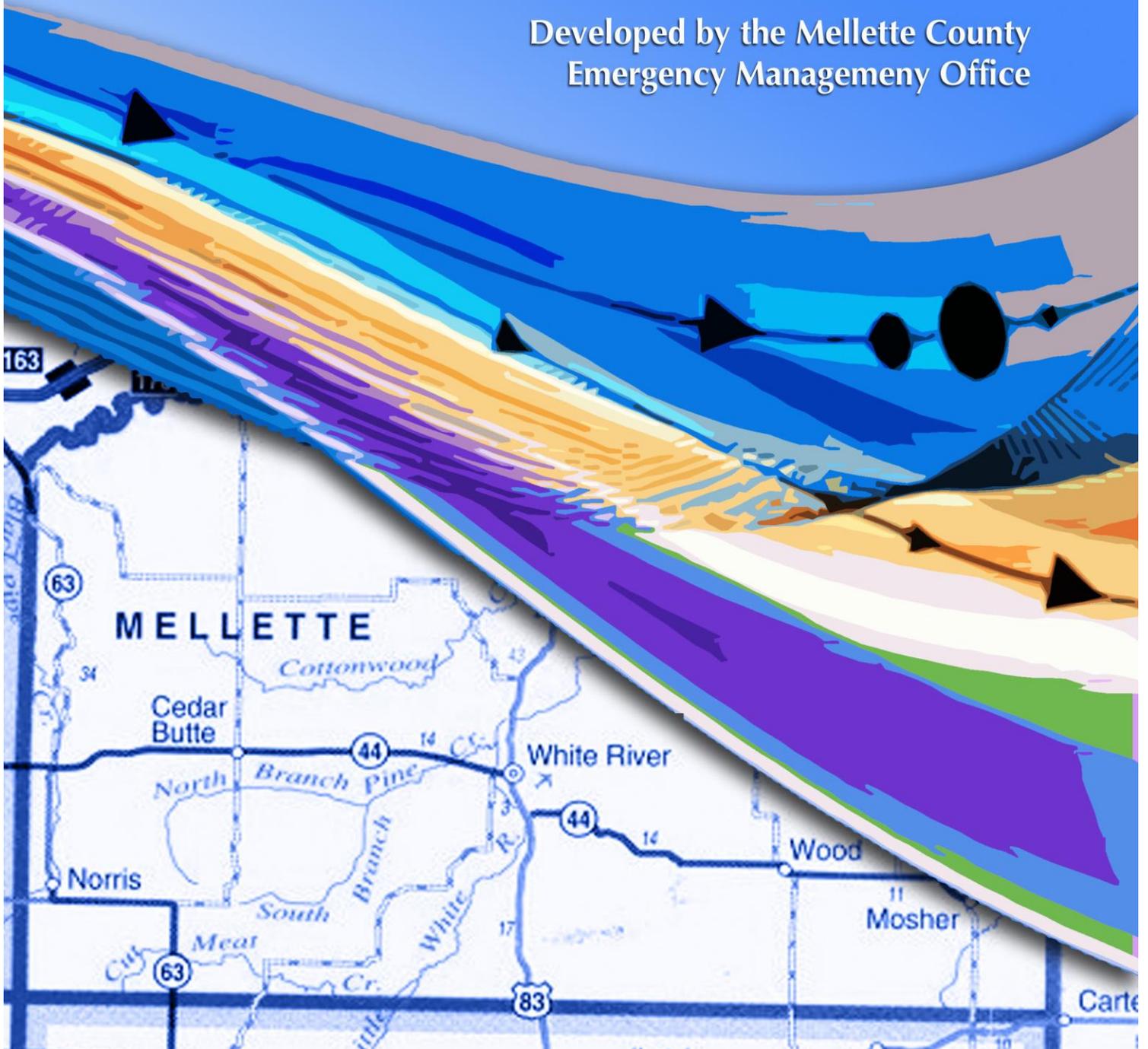


# Mellette County

## Pre-Disaster Mitigation Plan

December 2012

Developed by the Mellette County  
Emergency Management Office



The cover image features a stylized landscape with a blue river or stream in the foreground, transitioning into a yellow and orange sky. The title 'Mellette County' is written in a large, white, sans-serif font across the top, and 'Pre-Disaster Mitigation Plan' is written in a smaller, black, sans-serif font below it.

# Mellette County

## Pre-Disaster Mitigation Plan

### Table of Contents    **NEED To** Complete Page Numbers

---

#### **CHAPTER 1. Introduction**

- A. *Background*
- B. *Methodology*
- C. *Hazard Mitigation Goals of the State of South Dakota*
- D. *Acknowledgements*

#### **CHAPTER 2. Community Profile**

- A. *Location, Topography and Environmental Features*
- B. *Development Trends*

#### **CHAPTER 3. Hazards in Mellette County**

- A. *What Are the Hazards?*
- B. *Past Hazard Events*
- C. *Potential Hazards to Critical Facilities and Areas of Concern*

#### **CHAPTER 4. Prioritizing Critical Facilities and Areas of Concern**

- A. *Category 1: Emergency Response Services and Facilities*
- B. *Category 2: facilities and Areas to Protect in a Hazard Event*
- C. *Category 3: Potential Resources*

#### **CHAPTER 5. Determining the Affects of Defined Hazards**

- A. *Identifying Vulnerable Facilities*
- B. *Calculating the Potential Loss*

**CHAPTER 6. Existing Hazard Mitigation Programs**

**CHAPTER 7. Plan Goals and Objective Development**

A. *Goals, Objectives and Actions*

**CHAPTER 8. Potential Mitigation Strategies**

**CHAPTER 9. Feasibility and Prioritization of Mitigation Strategies**

**CHAPTER 10. Implementation Schedule**

**CHAPTER 11. Monitoring, Evaluating and Updating the Plan**

*LIST OF TABLES:*

<i>Table 1. Significant Hazard Occurrences Reported in Mellette County</i>	30
<i>Table 2. All-hazard Priority Matrix for Mellette County</i>	30
<i>Table 3. Existing Mitigation Strategies and Proposed Improvements</i>	46
<i>Table 4. Potential Mitigation Strategies</i>	56

*LIST OF MAPS: (before appendices):*

- 1. Aerial photo of Mellette County*
- 2. Aerial photo of White River*
- 3. Aerial photo of*
- 4. Aerial photo of*

*LIST OF APPENDICES:*

- Appendix A: Promulgation Statement*
- Appendix B: Map of Mellette County/Cities*
- Appendix C: List of Hazard Events* **NEED To ADD**
- Appendix D: STAPLEE Chart*
- Appendix E: Mitigation Action Chart*
- Appendix F: Copies of Sign In Sheets* **NEED to ADD**
- Appendix G: Community Survey* **NEED to ADD**

The title graphic features a stylized background of a river or waterway with colorful, abstract brushstrokes in shades of blue, purple, and yellow. The text 'Mellette County' is prominently displayed in a large, white, sans-serif font across the top. Below it, the subtitle 'Pre-Disaster Mitigation Plan' is written in a smaller, bold, black, sans-serif font.

