the amount of services available in urban areas vs. rural areas. Therefore, rural areas should work to enhance key services that decrease social vulnerability.

Community Leadership – In many of the documents gathered for this study, it was found that people generally could name who they believed were their community leaders, although there were very few responses regarding what made them a leader, whether at the government level or the community level. Some potential opportunities to increase community leadership include:

- Encourage community members to get to know their local emergency service providers, such as the local fire chief – they are often the first line of defense during crisis situation.
- Before a disaster occurs, determine who the people are in each community that will be able to get information about disaster response actions and/or recovery efforts to ensure the community knows what the situation is and what is required to recover.
- Work collectively as a community to solve problems and resolve conflict or challenges. This serves two purposes: one is to build relationships within the community and the other is to learn strengths of each individual to solve problems collectively when no other help is available.

Social Capital – How invested are the people of the community in the success of the community? Social cohesion and networks amongst communities differed greatly throughout Larimer County. Many are very cohesive internally but may not have networks outside the immediate area. Others described low social cohesion due to factors such



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

as second home owners who are rarely in the community or the remote nature of some neighborhoods. Out of the three primary factors of social capital, trust became a regular theme in the data collection. Government agencies and neighborhoods alike should strive to create programs that enhance social capital, build trust, foster engagement, and create a unique community culture. This is a partnership and everyone's responsibility. Some potential opportunities to improve social capital include:

- Trust is often linked to the unknown, therefore, community outreach programs should be enhanced to ensure members of each community are able to get answers to critical questions and to ensure they understand services provided by organizations and governmental agencies.
- If trust in formal leaders is low:
 - Community members should try to get to know their community leaders by having a simple conversation, either by emails, attending public events, or other avenues.
 - Community leaders should look for ways to interact with the public in a non-threatening environment such as charitable events, local expos, etc.
- Encourage community members to get involved in decisions that affect their area.
- Organize some type of neighborhood organization or entity (e.g., home owner's association) to increase the collective voice of the community.
- For communities that are isolated, getting information or resources after a disaster can be a challenge. Before the next disaster, reach out to neighboring areas and make connections to ensure the governmental jurisdictions know how to get in touch if needed.

Decision-Making Approach - The majority of agency leaders surveyed (11) indicated that their organization used a vertical hierarchy, which is unsurprising given that numerous respondents were members of fire departments that typically use an Incident Command System or para-military style structure. Three respondents said that their organizations used a horizontal structure and five used a combination of vertical and horizontal structures. Additionally, the majority of respondents (14) stated that staff members were "very" or "heavily" engaged in decision-making within the organization while 8 stated that staff were "somewhat" involved or that it "varied" depending on the decision-making situation. Research has shown that the strongest systems utilize a hybrid approach to decision-making, especially in emergency management. This allows for the vertical hierarchy that is necessary to make quick decisions that are jurisdictionally-specific, as well as a horizontal structure that allows for increased communications with multiple partners who all have their own authority structures.

- If a vertical hierarchy is the primary system for decision-making, consider a hybrid model where the authority structure still exists but a collaborative horizontal structure is included for the agencies outside the normal daily authority structure.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

STABILITY (Municipal / County Level)			
LEADERSHIP AND/OR GOVERNANCE	EFFECTIVE PARTNERSHIPS AND INTERJURISDICTIONAL RELATIONSHIPS	EMERGENCY MANAGEMENT SYSTEM	PLANNING STRATEGIES
Proactive posture	Leveraging knowledge	Large emergency management system designed to compartmentalize for better stability when system disturbance occur	Flexible plans and procedures
Decision Making	Breaking silos		Adaptability, innovation and creativity
Staff Engagement			Stress testing plans
Strong local governance			
Strong emergency management leadership			

Stability relates to the effectiveness of planning efforts, relationships, emergency management and leadership in preparing for and responding to crises and disasters. From the data provided on unmet needs, planning was a component in all communities surveyed but one. In many of the communities, this factor was the primary topic of concern. Along with those results, every community discussed private property concerns, such as private roads and bridges, as an area of need. The wildfire and flood took a large toll on the land, both publicly and privately, leading to increased need for innovative, adaptive and flexible long-term planning efforts. For those communities that ranked low in Stability, the following recommendations are given:

Leadership and/or Governance – One of the key components of a stable system is how the leadership structure is organized. A stable organization means acting proactively to solve problems, engaging with key staff to ensure decisions are sound and providing strong local governance. The leadership style and culture described by agency and community leaders encompassed numerous styles, including community-based leadership, bureaucratic, top-down, centralized and decentralized, democratic, collaborative, formal and informal, and tier structure. Based on survey responses, it appears that each agency and organization has a leadership style tailored to its individual needs and structure. Some potential opportunities to improve leadership and/or governance include:

- Take a proactive posture and respond to early warning signs before they escalate into crisis.
- Provide staff the ability to make decisions and determine the authority structures necessary to ensure success in crisis events.
- Engage and involve staff in an effort to better understand how each individual contributes to the success of the organization.
- Leverage knowledge by training staff and exercising procedures for complex events, both in day-to-day operations as well as emergency scenarios.
- Ensure multiple people have the knowledge to be able to step in and assist as needed.
- Reward innovation and allow staff the ability to make decisions to enable crisis response.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Effective Partnerships and Interjurisdictional Relationships – Survey respondents indicated that their organizations had MOUs, formal and informal agreements, and partnerships with a variety of other organizations. The surveys included a variety of responses regarding interjurisdictional relationships. Some respondents stated they had some interjurisdictional relationships with other organizations they worked with closely and indicated that the partnerships were important, but other respondents stated they did not have such relationships or did not know. Given the variety of types of organizations responding to the survey, this variety of responses is expected. Some organizations' jobs require well-developed interjurisdictional relationships while other organizations do not need the same type of relationships to succeed. The vast majority (19) of respondents stated their organizations encouraged cross-disciplinary and cross-silo cooperation and work, only one respondent stated their organization did not encourage such collaborative work. Numerous respondents stated the partnerships and agreements worked effectively and noted the value of establishing and maintaining these relationships. Some potential opportunities to improve effective partnerships and interjurisdictional relationships include:

- Past disasters have shown the value in relationships in emergency and crisis situations. Foster relationships and partnerships whenever possible at multiple levels: community, agency, county, state and federal.
- Update MOUs and IGAs as needed to keep them current.
- Develop strong partnerships and relationships across jurisdictional lines for positive outcomes from disaster.

Emergency Management Systems – Recent studies have shown that having a large network of partners as part of the emergency management system allows for greater ability to meet the needs of each community. Just as important, the system must be able to be compartmentalized to allow for disruptions and shocks to occur without taking out the system as a whole. When agencies and community leaders were asked about the flexibility and adaptability of their emergency management systems, the majority of respondents indicated that they had the ability to make changes and decisions rapidly or on the fly as conditions warranted, some stated that staff members worked closely together and were very agile. However, only 19 of the 28 survey respondents answered this question, possibly indicating that many respondents did not know or felt that this question did not apply to their organization. Some potential opportunities to improve emergency management systems include:

- Build emergency management systems with multiple hubs and connection points so that if any one area fails, the rest of the system is able to move forward.
- If currently disconnected from the emergency management systems in place in Larimer County, work with key partners to connect to the larger system.
- Everyone talks about the dangers of working in silos but it continues to be one of the top lessons learned from disaster. Break down walls and barriers whenever possible and talk to neighboring jurisdictions. A broader picture will emerge leading to better decision making.

Planning Strategies – Although the needs varied greatly between communities, planning came up in every area surveyed. In disaster areas, this included topics such as erosion control, revegetation, road reconstruction, debris,



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

and mitigation planning. In other areas of the county, not affected by recent disaster, topics came up regarding access to health care, preparedness planning and evacuation planning.

From a broader planning perspective, the vast majority (19) of the respondents stated that their organizations actively planned for emergencies and disasters, only three respondents said that their organizations did not. Most respondents (12) stated that they tested their emergency plans and procedures, including table-top exercises, walk-throughs, ongoing ICS and NIMS trainings, and by testing emergency operations. Seven respondents stated that their organizations did not test their emergency plans, and two respondents were unsure if any testing took place. Most respondents (15) indicated that their organization had written emergency plans and/or procedures, however five respondents stated that their organization had no emergency plans at all or no written plans. The difference in responses to this question versus the previous question indicates that although some organizations may hold trainings or table-top exercises, they do not necessarily have written emergency plans and procedures in place.

Regarding the flexibility of plans, there was a variety of responses. Some respondents were confident that their organizations were flexible, others indicated belief or hope that their organizations were flexible (“as flexible as a yoga instructor – hopefully”). A few respondents indicated that their organizations lacked written emergency plans, thus they were unable to answer the question. Numerous respondents identified actions taken to resolve problems, including convening meetings on the subject, assigning a committee to solve the problem, discussing the issue with staff, and amending plans as deemed necessary. It is important to note that only 17 respondents answered this question, thus this may be a subject area for future inquiry. Some potential opportunities to improve planning strategies include:

- Train to failure. Ensure the culture of the organization accepts training to a point of failure or collapse of the system. This will provide everyone with the knowledge of where a failure may occur in a real event and allow the jurisdiction the opportunity to make changes to eliminate that failure point.
- Include business, non-profit and non-governmental partners in emergency planning strategies to ensure a broader overall perspective
- Add flexibility and adaptability to plans to allow for unknowns
- Promote innovation and creativity in problem solving in day-to-day work as well as disaster response and recovery



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

SUSTAINABILITY (Community Level and Municipal / County Level)				
RESOURCE MANAGEMENT	ACCESSIBILITY TO LIFELINES	MITIGATION & RESILIENCE	RECOGNITION OF SMALL OR CASCADING FAILURES	UNITY OF PURPOSE
Strong resource management and supply chain management plan and procedures with redundancy built-in Resource availability - Internally or Externally Ability to swiftly obtain resources from multiple sources when needed	Strong resource management and supply chain management plan and procedures with redundancy built-in	Ability to bounce back after a disaster and fully recover Ability to decrease or eliminate hazards to decrease future harm	Early recognition of system failures Ability to avoid unintended consequences	Understanding of the priorities of the community, clearly defined, as well as an understanding of the necessary steps to move forward

Sustainability involves the factors that affect the system as a whole. This includes how agencies and communities are able to get needed resources, information, and vital services. Additionally, it involves the awareness of small system failures that may lead to systemic failures or a cascade of events that cause the system to fail. For those communities that ranked low in Sustainability, the following recommendations are given:

Resource Management – Resource management involves not only the availability of resources locally, but also the ability to move resources into the area following an emergency or disaster. Supply chain management allows for the rapid movement of resources. When agencies and community leaders were surveyed regarding this factor, some survey respondents (13) stated that their organizations had plans for obtaining essential resources, but most of them did not provide details and one respondent stated that their plans were “limited and not fully tested.” Five respondents stated that their organizations did not have any plans for obtaining essential resources during or after a disaster, indicating that this may be a good topic to address in educational and outreach efforts. In an emergency situation, emergency response organizations will order necessary resources to manage the event. These resources sometimes take time to get to the needed areas so having a community plan is essential. Some potential opportunities to improve resource management include:

- Better community outreach is needed to work through resource considerations, priorities and gaps
- Every community should have a well-developed resource and supply-chain management plan
- If the community only has one access in or out, alternative procedures should be developed to allow for necessary supplies during a disaster or when that access is limited or blocked
- Community supplies, gasoline, generators, and other items can be obtained locally through a community effort and maintained within the area. This would need to be done as a grass roots effort and/or in conjunction with local first response organizations.

Accessibility to Lifelines – While utilities themselves did not come up in many of the community surveys, the lack of lifelines was a major topic of concern during the unmet needs meetings overall. It was found that the more rural the community, the more the concern about losing key lifelines, such as power, gas, phone, internet or



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

transportation systems (road networks). All agencies will actively respond during and after a disaster to restore essential lifelines, however, until restoration is complete, communities will be on their own and will need back-up plans to meet their needs.

The majority of respondents (11) indicated that their organization had conducted assessments regarding key services and utilities, while four stated that they had not done any assessment of lifelines. Regarding redundancies and back-up systems, most respondents (10) indicated that they had a plan for back-up systems, although not all of them were complete back-ups, some only had back-up power options but did not have back-ups for fuel or water sources. Five respondents stated that they did not have plans for back-ups and one respondent was unsure. Similar to the last question, many respondents did not answer this question, indicating the need for greater information and education regarding this aspect of emergency preparedness. Some potential opportunities to improve accessibility to lifelines include:

- Assess available lifelines (power, water, gas, transportation infrastructure) and determine alternatives in the event those primary structures are disrupted.
- Secondary modes of egress are needed for some areas throughout these communities (e.g., Red Feather Lakes, Crystal Lakes and Glen Haven). Continue to work towards the identification and development of secondary access routes. This can be done by working with local law enforcement, fire agencies and county departments, such as the Office of Emergency Management.
- Develop clear plans and procedures to manage and mobilize organizational and/or community resources that might be needed during a crisis.
- Develop community communications plans to move information easily and rapidly amongst community members. This will help in resource acquisition and management as well as the assessment of available lifelines.
- Upgrade and expand warning and monitoring systems such as emergency notification systems and rain/stream gauge monitoring.
- Develop plans for alternative energy sources, allowing for redundancies and back-up systems if primary means fail (community solar power, internet hubs, etc.).
- Add additional generator or alternative power for critical services in each community.
- Build strong relationships within and between communities and governmental structures for long-term visioning and goals.
- Provide an organization-wide awareness of priorities that would be followed during a crisis.

Mitigation and Resilience – How quickly are you able to recover normal operations after a disaster and what can you do to mitigate hazards in the future? These questions are currently being asked by emergency management partners throughout Larimer County. The information collected as part of this study indicates that there are a wide range of answers depending upon the community, from “immediately” to “within days” to “several weeks.” Many



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

answers indicated that it would depend on the scale of the disaster and a few respondents stated they “had no idea” or did not have adequate information to answer the question. Some potential opportunities to improve mitigation and resilience include:

- Mitigation factors should be added into community and government planning documents to decrease the hazards faced by the community. A review of the Larimer Multi-Jurisdictional Hazard Mitigation Plan should be analyzed, actions should be implemented, and the plan should be updated regularly.
- Resilience has both a social and an institutional side. By incorporating the recommendations throughout this study, overall resilience will be strengthened.
- Community residents need to understand the risks they face by choosing to reside in and around floodplains and within the wildland interface. Private property will continue to be at risk, and residents should understand that replacement and repair of these properties is a personal responsibility.

Recognition of Small or Cascading Failures – The two biggest hazards Larimer County faces are flood and wildfire. Both of these events create a cascade of events that follow. Drought causes increased wildfire, which causes increased flooding and debris flows, which increases damages and destruction to public and private property. Flooding causes erosion and sediment flows which can later cause watershed health considerations and floodplain changes affecting public and private property. An emergency management system is similar in the fact that when something occurs in one area of the system, it ultimately affects other areas, and if these impacts go unnoticed, systemic failures may also occur. This factor received the fewest overall responses from agency and community leaders, only 15 of the 28 respondents, and several of these respondents indicated they didn’t know or were unsure about any unintended consequences. It is possible that the low level of response to this question was due to misunderstanding the question, or that respondents did not think the question applied to their organization’s work. This leads to the need for greater education about systemic processes and adverse effects. Some potential opportunities to improve recognition of small or cascading failures include:

- Increase communication amongst emergency services and emergency management partners to provide a more accurate picture of the situation and the needs to allow for better decision-making.
- Monitor communication systems to quell rumors and misinformation before community members begin to react to poor information.
- Discuss small system disturbances while considering the unintended consequences of decisions to mitigate these issues. This may avert problems before they occur.
- Analyze lifelines and redundancies to determine interconnections and whether the failure of one system will lead to the failure of another (e.g., power failure leads to no refrigeration which leads to the inability to keep life-saving medications viable).