# Mellette County

## Pre-Disaster Mitigation Plan

### Executive Summary

---

*The Mellette County Pre-Disaster Mitigation Plan was prepared in response to the Disaster Mitigation Act of 2000 (DMA 2000). The DMA 2000 requires state and local governments to prepare hazard mitigation plans in order to remain eligible to receive pre-disaster mitigation funds that are made available in the wake of federally declared disasters.*

*This plan is an update of the Pre-Disaster Mitigation Plan (PDM) developed by the County in 2006. The document will serve as a strategic planning tool to mitigate against future disaster events for use by the county and its communities. The plan identifies and analyzes the natural and man-made disasters that may occur in Mellette County in order to understand the county's vulnerabilities and propose mitigation strategies that minimize future damage caused by the hazards. This knowledge will help identify solutions that can significantly reduce threat to life and property.*

*This is not an emergency response or emergency management plan. Undoubtedly, the plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is a crucial mitigation strategy. However, the focus of this plan is to support responsible decision-making to avoid risks and increase implementation efforts of activities or projects that will eliminate or reduce the possibility of exposure to a hazard threat.*

### Mellette County Pre-Disaster Mitigation Planning Process

*The DMA 2000 requires states to submit comprehensive Hazard Mitigation Plans to the Federal Emergency Management Agency (FEMA) to be eligible for future pre-disaster mitigation funding. Local jurisdictions must also develop plans and to comply with such requirements, Mellette County and the communities in the County have developed this Pre-Disaster Mitigation Plan.*

*The plan was developed by the Mellette County Emergency Management Office and the local Planning Committee to assist Mellette County and its jurisdictions to reduce and mitigate future losses from natural and man-made hazards. The plan was coordinated and authored through the assistance of a consultant, Northern Tier Consulting.*

*The plan contains the necessary tools to identify specific hazards and effectively improve the disaster planning process by requiring participating municipalities to document their hazard mitigation planning process by identifying hazards, potential losses, mitigation needs, goals, and strategies.*

*To support the planning process for this Pre-Disaster Mitigation Plan, Mellette County completed the following functions:*

### **Scope of Planning Process**

- *Formed a planning group with members from each municipality*
- *Provided opportunities for public input and encourage participation and involvement*
- *Identified hazards and vulnerabilities within the county and local jurisdictions*
- *Combined risk assessments, community development, and emergency management ideas*
- *Developed goals and measurable objectives based on the identified hazards and risks*
- *Prioritized and evaluate each hazard and subsequent actions*
- *Established guidelines for updating and monitoring the plan*
- *Presented the plan to the Mellette County Commissioners and the participating communities for adoption*

*Following the completion and adoption of this plan, it is the intention of the participating jurisdictions to continue working collaboratively to address data gaps while implementing complementary and collective mitigation actions. The plan is available for review at the Mellette County Emergency Management Office. Updates to the plan will be similarly announced after annual plan reviews and five-year updates, with the next update to occur in 2017.*

### **Hazard Identification**

*Mellette County is vulnerable to natural hazards that have the possibility of causing serious threat to the health, welfare, and security of our citizens. The cost of response and recovery, in terms of potential loss of life or loss of property, from potential disasters can be lessened*

when attention is turned to mitigating their effects before they occur. Along with critical structures essential to the county, the planning committee has identified; natural hazards, man-made hazards, that repetitively and continuously affect the welfare of citizens in the county. These are summarized below and will be expanded upon throughout this plan.

A key component of a mitigation plan is the accurate identification of risks posed by a hazard along with the corresponding community impact. The process of identifying hazards of concern, profiling hazard events and conducting a vulnerability assessment is known as a risk assessment.

**The following natural hazards are addressed:**

- *Flooding*
- *Droughts*
- *Extreme Winter Weather*
- *Tornado/High Winds/Lightning*
- *Wildfire*



**The following man-made and technological hazards are addressed:**

- *Hazardous Materials*
- *Transportation Incident*
- *Power Failure*
- *Urban Fire*
- *Communication Outage*

**The list of critical facilities that would be most affected by an incident include:**

- *Electric power lines, substations*
- *Water supply stations*
- *Telephone facilities*
- *Fire stations*
- *Law enforcement facilities*
- *Hospitals and clinics*
- *Transportation and evacuation routes*

The cover image features a stylized, colorful background with horizontal bands of blue, purple, and yellow, suggesting a landscape or water. The title 'Mellette County' is written in a large, white, sans-serif font across the top. Below it, 'Pre-Disaster Mitigation Plan' is written in a smaller, black, sans-serif font.

# Mellette County

## Pre-Disaster Mitigation Plan

### Chapter 1

---

#### Background

##### Purpose

*The purpose of this plan is to maximize the survival of the citizens within Mellette County and to preserve property, while working to lessen the environmental effects of a disaster. This plan intends to familiarize elected and appointed officials to their collective emergency preparedness and mitigation responsibilities as representatives of county and local government.*

*The Mellette County Mitigation plan was developed to assist the county in reducing and mitigating future losses from natural and man-made hazard events. The plan contains the tools necessary to identify specific hazards along with aspects of existing and future mitigation efforts.*

*The long-ranging outcome of the plan is to establish a framework of research, information, and public education/involvement that can be expanded in the future to meet the needs of the area.*

##### These include:

- *Providing a Methodical Approach to Mitigation Planning*
- *Enhancing Public Awareness and Understanding of Hazards*
- *Developing Decision-Making Tools for Policy Makers*
- *Promoting Compliance with State and Federal Program Requirements*
- *Assuring Inter-Jurisdictional Coordination of Mitigation-Related Programming*
- *Developing Jurisdiction Specific Hazard Mitigation Strategies for Implementation*

## **Methodology**

*Mitigation planning is a process that communities employ to identify policies, activities, and tools to implement mitigation actions. The process that was used in the development of this plan consisted of the following recommended FEMA planning sections with action steps to align to the County's overall goals:*

- I. Planning Process*
- II. Hazard Identification and Risk Assessment*
- III. Mitigation Strategy*
- IV. Plan Review, Evaluation, and Implementation*
- V. Plan Adoption*

## **I. Planning Process**

### **Funding Approval**

*The County received funding approval from FEMA and the South Dakota Office of Emergency Management, to prepare the mitigation plan, in February 2012.*