CONCLUSION

The purpose of this study was to link assessments on Community Fragility and Unmet Needs for the purposes of creating a comprehensive assessment of Larimer County continued recovery needs. Linking Community Fragility to the ongoing Unmet Needs from the large-scale recovery efforts from the 2012 High Park wildfire and 2013 flood paints a holistic picture of pre- and post-disaster needs throughout Larimer County.

Only someone from a specific area can truly know what the strengths and weaknesses might be within their community and neighboring areas. This study provides a snapshot in time based upon available and relevant data, but it in no way captures all of the information available at the local level. Instead, it is meant as a starting point for greater research, outreach and education. If an area is relatively isolated, that area may be more vulnerable after the next emergency. By knowing this in advance, measures may be taken to decrease that isolation and thus, increase their chance of successful recovery in the future.

Additionally, at the municipal and county levels, creating stable governance, leadership and systems will enhance every community's ability to thrive. To complete the picture, both informal and formal communities need to work together to become sustainable for future generations. This may include mitigation efforts to increase resiliency or a strong planning partnership to ensure goals and priorities of the area are met.

Working from a systems perspective, where all parts are necessary for the success of the whole, every person will make a difference. Each individual will play a part in bolstering the weaknesses of the system and enhancing the strengths. Disasters happen in every area of the globe. By working holistically through a systems perspective, Larimer County has the opportunity to embrace a new path forward, strengthening each community along the way.

WHERE DO WE GO FROM HERE?

Substantial opportunities exist to strengthen community systems overall. As identified, needs still exist at the local community level that must be considered from a strategic perspective. How these needs are addressed in the immediate future will have a great impact on how the county responds in the future.

A work session was held with the Board of Commissioners on January 25, 2016 to discuss the findings of this report, along with the county's newly developed Hazard Mitigation Plan. From this work session, specific action items were chosen as a focus for the next 1-3 years (see Attachment A). Additionally, a comprehensive Fragility Strategy will be developed by the Office of Emergency Management to select specific action items, identify project partners, establish time frames, and schedule a reassessment of results.



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ATTACHMENT A

Larimer County 5 Year Strategic Plan: All-Hazards Emergency Management

1. *By June 2014, designate a County staff member to coordinate the initial recovery activities and work with the Long-Term Recovery Group on long-term recovery goals. Assist in the establishment of a VOAD (Voluntary Organizations Active in Disaster), and act as the County's representative to the Long-Term Recovery Group and VOAD.*
2. *By the end of 2014, develop and implement a training and education program for citizens at risk of all hazards to protect their lives and property.*
3. *By the end of 2014, ensure that the Emergency Operations Plan is updated to optimize coordinated emergency response efforts.*
4. *By June 2015, review and revise as appropriate the County's Building, Fire, and Land Use Codes to require and enforce suitable mitigation for new construction in hazardous areas.*
5. *By June 2016, perform an Unmet Needs and Community Fragility Study for Larimer County and outline how the information can be used to reduce unmet needs and decrease Community Fragility from emergencies and disasters long-term.*

Projects for Consideration

Utilizing the goals established in the Larimer County Strategic Plan, as well as the findings of this study, a list of potential projects has been developed for consideration by the Board of Commissioners. The purpose of this list is not necessarily to be all encompassing but to focus on projects that have the greatest impact on the broadest scale of issues covered in this report. This list can be scaled down, added to, or expanded upon based on the resources available to the county. Once finalized, cost elements and scope of work required can be developed to initiate these projects.

This list was created to cite specific projects that have clear objectives and are "SMART":

- Specific – target a specific area of improvement
- Measurable – quantify or at least suggest an indicator of progress
- Attainable – assuring that an end can be achieved
- Relevant – is the right goal at the right time for you
- Time-related – specify when the result(s) can be achieved

Planning

By the end of 2016, create a Disaster Plan Mini Kit to distribute to communities and associations to assist with identifying critical areas that need to be addressed before the next emergency. Items may include:

- Resource Planning: supplies, gasoline generators, other items
- 2nd egress routes identified
- Communication tree
- Disaster recovery directory



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Hazard Mitigation Projects

The county should continue to explore federal grant programs to address mitigation activities as identified in the 2016 Hazard Mitigation Plan.

- Within the next three years, the county should complete the Home Acquisition Program for substantially damaged or destroyed structures in the floodway identified after the 2013 flood.
- By the end of 2016, complete the stream gauge monitoring system upgrade along the Big Thompson River through the HMGP program. Over the next three years, seek additional grant funding to upgrade stream gauges along the Cache la Poudre and the Little Thompson Rivers.
- By the end of 2017, conduct an assessment of critical facilities and lifeline redundancies to determine needs for back-up systems and resources. Provide guidance to local communities on ability to obtain necessary resources.
- Participate in FEMA's High Water Mark Placard Program and by the end of 2016 kick off the program throughout flood impacted communities.