### **Scope of the Plan**

*The scope of this plan is "All-Hazard" and includes the identification of both natural and man-made hazards affecting Mellette County, as identified by community input, Hazard Vulnerability Assessments (HVAs), risk assessments and the planning committee's study and input. They are categorized as follows:*

- I. Flood, Drought, Extreme Heat, and Wildfire*
- II. Tornado and Severe Wind*
- III. Winter Weather (Snow, Ice Storm and Extreme Cold)*
- IV. Man-made Hazards*

*The planning team's consideration of issues related to man-made hazards has been developed through recommendations from the previous plan, local planning committee, area businesses, and local farmers and ranchers.*

## **Building the Informational Group and Planning Committee**

*Prior to the Kick-off meeting, the Mellette County Emergency Management Coordinator wrote letters to prospective members, which included a brief description, need, and timeline for the completion of the Pre-Disaster Mitigation (PDM) Plan.*

*The first task was to organize the Mellette County Informational group of appointed and elected officials, key stakeholders and subject matter experts. This assembly was comprised of representatives from state government, county and local government, and community groups. Individuals from the group attended the kick-off meeting in April 5, 2012 and have been informed of planning updates on a quarterly basis.*

*At the Kick-off meeting, participants were invited to join and provide input as a volunteer to the core planning team. Additional members from county and local government were contacted and invited to join the team due to the role as a jurisdictional resource possessing the following skills and knowledge:*

- *An understanding of how hazards affect the counties and participating jurisdictions*
- *Substantial knowledge of community and county infrastructure systems*
- *Availability of resources such as maps or data on past hazard events*

*This appreciated and dedicated group attended the planning meetings, provided information and documents that were used to produce the plan, reviewed drafts of the plan as it was being assembled, and edited and approved the final version of the plan.*

## **Public Input and Informational Meetings**

*After the Kick-Off Meeting, information was gathered through a series of public meetings in July 2. Public input was solicited (public notices in area newspapers, meetings, etc.) during the entire planning process. Opportunities for comments were made available at both the local and county government levels. Citizens were able to obtain information to plan's status through Mellette County Emergency Management office, county government, and local government officials.*

*Feedback received from the public proved valuable in the development of the plan. Several remarks received by the committee led to the reconsideration of "suggested" priority mitigation actions, which illustrated the need for options in the event of severe storms, drought, and power outages.*

*For example, the set-up of shelters in White River Corn Creek and generators for shelters along with sirens in the communities not currently protected are now included in the natural hazard portion of the PDM.*

## **Planning Meetings**

*To review the upcoming plan development process, review of existing data and lastly, to begin systematic compiling of new information, the planning meetings started in October and ran through December 2012. The final plan review was held the second week of December. The majority of the meetings were held at the Mellette County Emergency Services Building. An agenda was sent before the meetings and all members of the team were invited to attend by email notification and prior meeting announcements.*

## **Schedule of Events, 2012-2013**

*March: Email Introduction to Project and Consultant*

*April: Kick-off Meeting with Local Newspaper*

*May: County Commission and Council Meeting Notification*

*July: Public Notice Meetings with Local Newspaper*

*October First In-person Planning Meeting*

*November: Series of In-person Planning Meetings*

*Middle of January: Final Plan Review*

*Late January Through February: Submission to South Dakota Office of Emergency Management and FEMA*

*May 2013: Community and County Adoption Presentations*

## **II. Hazard Identification and Risk Assessment**

## **Step 1 – Map the Hazards and Conduct Risk Assessments**

*Participants identified areas where damage from historic natural disasters had occurred and areas where critical man-made facilities and other features may be at risk to property damage, environmental pollution, and other factors. Updates to the list of past hazard events was included from the information contained in the 2003 Plan.*

*An updated Hazard Vulnerability Assessment (HVA), using the main hazards and relating them to a risk rating, vulnerability and overall damage it would cause to the people and property of the county.*

## **Step 2 – Identify Critical Facilities and Areas of Concern**

*Participants identified facilities and areas that were deemed significant or crucial to the county for emergency management purposes, or provision of utilities and community services, evacuation routes and for recreational and social value.*

## **III. Mitigation Strategy**

### **Step 3 – Identify Existing Mitigation Strategies**

*After collecting detailed information on each critical facility in the county, the local planning committee members, Mellette County Emergency Management Office and the Consultant, identified existing mitigation strategies.*

### **Step 4 – Identify the Gaps in Existing Mitigation Strategies**

*The previous plan strategies were reviewed for coverage and effectiveness, as well as the need for improvement or a downgrade of an existing strategy to a given area.*

### **Step 5 – Identify Potential Mitigation Strategies**

*A list of additional hazard mitigation actions and strategies for the region was developed. A sampling of potential actions included improving emergency services (i.e., development and coordination of shelter generators and sirens for unprotected areas).*

### **Step 6 – Prioritize and Develop the Action Plan**

*The proposed hazard mitigation actions and strategies were reviewed and each strategy was rated (good, average, or poor) for its effectiveness according to seven factors (e.g., technical and administrative applicability, political and social acceptability, legal authority, environmental impact, and financial feasibility).*

*Each factor was then scored and all scores were totaled per strategy. Strategies were then ranked by their overall score for preliminary prioritization and reviewed again under Step 7.*

### **Step 7 – Determine Priorities**

*The preliminary list was evaluated in order to make changes and determine a final ranking for new hazard mitigation actions and existing protection strategy improvements identified in the previous steps.*

### **Step 8 - Develop Implementation Strategy**

*An implementation strategy was developed that included those individuals responsible for implementation (who), a timeline for completions (when), and funding or technical assistance sources (how) for each identified hazard mitigation actions.*

## **IV. Plan Review, Evaluation, and Implementation**

### **Step 9 – Review and Implementation**

*Once the plan was developed the team conducted a thorough review of the PDM. The draft plan was reviewed by the following local agencies:*

*Mellette County Commissioners and employees  
Mellette County Emergency Management Office  
Mellette County Highway Department  
Mellette County Sheriffs Office  
White River Volunteer Fire Department  
Mission Volunteer Fire Department  
Local business owners*

*Systematic changes were made in areas that need to be further clarified. The plan will be implemented and evaluated on an ongoing basis to ensure the actions, timelines, and responsible parties are correct, up-to-date and can be obtained as they are stated in the PDM.*

## **V. Plan Adoption**

On \_\_\_\_\_, the Mellette County Commission formally adopted this plan after approval from each participating jurisdiction. The 2012 PDM plan is current and will be updated annually by the Mellette County Emergency Management Office.