Community Events

In 2016, create a robust community outreach program for preparedness, mitigation and resiliency and conduct meetings, work sessions, and/or workshops in at least five communities. After 2016, continue to build upon and expand community events getting people information when they are ready to digest it. Examples may include:

- Relay Race to send a message from one side of town to another
- Emergency Preparedness Expos
- Fire/Sheriff department hosting community picnics and open houses
- Watershed Coalition led programs: river restoration, wildfire mitigation
- Foster interjurisdictional relationships outside of work
 - a. Hold annual softball competition
 - b. Fishing tournaments
 - c. Bicycle and running races
 - d. Firefighting competition

Education

K-12 (Interacting with Public Schools)

By the end of 2017, in partnership with local school districts, design an education program for children and parents on preparedness, mitigation and resiliency. This has been proven to be a very effective way to get parents involved in emergency preparedness.

Higher Education

By the end of 2017, in partnership with Colorado State University and/or the private sector, offer educational seminars, webinars, and/or on-line training on relevant topics to employees and community members. Topics to consider:

- The National Flood Insurance Program
- Road Planning and Maintenance for Private Access Roads. Larimer County already has a publication created in 1999, which might need to be updated and presented in a way to make it more easily accessible
- The benefits of home owner associations, coalitions, and public improvement districts.
- Flood proofing your homes and business (i.e. Silver Jackets working with Estes Park)



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

- Online mitigation classes for community members. As an example, CDR Maguire recently created one for the Town of Westerly, CT. It can be viewed at www.westerly.govoffice.com by clicking on the Emergency Management Page
- FEMA PA, HMGP, CDBG-DR and other federal grant training.
 - i. FEMA's Emergency Management Institute offers a number of courses either online or on-campus that could benefit different individuals from the county.
 - ii. www.hudexchange.info offers education on CDBG-DR
- How to appropriately dispose of debris during a disaster for residents
- Community Solar Projects
- Setting up an association between communities to discuss lessons learned from different emergencies much like the state did when they brought in state officials from Vermont early on in the flood disaster to provide some input on what to expect.

Web Page Design for OEM

By the end of 2016, update and implement best practices on county's Emergency Management Page. Things to consider:

- Adding frequently asked questions section
- Making it mobile friendly
- Relying less on text and more on visuals
- Adding on-line training videos
- Utilizing best practices on social media – frequency of posting on Facebook and twitter
- Getting onto the playlist for the Larimer County's YouTube channel

Safety Projects

Multiple safety related projects should be considered in the next three years.

- By the end of 2016, complete a community-wide assessment of single access areas.
- By the end of 2016, assess the feasibility of a Mobile Medical Center for rural communities
- Continue to partner with the Amateur Radio Emergency Services volunteers at the community level and build capacity for this service at the community level

Debris Projects

By the end of 2016, obtain approval from FEMA for Larimer County's new Debris Management Plan as part of the PAAP Program. This process should include:

- Identification of sites to stage debris efforts across the county
- Determination of alternatives to burn, chip or other options to reduce the amount of debris before the next disaster to extend the county's landfill lifeline
- Consideration of the use of radios (i.e. HAM) with on-call hauler rather than relying on cellular phones to increase efficiency in operations and reduce costs

Communications – Phone/Broadband

In 2016, conduct a feasibility study to look into the cost of bringing high speed internet access into certain communities. As an alternative, the county can assist in fostering a conversation between resident and the private sector for specific solutions to their area.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Become a Best Practice Community

Consider forming a joint Emergency Operations Center (EOC) instead of each agency having only one or two people working through all phases of emergency management.

Look at federal grants opportunities to bring new innovative solutions to solve transportation needs of the county. One potential grant currently in existence is the Accelerated Innovation Deployment Demonstration Grant which focuses on reducing the time to construct projects and therefore cost and impact to the traveling public.



APPENDIX 1:

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UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

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UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

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APPENDIX 2:

THE NEW CODE OF THE WEST

Around 1996, in response to the urbanization of rural Colorado, John Clarke, former Larimer County Commissioner, decided that much of the source of the friction between new and existing residents was the mindset of the urbanites who were expecting the same sort of services in the country that they routinely received in the city. At the urging of a developer friend and borrowing liberally from western author Zane Grey's 1934 novel, "The Code of the West," Clarke drew up what he calls "The New Code of the West." "We are dealing with the gentrification of the country," he said. "We have to be truthful about what it's like to live here. And so we give a copy of this code to everyone who is interested in moving here."

While Grey's code dealt with matters such as tipping one's hat to a lady, the new code addresses modern issues such as emergency service, water rights, telephone service and the smells that are generated in a rural area.

Introduction

It is important for you to know that life in the country is different from life in the city. County governments are not able to provide the same level of service that city governments provide. To that end, we are providing you with the following information to help you make an educated and informed decision to purchase rural land.

Access

The fact that you can drive to your property does not necessarily guarantee that you, your guests and emergency service vehicles can achieve that same level of access at all times. Please consider:

1.1 - Emergency response times (Sheriff, fire suppression, medical care, etc.) cannot be guaranteed. Under some extreme conditions, you may find that emergency response is extremely slow and expensive.

1.2 - There can be problems with the legal aspects of access, especially if you gain access across property belonging to others. It is wise to obtain legal advice and understand the easements that may be necessary when these types of questions arise.