### **Overarching Mitigation Goals**

#### **State Mitigation Goals**

- *Guide South Dakota's mitigation program to reduce or eliminate destructive effects of significant hazards to the state*
- *Serve as a public and private sector reference document and management tool for mitigation activities throughout South Dakota*

#### **Local Mitigation Goals**

- *Develop and maintain emergency response and mitigation plans*
- *Reduce or eliminate flood damage*
- *Provide and maintain generators for essential facilities*
- *Continue to maintain and update communication and emergency warning systems*
- *Increase security at critical facilities*
- *Develop a public awareness education system*
- *Produce a template of all businesses in the county so that all emergency responders will become familiar with the properties.*

*This plan addresses significant hazard events of flooding, drought, winter/ice storms, tornadoes, and wildfires experienced in south-central South Dakota. These natural disasters have a history of occurrence with varying degrees of damage and economic loss.*

*An assessment and analysis can be completed through the information contained in this plan and developed into prospective mitigation strategies to reduce or eliminate future damages from such events.*

*Mellette County concurred and adopted the above-mentioned goals.*

## **Acknowledgements**

*The Mellette County Emergency Management Office, Northern Tier Consulting and the Planning Committee extend special thanks to those that assisted in the development of this PDM:*

*Mellette County Commissioners  
Mellette County Emergency Management Office  
Mellette County Highway Department  
Mellette County Sheriffs Office  
White River Volunteer Fire Department  
South Dakota Office of Emergency Management  
City of White River  
Mellette County EMS Association  
Wood Fire Department  
City of Wood*



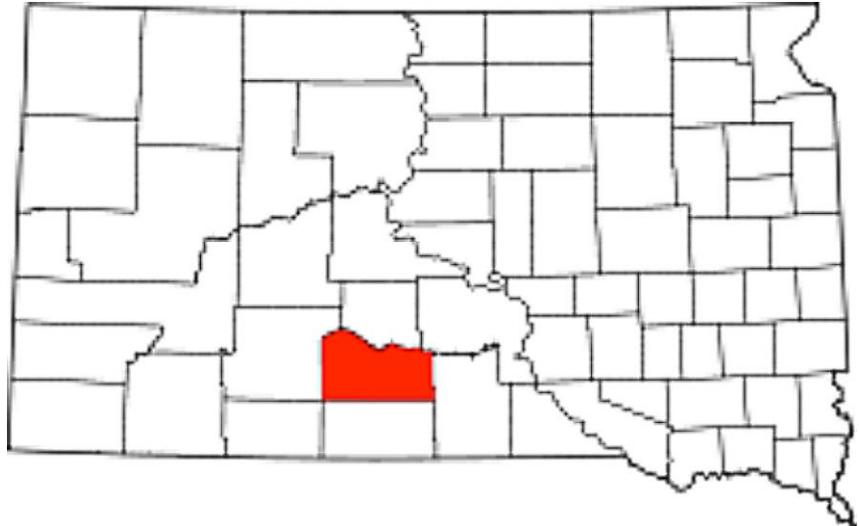
## **Chapter 2 – Community Profile**

---

## Location and Setting

### Community Profile

*The community profile is a key element in the development of an effective hazard mitigation plan. It provides a comprehensive description of the community, while serving as a source of data for a wide-range of variables. The most current information and the data are shown in this profile.*



*The map to the right shows the location of Mellette County within the State of South Dakota.*

### Overview

*Mellette County is located in the south-central portion of South Dakota. Mellette County has a total area of 1,310 square miles (3,392km<sup>2</sup>), of which 1,306 square miles (3,384 km<sup>2</sup>) is land and 3 square miles (8 km<sup>2</sup>) (.25%) is water. Elevation in Mellette County is 2,240.0 ft. (689 meters). The county is divided into sixteen townships: Bad Nation, Blackpipe, Butte, Cody, Fairview, Mosher, New Surprise Valley, Norris, Prospect, Red Fish, Ring Thunder, Riverside, Rocky Ford, Rosebud, Running Bird, and Surprise Valley; and two areas of unorganized territory: Cedarbutte and Central Mellette. Mellette County's population is 2,048 (1 person per square mile).*

*White River is the largest city in Mellette County and also serves as the county seat. The nearest metropolitan areas from White River are:*

<i>Sioux Falls, South Dakota</i>	<i>235 miles east</i>
<i>Rapid City, South Dakota</i>	<i>161 miles west</i>
<i>Sioux City, Iowa</i>	<i>316 miles east</i>
<i>Omaha, Nebraska</i>	<i>349 miles southeast</i>
<i>Minneapolis, Minnesota</i>	<i>497 miles northeast</i>

*Other communities in the County are Wood, which has a population of 62. Wood started as the Wood post office in 1906 and was incorporated in 1909. The community of Norris is unincorporated, but it contains a larger population of 152.*

Mellette County has two school districts, White River School District 47-1, which includes an alternative high school, high school, middle school and elementary school in White River and an elementary school located in Norris. Wood School District 47-2 has two elementary schools, one in Wood and another in Witten, located in neighboring Tripp County to the east.

<i>Mellette County</i>	
<i>Founded</i>	1909
<i>Named for</i>	Arthur C. Mellette
<i>Seat</i>	White River
<i>Largest city</i>	White River
<i>Area</i>	
- Total	1,310 sq. mi (3,392 km <sup>2</sup> )
- Land	1,306 sq. mi (3,384 km <sup>2</sup> )
- Water	3 sq. mi (8 km <sup>2</sup> ), 0.25%
<i>Population</i>	
- (2010)	2,048
- Density	1/sq. mi (0/km <sup>2</sup> )

## History

Mellette County is named for Arthur Calvin Mellette. Mellette was the last Governor of the Dakota Territory and the first Governor of the State of South Dakota.

There are two National Register of Historic Places listings in Mellette County, South Dakota.