1.3 - You can experience problems with the maintenance and cost of maintenance of your road. Larimer County maintains 1,103 miles/1,775 kilometers of roads, but many rural properties are served by private and public roads which are maintained by private road associations. There are even some county roads that are not maintained by the county - no grading or snow plowing. There are even some public roads that are not maintained by anyone! Make sure you know what type of maintenance to expect and who will provide that maintenance.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

1.4 - Extreme weather conditions can destroy roads. It is wise to determine whether or not your road was properly engineered and constructed.

1.5 - Many large construction vehicles cannot navigate small, narrow roads. If you plan to build, it is prudent to check out construction access.

1.6 - School buses travel only on maintained county roads that have been designated as school bus routes by the school district. You may need to drive your children to the nearest county road so they can get to school.

1.7 - In extreme weather, even county maintained roads can become impassable. You may need a four wheel drive vehicle with chains for all four wheels to travel during those episodes, which could last for several days.

1.8 - Natural disasters, especially floods, can destroy roads. Larimer County will repair and maintain county roads, however, subdivision roads are the responsibility of the landowners who use those roads. A dry creek bed can become a raging torrent and wash out roads, bridges, and culverts. Residents served by private roads and/or bridges have been hit with large bills for repairs and/or reconstruction after floods.

1.9 - Unpaved roads generate dust. When traffic levels reach specific levels, Larimer County treats county system roads to suppress the dust, but dust is still a fact of life for most rural residents.

1.10 - If your road is unpaved, it is highly unlikely that Larimer County will pave it in the foreseeable future. Check carefully with the County Road and Bridge Department when any statement is made by the seller of any property that indicates any unpaved roads will be paved!

1.11 - Unpaved roads are not always smooth and are often slippery when they are wet. You will experience an increase in vehicle maintenance costs when you regularly travel on rural county roads.

1.12 - Mail delivery is not available to all areas of the county. Ask the postmaster to describe the system for your area.

1.13 - Newspaper delivery is similarly not always available to rural areas. Check with the newspaper of your choice before assuming you can get delivery.

1.14 - Standard parcel and overnight package delivery can be a problem for those who live in the country. Confirm with the service providers as to your status.

1.15 - It may be more expensive and time consuming to build a rural residence due to delivery fees and the time required for inspectors to reach your site.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

Utility Services

Water, sewer, electric, telephone and other services may be unavailable or may not operate at urban standards. Repairs can often take much longer than in towns and cities. Please review your options from the non-exhaustive list below.

2.1 - Telephone communications can be a problem, especially in the mountain areas of Larimer County. From time to time, the only phone service available has been a party line. If you have a private line, it may be difficult to obtain another line for fax or computer modem uses. Even cellular phones will not work in all areas.

2.2 - If sewer service is available to your property, it may be expensive to hook into the system. It also may be expensive to maintain the system you use.

2.3 - If sewer service is not available, you will need to use an approved septic system or other treatment process. The type of soil you have available for a leach field will be very important in determining the cost and function of your system. Have the system checked by a reliable sanitation firm and ask for assistance from the Larimer County Environmental Health Department.

2.4 - If you have access to a supply of treated domestic water, the tap fees can be expensive. You may also find that your monthly cost of service can be costly when compared to municipal systems.

2.5 - If you do not have access to a supply of treated domestic water, you will have to locate an alternative supply. The most common method is use of a water well. Permits for wells are granted by the state engineer and the cost for drilling and pumping can be considerable. The quality and quantity of well water can vary considerably from location to location and from season to season. It is strongly advised that you research this issue very carefully.

2.6 - Not all wells can be used for watering of landscaping and/or livestock. Permits from the state engineer may restrict water to use to that which is used inside of a home. If you have other needs, make certain that you have the proper approvals before you invest. It may also be difficult to find enough water to provide for your needs even if you can secure the proper permit.

2.7 - Electric service is not available to every area of Larimer County. It is important to determine the proximity of electrical power. It can be very expensive to extend power lines to remote areas.

2.8 - It may be necessary to cross property owned by others in order to extend electric service to your property in the most cost efficient manner. It is important to make sure that the proper easements are in place to allow lines to be built to your property.

2.9 - Electric power may not be available in two phase and three phase service configurations. If you have special power requirements, it is important to know what level of service can be provided to your property.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

2.10 - If you are purchasing land with the plan to build at a future date, there is a possibility that electric lines (and other utilities) may not be large enough to accommodate you if others connect during the time you wait to build.

2.11 - The cost of electric service is usually divided into a fee to hook into the system and then a monthly charge for energy consumed. It is important to know both costs before making a decision to purchase a specific piece of property.

2.12 - Power outages can occur in outlying areas with more frequency than in more developed areas. A loss of electric power can also interrupt your supply of water from a well. You may also lose food in freezers or refrigerators and power outages can cause problems with computers as well. It is important to be able to survive for up to a week in severe cold with no utilities if you live in the country.

2.13 - Trash removal can be much more expensive in a rural area than in a city. In some cases, your trash dumpster may be several miles from your home. It is illegal to create your own trash dump, even on your own land. It is good to know the cost for trash removal as you make the decision to move into the country. In some cases, your only option may be to haul your trash to the landfill yourself. Recycling is more difficult because pick-up is not available in most rural areas.

The Property

There are many issues that can affect your property. It is important to research these items before purchasing land.