- South Dakota Dept. of Transportation Bridge No. 48-244-204, listed in 1993, located in White River
- Stamford Bridge, listed 1993, located in Cedarbutte Unorganized Territory (UT)

<i>NAME</i>	<i>POPULATION</i>	<i>ELEVATION</i>	<i>TOTAL HOUSING UNITS</i>
<i>White River</i>	581	2,135 feet	245
<i>Wood</i>	62	2,148 feet	33
<i>Norris CDP</i>	152	2,530 feet	47
<i>Mellette County</i>	2,048	2,240 feet	835

## Development Trends

### Current Trends

*Hunting lodges in the county are one of the fastest growing businesses. This boom has caused land prices to rise sharply over the past few years.*

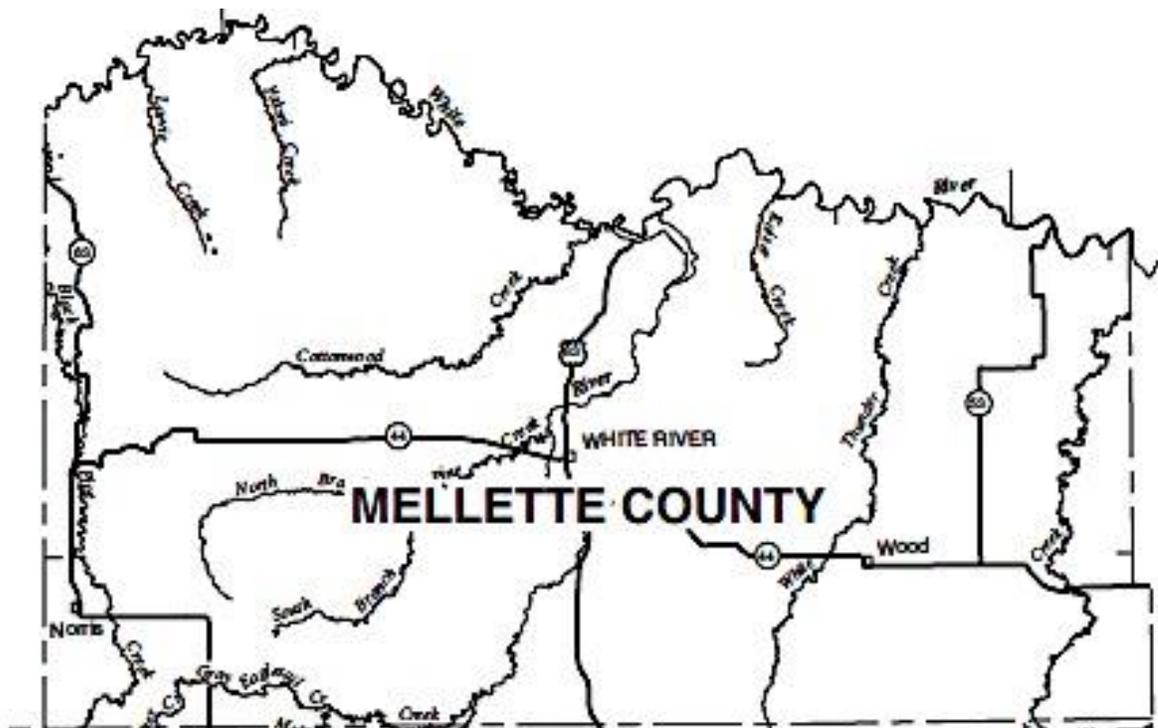
### Jurisdiction Specific Trends

*The county is divided into sixteen townships: Bad Nation, Blackpipe, Butte, Cody, Fairview, Mosher, New Surprise Valley, Norris, Prospect, Red Fish, Ring Thunder, Riverside, Rocky Ford, Rosebud, Running Bird, and Surprise Valley; and two areas of unorganized territory: Cedarbutte and Central Mellette.*

### Terrain and Climate

*The landscape in Mellette County is quite open, and the terrain is uneven. Several buttes rise prominently from the landscape. Most of the land in the county is used for grazing cattle, although some corn, wheat, and other crops are grown. The county lies entirely within the watershed of the White River. Figure 1 below shows the watersheds in Mellette County*

Figure 1



*As in most of South Dakota, the climate of Mellette County is characterized as sub-humid and continental, which means that summers are often hot and winters can be very cold. There are no large bodies of water or mountain ranges to lessen the extreme effects. Precipitation averages less than 20 inches per year, and during drought years the amount can be much less. Most of the precipitation occurs during the spring and early summer; winter snow is not frequent, but snow cover on the ground is fairly constant during the winters.*

*In general, most soil in the county is not particularly fertile, and the low amount of rainfall the county normally receives limits agriculturally production. More information about the county's soils can be obtained from the National Resource Conservation Service's digital soil survey on their website at, <http://soils.usda.gov/>.*



## **Land Use**

*Because of the low rainfall, most of the land is used for grazing livestock, although some crops are grown. Crops grown in the county include corn, sorghum, wheat, and sunflowers.*

## **Transportation**

*Mellette County's main transportation routes are U.S. Highway 83, which runs north south through the center of the county, and SD Highway 44 US 18, which runs east-west through the county. There are no railroad lines in the county, but there is a small airport with a grass runway in White River.*

## **Water and Wastewater**

*Most rural residents in Mellette County, and households in the Town of Wood, are served by the Mini Wiconi water system. The Tripp County Water Users District serves the eastern part of the county. The City of White River has as its own wastewater collection and treatment system. Rural residences use individual septic tanks and drain fields. The density of septic systems and its potential to cause water contamination is an environmental*

concern. Although residential growth is not expected to be significant and new developments need to be controlled through planning and development guidelines.

### **Power and Communications**

*The Cherry-Todd Electric Cooperative provides electric power to county residents. The primary telephone company serving the county is Golden West Communications. Cellular phone service is also available in parts of the county, but there are many areas where signals are weak or non-existent.*

### **Social and Economic Description**

*Mellette County's economy is dependent to a large extent upon agriculture, which consists mostly of cattle grazing. Industry and manufacturing are not significant. Because of the County's dependence upon agriculture and the lack of high wage occupations, personal income in the county is far below state and national figures.*

*Like much of the upper Midwest, the rural landscape in Mellette County experienced a population decline during the last half of the twentieth century, although the county did register a slight increase from 1990 to 2000.*



## **Chapter 3 – Hazards in Mellette County**

---

*The first step in planning for natural hazards is to identify hazards that might affect Mellette County. Some communities are more susceptible to certain hazards (i.e., grass fires,*

*structural fires, flash floods, tornadoes, blizzards, and drought). These incidents have caused millions of dollars in property damage and the loss of several hundred lives. All of the approved hazards from the previous plan were retained in the 2012 plan.*

*These hazards were identified through an extensive process that included the review of State Emergency Management disaster declarations for the county, federally funded studies, input from citizens and risk assessments completed by Mellette County Emergency Management Office.*

*The Planning Team encountered a limited amount of digital data, which included limitations in current Flood Insurance Rate Maps (FIRMs), complete and current data sets for water, gas, and electrical, lack of digital parcels from the county assessors office, and up-to-date HAZUS MH information.*

## **A. What are the Hazards?**

### **Natural Hazards**

#### **Flooding**

*This hazard includes erosion, mudslides, rapid snow pack melt, river/creek ice jams, and dam breach and/or failure. Mellette County as a whole does not participate in the National Flood Insurance Program (NFIP).*

#### **Probability of Occurrence**

*The probability of minor flooding in the county is moderately high, especially along the larger streams. Luckily, the affect on residential property and human life is very low.*