3.1 - Not all lots are buildable. The Larimer County Assessor has many parcels that are separate for the purpose of taxation that are not legal lots in the sense that a building permit will not be issued. You must check with the Larimer County Planning Department to know that a piece of land can be built on.

3.2 - Easements may require you to allow construction of roads, power lines, water lines, sewer lines, etc. across your land. There may be easements that are not of record. Check these issues carefully.

3.3 - Many property owners do not own the mineral rights under their property. Owners of mineral rights have the ability to change the surface characteristics in order to extract their minerals. It is very important to know what minerals may be located under the land and who owns them. Much of the rural land in Larimer County can be used for mining, however a special review by the county commissioners is usually required. Be aware that adjacent mining uses can expand and cause negative impacts.

3.4 - You may be provided with a plat of your property, but unless the land has been surveyed and pins placed by a licensed surveyor, you cannot assume that the plat is accurate.

3.5 - Fences that separate properties are often misaligned with the property lines. A survey of the land is the only way to confirm the location of your property lines.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

3.6 - Many subdivisions and planned unit developments have covenants that limit the use of the property. It is important to obtain a copy of the covenants (or confirm that there are none) and make sure that you can live with those rules. Also, a lack of covenants can cause problems between neighbors.

3.7 - Homeowners associations (HOAs) are required to take care of common elements, roads, open space, etc. A dysfunctional homeowners association or poor covenants can cause problems for you and even involve you in expensive litigation.

3.8 - Dues are almost always a requirement for those areas with a HOA. The by-laws of the HOA will tell you how the organization operates and how the dues are set.

3.9 - The surrounding properties will probably not remain as they are indefinitely. You can check with the Larimer County Planning Division to find out how the properties are zoned and to see what future developments may be in the planning stages. The view from your property may change.

3.10 - If you have a ditch running across your property, there is a good possibility that the owners of the ditch have the right to come onto your property with heavy equipment to maintain the ditch.

3.11 - Water rights that are sold with the property may not give you the right to use the water from any ditches crossing your land without coordinating with a neighbor who also uses the water. Other users may have senior rights to the water that can limit your use or require you to pay for the oversizing or other improving of the ditch.

3.12 - It is important to make sure that any water rights you purchase with the land will provide enough water to maintain fruit trees, pastures, gardens or livestock.

3.13 - The water flowing in irrigation ditches belongs to someone. You cannot assume that because the water flows across your property, you can use it.

3.14 - Flowing water can be a hazard, especially to young children. Before you decide to locate your home near an active ditch, consider the possible danger to your family.

Mother Nature

Residents of the country usually experience more problems when the elements and earth turn unfriendly. Here are some thoughts for you to consider.

4.1 - The physical characteristics of your property can be positive and negative. Trees are a wonderful environmental amenity, but can also involve your home in a forest fire. Building at the top of a forested draw should be considered as dangerous as building in a flash flood area. Defensible perimeters are very helpful in protecting buildings from forest fire and inversely can protect the forest from igniting if your house catches on fire. If you start



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

a forest fire, you are responsible for paying for the cost of extinguishing that fire. For further information, you can contact the Larimer County Emergency Services Department.

4.2 - Steep slopes can slide in unusually wet weather. Large rocks can also roll down steep slopes and present a great danger to people and property.

4.3 - Expansive soils, such as Bentonite Clay (which is common in the foothills) can buckle concrete foundations and twist steel I-beams. You can know the soil conditions on your property if you have a soil test performed.

4.4 - North facing slopes or canyons rarely see direct sunlight in the winter. There is a possibility that snow will accumulate and not melt throughout the winter.

4.5 - The topography of the land can tell you where the water will go in the case of heavy precipitation. When property owners fill in ravines, they have found that the water that drained through that ravine now drains through their house.

4.6 - A flash flood can occur, especially during the summer months, and turn a dry gully into a river. It is wise to take this possibility into consideration when building.

4.7 - Spring run-off can cause a very small creek to become a major river. Many residents use sand bags to protect their homes. The county does not provide sand bags, equipment or people to protect private property from flooding.

4.8 - Nature can provide you with some wonderful neighbors. Most, such as deer and eagles are positive additions to the environment. However, even "harmless" animals like deer can cross the road unexpectedly and cause traffic accidents. Rural development encroaches on the traditional habitat of coyotes, bobcats, mountain lions, rattlesnakes, prairie dogs, bears, mosquitoes and other animals that can be dangerous and you need to know how to deal with them. In general, it is best to enjoy wildlife from a distance and know that if you do not handle your pets and trash properly, it could cause problems for you and the wildlife. The Colorado Department of Wildlife and the Larimer County Health Department are two good resources for information. They have many free publications to help educate you about living in the wild.

Agriculture

Moo! The people who tamed this wild land brought water to the barren, arid east slope of the Rockies through an ingenious system of water diversion. This water has allowed agriculture to become an important part of our environment. Owning rural land means knowing how to care for it. There are a few things you need to know:

5.1 - Farmers often work around the clock, especially during planting and harvest time. Dairy operators sometimes milk without stopping and hay is often swathed or baled at night. It is possible that adjoining agriculture uses can disturb your peace and quiet.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

5.2 - Land preparation and other operations can cause dust, especially during windy and dry weather.