#### **Vulnerability and Loss Potential**

*The flooding that does occur in the county is usually slight. Vulnerability from flooding exists in the rural areas, where the threat is primarily contained to rural roads, and at times minor flooding in populated areas. From past incidents, there is particular vulnerability in the river bottoms of the Little White and Big White Rivers. There is slight chance that single homes in these areas would sustain some kind of damage however there are no communities that lie along these rivers.*

#### **History**

*There has been significant flooding in parts of the county, but none that caused tremendous economic or personal losses.*

## **Drought**

*Drought is a very serious and common hazard in south central South Dakota, causing massive deficits in farming and ranching businesses along with drinking water shortages.*

*Cold winters and hot summers characterize South Dakota's climate. Semi-arid conditions prevail in the western portion. This combination of hot summers and limited precipitation in a semiarid geography, places South Dakota in a potential annual drought situation.*

### **Probability of Occurrence**

*Droughts are extended periods when precipitation is significantly below normal. They can occur during all times of the year, but the consequences are worse during the summer growing season, especially after winters with very little snowfall. A small departure in normal precipitation during the months of June through August can have a negative impact on crop production and the amount of forage available to livestock. Since South Dakota is located in a semiarid region, the probability of a drought occurring in any given year in the county should be considered at least moderate.*

### **Vulnerability and Loss Potential**

*The county is economically vulnerable to drought because of its effect on all agricultural business production and especially food production. Crops raised in the county are,*

*wheat, sorghum, corn, alfalfa, and sunflowers, which are all vulnerable to drought. With drought ridden land prices decrease for acreage.*

*Other impacts of drought include the increased potential for grassfires and plant diseases. Energy related effects and possible increase cost of water transportation and irrigation. All areas of the county are vulnerable to droughts, but non-irrigated land is especially vulnerable. Direct impact on people is not substantial but on animals and crops it is very damaging.*

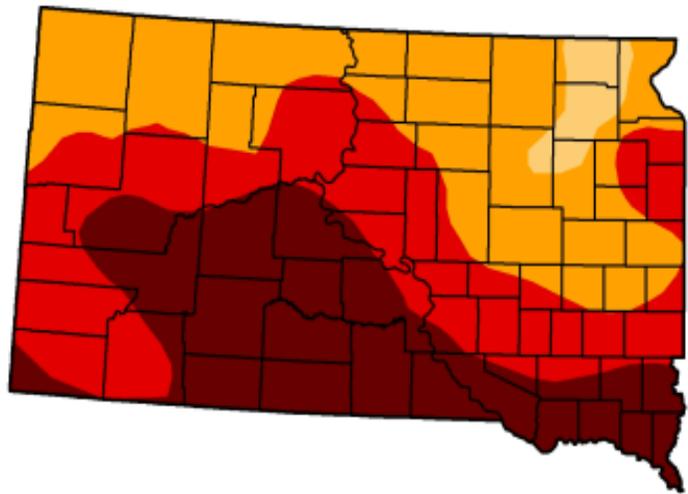
### **History**

*Droughts in the last decade that have significantly affected the state occurred in 2002, through 2007 and 2012.*

## **US Drought Monitor Graph and Map for South Dakota**

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	96.95	63.32	30.68
Last Week (11/20/2012 map)	0.00	100.00	100.00	93.09	54.85	32.57
3 Months Ago (08/28/2012 map)	0.00	100.00	83.30	60.98	26.44	0.00
Start of Calendar Year (12/27/2011 map)	48.14	51.86	13.86	2.11	0.00	0.00
Start of Water Year (09/25/2012 map)	0.00	100.00	100.00	74.69	50.53	6.72
One Year Ago (11/22/2011 map)	59.47	40.53	11.46	2.11	0.00	0.00



**Intensity:**

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

**Severe Winter Weather**

*This natural hazard includes heavy snowstorms and ice storms that occur from early fall to late spring. They vary in intensity from mild to very severe. Blizzards are storms that contain heavy snowfall, strong winds, and cold temperatures. The combination of these elements creates near zero visibility, deep snowdrifts, and life-threatening wind chills.*

**Probability of Occurrence**

*The probability of occurrence is high that a severe winter storm will occur on a historical average of at least once or more every five years. However, exceptions have occurred outside this timeframe. Consequences can include loss of life and injury to humans as well as livestock.*

**Vulnerability and Loss Potential**

*The entire county is vulnerable to a severe winter storm. Particular populations that are susceptible include rural homeowners, the elderly, and special needs residents. Facilities at risk include hospitals, nursing homes, schools, etc. Other areas/items in danger include transportation corridors, utilities and livestock.*

**History**

*Severe winter storms have affected the area on an annual basis.*

## **Tornado/ High Winds**

*Included under this hazard are downbursts and lightning strikes causing grassfires and severe damage to property, people and even loss of life.*

### **Probability of Occurrence**

*High wind events are usually associated with storms and other unstable weather conditions. All areas of the reservation are susceptible to high winds, and the probability of occurrence is high in most areas. Tornadoes represent the most dramatic and dangerous type of wind event that can strike in South Dakota. Tornadoes occur most often during the months of May, June, and July. The greatest period of tornado activity (about 82 percent of occurrence) is from 11 am to midnight. Within this time frame, most tornadoes occur between 4 pm and 6 pm.*

*Mellette County Tornadoes from 2006-2012*

<i>Date</i>	<i>F-level</i>	<i>Death</i>	<i>Injury</i>
<i>2007</i>	<i>1</i>	<i>0</i>	<i>0</i>
<i>2008</i>	<i>1</i>	<i>0</i>	<i>0</i>
<i>2009</i>	<i>1</i>	<i>0</i>	<i>0</i>
<i>2011</i>	<i>1</i>	<i>0</i>	<i>0</i>

### **Vulnerability and Loss Potential**

*Populated areas are most at risk from high wind events because of the amount of infrastructure that can be affected. The primary risk is to property, but people can also be directly impacted when high winds blow down power lines, causing a disruption in service. There is also the slight chance that blowing debris can cause personal injuries.*

*Two factors make the county particularly vulnerable to high wind events. Generally, manufactured houses and mobile homes make up a high percentage of the county's housing types and many of these homes lack permanent foundations or basements. People living in these types of homes are not able to seek shelter in basements.*

*Secondly, there are no designated tornado shelters in any of the communities, other than local churches. Some of the schools are used as disaster relief areas, places where people can go after power failures and other disaster events, but they are not adequate tornado shelters.*

*South Dakota ranks number 32 in the United States for cloud to ground lightning strikes with 386,322, and with 77,116 square miles there is an average of 5 strikes per square mile. With the amount of prairie in Mellette County the risk is high for grassfires from lightning strikes.*