5.3 - Farmers occasionally burn their ditches to keep them clean of debris, weeds and other obstructions. This burning creates smoke that you may find objectionable.

5.4 - Chemicals (mainly fertilizers and herbicides) are often used in growing crops. You may be sensitive to these substances and many people actually have severe allergic reactions. Many of these chemicals are applied by airplanes that fly early in the morning.

5.5 - Animals and their manure can cause objectionable odors. What else can we say?

5.6 - Agriculture is an important business in Larimer County. If you choose to live among the farms and ranches of our rural countryside, do not expect county government to intervene in the normal day-to-day operations of your agri-business neighbors. In fact, Colorado has "Right to Farm" legislation that protects farmers and ranchers from nuisance and liability lawsuits. It enables them to continue producing food and fiber.

5.7 - Colorado has an open range law. This means if you do not want cattle, sheep or other livestock on your property, it is your responsibility to fence them out. It is not the responsibility of the rancher to keep his/her livestock off your property.

5.8 - Before buying land you should know if it has noxious weeds that may be expensive to control and you may be required to control. Some plants are poisonous to horses and other livestock.

5.9 - Animals can be dangerous. Bulls, stallions, rams, boars, etc. can attack human beings. Children need to know that it is not safe to enter pens where animals are kept.

5.10 - Much of Larimer County receives less than 15 inches (38 cm) of precipitation per year. As a result, we have a problem with overgrazing, and fugitive dust. Without irrigation, grass does not grow very well. There is a limit to the amount of grazing the land can handle. The Larimer County Cooperative Extension Office can help you with these issues.

In Conclusion

Even though you pay property taxes to the county, the amount of tax collected does not cover the cost of the services provided to rural residents. In general, those living in the cities subsidize the lifestyle of those who live in the country by making up the shortfall between the cost of services and the revenues received from rural dwellers.

This information is by no means exhaustive. There are other issues that you may encounter that we have overlooked and we encourage you to be vigilant in your duties to explore and examine those things that could cause your move to be less than you expect.



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

We have offered these comments in the sincere hope that it can help you enjoy your decision to reside in the country. It is not our intent to dissuade you, only inform you.



APPENDIX 3:

SURVEYS USED IN THIS REPORT

The public survey distributed in Larimer County included open-ended and scaled opinion questions. A copy of the paper survey is included in this Appendix.

Visions for a Resilient Larimer County Core Community Resilience Themes

The purpose of this survey is to gather preliminary information from community members and stakeholders about the current capacities and resiliency conditions of their community as well as to develop a long-range vision for a resilient Larimer County. In the Colorado Resiliency Framework, resilience is defined as, “the ability of communities to rebound, positively adapt to, or thrive amidst changing conditions or challenges – including disasters and climate change – and maintain quality of life, healthy growth, durable systems and conservation of resources for present and future generations.” This survey is designed to elicit input about ways to improve community capacity, capability, and resiliency. The survey should take 10-15 minutes to complete and all responses will remain anonymous.

1. What community do you live in?
2. How long have you lived in this community?
 Less than a year 1-5 years 5-10 years Over 10 years

3. The following statements are possible descriptions of your community. Please select one response for each statement.

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree	I don't know
A – People in my community feel like they belong to the community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B - People in my community are committed to the well-being of the community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C - People in my community have hope about the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D - People in my community help each other.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E - My community treats people fairly no matter what their background is.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F - My community supports programs for children and families.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
G - My community has the resources it needs to take care of community problems (resources can include money, information, technology, tools, and services).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
H - My community has effective leaders.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I - People in my community are able to get the services they need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
J - People in my community know where to go to get things done.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
K - My community works with organizations and agencies outside the community to get things done.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L - People in my community communicate with leaders who can help improve the community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
M - People in my community work together to improve the community.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
N - My community looks at its successes and failures so it can learn from the past.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
O - My community has priorities and sets goals for the future.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



UNMET NEEDS AND COMMUNITY FRAGILITY STUDY: LARIMER COUNTY

	Strongly Disagree	Disagree	Neither Disagree Nor Agree	Agree	Strongly Agree	I don't know
P - My community tries to prevent disasters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Q - My community actively prepares for future disasters.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
R - My community can provide emergency services during a disaster.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S - My community has services and programs to help people after a disaster.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
T - My community keeps people informed (for example, via television, radio, newspaper, Internet, phone, neighbors) about issues that are relevant to them.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
U - If a disaster occurs, my community provides information about what to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
V - People in my community trust public officials.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
W - People in my community trust community leaders.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
X - People in my community trust county leaders.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Y - I feel that I am represented in local politics.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Z - I feel that my community has access to political representation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AA - I know who my community leader(s) is/are.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BB - I know who my county leader(s) is/are.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. Related to the above leadership questions, if possible please provide specific names for the following:
 - a. I know who my community leader(s) is/are (AA):
 - b. I know who my county leader(s) is/are (BB):
5. Do you have additional comments to share pertaining to the above questions? If so, please elaborate below (please make sure to begin your comment by referencing the question letter – i.e. “M – My community has...”).
 - a. Comment 1:
 - b. Comment 2:
 - c. Comment 3:
6. Please add any additional comments below:

Please return to: Office of Emergency Management, 200 West Oak Street, Fort Collins CO 80522 or via email at: hodgeslr@co.larimer.co.us

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