### **History**

*Some amount of damage from high wind events can be expected to happen annually, and the county has experienced some wind events that caused substantial damage. With 23 lightning related fatalities in the last 50 years, South Dakota is ranked in the top twenty states for lightning fatalities per [population](#).*

## **Fire**

*Urban, wild and grassfires, affecting businesses, residential and recreational areas are contained in this section. They are prevalent due to the drought and high wind conditions.*

### **Probability of Occurrence**

*Wildfires are more likely to occur than urban fires in Mellette County because of the small population base and thousands of acres of grassland in the area. Wildfires can occur in all parts, and the likelihood of these fires arising increases during extended dry periods.*

### **Vulnerability and Loss Potential**

*In regards to wildfires, the risk to people and property is usually low, unless such a fire occurs near a dwelling or other structure. The loss potential is generally not significant, but homes in various communities have been threatened in the past by extensive wildfires that burned near inhabited areas. In regards to urban fires, all communities have some vulnerability. A structure's liability is dependent upon its construction, and also whether any flammable materials are stored onsite.*

### **History**

*There have been many extensive wildfires in the county. Lightning striking dry vegetation has caused largest percentage of these fires.*

### **Development Trends**

*No future development is expected to increase the severity of this type of disaster.*

## **Biological Pests and Infectious Diseases**

*When Lewis and Clark came up the Missouri River with the Corps of Discovery in 1804, they saw and recorded many different species of indigenous animals. One of these newly found creatures was the prairie dog, which Lewis and Clark called “barking squirrels”. Although, these animals are recorded in early American history they are devastating the grasslands. They create mounds with many holed entrances and live in colonies known as “towns” which can extend hundreds of miles.*

*Additionally, zoonotic illnesses caused by organisms such as bacteria, viruses, fungi and parasites are a hazard to livestock and people and since prairie dogs are carriers of fleas, they are at a risk for and spreading an infectious disease to other mammals, such as the bubonic and sylvatic plague.*



### **Probability of Occurrence**

*There are thousands of acres of dog towns in south central South Dakota and within each of the towns there are hundreds of prairie dogs. With the massive numbers, unfortunately, there are just a few ways to control them,*

*natural disease (plague), and other methods, like poison, which works fairly well, but also affects other wildlife species, and the reintroduction of a natural predator, the endangered black-footed ferret. In South Dakota, black-footed ferrets feed on black-tailed prairie dogs, and it is 91% of their diet.*

### **Vulnerability and Loss Potential**

*Land for livestock, to graze is being taken over by the prairie dog towns. The prairie dog and its predator, the black-footed ferret is also susceptible to disease, poisoning and a loss of habitat. The struggle and the potential for even more loss on both sides of the issue stems from the fact that these animals are federally protected but the landowner has to ensure the health of its herds and with the laws enforced, find it increasingly difficult to control them.*

*In late November 2012, the South Dakota Department of Health issued an advisory to residents to be aware that the prairie dog carries fleas and the fleas can spread sylvatic plague to other animals, pets and possibly to people.*

## History

*The battle between farmers and ranchers and the prairie dog has been occurring as long as settlers have been in the Dakotas. Nonetheless, within the last 25 years South Dakota has been trying to find a compromise that will satisfy landowners while ensuring endangered species laws are not broken, all with the hopes of enhancing its conversation and management plan to satisfy the needs of both sides.*

## Development Trends

*The amount and location of prairie dog towns limits new development not only because of the sheer amount of them but also because of restrictions to removing their habitat.*

## EPIDEMIOLOGY

South Dakota's first report of sylvatic plague was in 2004. There have been no cases of human plague reported in South Dakota. Animal plague has been detected previously in the following South Dakota counties: Pennington, Custer, Fall River, Shannon, Bennett, Todd, Mellette & Dewey.

- Human plague is rare. Nationally in 2012, 2 cases of human plague have been reported; 3 human cases in 2011; 2 cases in 2010; 8 cases in 2009; 3 cases 2008, and 7 cases in 2007.
- Controlling rodents and their fleas around places where people live, work, and play is important in preventing human disease.

## Man-Made Hazards

### Hazardous Materials

*With the areas agricultural need for various chemicals the occurrence of a disaster resulting from a spill; incorrect usage or containment of a hazardous material to humans and the environment is a definite possibility.*



### Probability of Occurrence

*There are some facilities in the county that handle hazardous materials, many of which are used in agricultural production. Many hazardous materials incidents involve transported materials.*

### Vulnerability and Loss Potential

*The probability for a minor spill is high, particularly where the movement of farm chemicals occurs, but major incident probabilities are low. The risk to people is*

*moderate, and the degree of risk depends upon the type and amount of material spilled. Other factors influencing the degree of risk include topography, wind direction, and the population density at the place of occurrence.*

### **History**

*There have been minor hazardous materials releases in the county, many of which involved spills along the highways.*

## **Transportation Incidents – Motor Vehicle**

### **Probability of Occurrence**

*Although motor vehicle accidents can occur in all parts of the county, the areas along the major transportation routes are most likely to experience these incidents. The Highway 44 and US Highway 83 corridors carry the most traffic volume, but roads leading to White River also carry a significant amount of traffic.*

### **Vulnerability and Loss Potential**

*Vulnerability is greatest along the roads mentioned above. Vulnerability along all roads and highways is increased during the winter, when ice, snow, and freezing rain hamper driving conditions. The summer construction season also increases vulnerability.*

### **History**

*There have been serious traffic accidents along many of the roads and highways in the county, including those involving multiple fatalities.*

## **Dam Failure**

*Inspection and maintenance of dams, culverts, and other drainage structures is performed regularly in the County to mitigate the occurrence of failure and subsequent flooding.*

### **Probability of Occurrence**

*The probability of occurrence for a dam failure is very low and the consequences to persons, property and the environment are also low if local dams were to fail.*

### **Vulnerability and Loss Potential**

*Awareness of vulnerability is available through historical records, spring snowmelt, and runoff. The largest potential for damage would incur from the loss to crops.*

## **History**

*There have been no reported dam failures to Mellette County.*

## **Power Failure**

*All populated areas are negatively affected by power outages but with the extreme weather patterns and rugged terrain, power outages are a major concern for Mellette County and its citizens.*



## **Probability of Occurrence**

*The probability of occurrence is low for a massive power failure countywide and high for an occasional localized power failure based upon historical averages.*

*The consequences of occurrence range from a nuisance to a severe emergency depending upon the length and location of the outage.*

## **Vulnerability and Loss Potential**

*The entire county is at risk for a power loss. The need for all critical facilities and shelters to have generators for back-up power is crucial. With the severe weather in the summer and winter, a power loss could negatively affect the population if services are not restored quickly.*

## **History**

*A severe ice and snowstorm was recorded in November 2010, which caused power outage to hundreds of homes in the western portion of the County for more than two weeks. In December, of the same year, another severe wind and ice storm hit the central and eastern portion of Mellette County causing power outages from one to several days in outlying areas.*

## **Communication Outage/Isolation**

*Loss of communication is a serious hazard in remote areas especially if emergency services are needed and the outage occurs over a long period of time.*

## **Probability of Occurrence**

The risk of communications isolation is at a medium level. The reliability of Mellette County’s communications infrastructure is not very high, experience and research has revealed that it is all too easy to cripple large portions of the infrastructure.

**Vulnerability and Loss Potential**

Electronic communications (audio, video, data stream, etc.) are critical to frontier residents, visitors, businesses, government, and emergency services. A disruption in any portion of the communications infrastructure has an immediate effect. Regrettably, as communication has increasingly become more significant and specialized, so has its vulnerability.

**B. Past Hazard Events**

The planning team reviewed all hazard occurrences that have been reported in the last 6 years since the previous 2006 PDM was drafted. The information provided in the table is not a complete history report, but rather an overview of reported hazard events. Appendix C has the full list of hazardous weather events.

**Table 1. Significant Hazard Occurrences Reported in Mellette County, 2006-2012**

Type of Hazard	Number of Occurrences
Drought	Lasting three years, 2007-2010
Wildfire/Forest Fire	20-40 per year (all levels)
Flood	3
Hail	36
Major Lightning Strikes	5
Tornado/Funnel Cloud	4
Snow & Ice	16*
Thunderstorms/High Winds	44*

\* Source: National Climatic Data Center, NOAA, 2006-July, 2012    \*\* SDDA 2005-2009  
 \*\*\*2008 Disaster declaration 12/12/08 SD Dept. Public Safety

**C. Potential Hazards to Critical Facilities and Areas of Concern**

The Mellette County hazard analysis reflects the comprehensive study of all hazards that may affect its communities. It is based on the best available information describing those hazards that have occurred and which ones are most likely to occur in the future. The analysis includes the listing of each hazard, the risk level, impact, and priority score to prioritize and address the defined hazards.

**Table 2. All-hazard Priority Matrix for Mellette County**

<i>All-Hazards (in alphabetical order)</i>	<i>Risk 1-5</i>	<i>X</i>	<i>Impact 1-3</i>	<i>=</i>	<i>Priority Score</i>
<i>Biological Pests</i>	4		2		8
<i>Blizzard/Winter Storm</i>	5		3		15
<i>Dam Break</i>	1		2		2
<i>Drought</i>	4		3		12
<i>Fire – Wild</i>	4		2		8
<i>Fire – Urban</i>	4		3		12
<i>Flooding – Flash</i>	2		2		4
<i>Flooding – Slow-rising</i>	2		1		2
<i>Hailstorm</i>	3		2		6
<i>Hazardous Materials</i>	4		2		8
<i>High Winds</i>	5		2		10
<i>Ice Storm</i>	4		2		8
<i>Thunderstorm/Lightning</i>	5		2		10
<i>Tornado</i>	3		2		6
<i>Transportation – Air</i>	3		1		3
<i>Transportation – Highway</i>	4		3		12

1  
very  
high  
priority  
hazards  
(13-15),  
tan  
shading

5 high priority hazards (10-12), blue shading  
5 medium priority hazards (6-9)

4 Low priority hazards (2-5)

Once past incidents have been identified, the next step in the planning process is to determine what structures or areas could be affected. This requires the county to determine which facilities and areas in the community are considered critical and why they are considered critical (i.e., is the facility in the floodplain? It is storing hazardous material?)

**D. Addressing Vulnerability: Repetitive Loss Properties**

Periodic flooding affects numerous areas of the County, however the majority of the land is unincorporated and has very little residential development. Repetitive loss properties are those for which two or more losses of at least 1,000 dollars have been paid under the National Flood Insurance Program (NFIP) within a ten-year period since 1978. For Mellette County there are no repetitive loss properties or severe repetitive loss properties.



## Chapter 4 – Prioritizing Critical Facilities and Areas of Concern

---

*The Pre-Disaster Mitigation Plan for Mellette County identifies critical facilities located in the County and the pre-disposed hazards affecting them. A critical facility is defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the County, or fulfills important public safety, emergency response, and/or disaster recovery functions.*

*The next step in the Hazard Mitigation Planning process is to prioritize the facilities and areas of concern that were initially identified in relation to community importance. It is vital for the community to determine what resources are needed to protect the facilities in an incident.*

*The critical facilities identified in the County are categorized, prioritized and described throughout the next few pages.*

- **Emergency Response Services**

- *The first category contains facilities needed for Emergency Response in the event of a disaster.*

- *White River Fire Department*
- *White River Police Department*
- *Mellette County Sheriff's Office*
- *Mellette County Emergency Management*
- *Rosebud Ambulance Service*
- *Rosebud Police Department*
- *Rosebud Hospital*

- *Rosebud Fire*
- *Rosebud Emergency Management Office*
- *Parmelee Fire*
- *St Francis Fire*

- **Non-emergency Response Facilities**

- *The second category contains Non-Emergency Response Facilities that have been identified by the committee as non-essential. These are not required in an emergency response event, but are required for everyday operation.*

- *Administration Building in White River*

- **Facilities/Populations to Protect**

- *The third category contains Facilities/Populations that the committee wishes to protect.*

- *All Schools*
- *Cherry Todd Electric poles and power lines, no buildings*
- *Emergency Shelters*
- *Mellette County Highway Department*

- *City of White River Public Works*

- **Potential Resources for Services/Supplies**

- *The fourth category contains Potential Resources, which can provide services or supplies in a disaster.*

- *Grocery Stores*
- *Convenience Stores*

### **Category I: Emergency Response Services**

**The Planning Team identified the following facilities as the highest priority.**

1. *County EOC, City of White River Building and Mellette County Building*
2. *State Area EOC for western South Dakota, Mickelson Building in Pierre*

### **Category 2: Emergency Communications and Warning Systems**

#### **Dispatch**

- *State Radio Dispatch, Mellette County*
- *Rosebud Tribal Police Department, Rosebud, SD*
- *Mellette County Emergency Management Office*

#### **Broadcast**

<b>Radio</b>	<b>Television</b>	<b>Cable/Sat Television</b>
<i>KBHE-FM-SDPB</i>	<i>KTTM</i>	<i>Comcast Digital Cable</i>
<i>KZSD-FM 102.5</i>	<i>KDLT*</i>	<i>DIRECTV</i>
<i>KOYA-FM 88.1</i>	<i>SDPB TV</i>	<i>DISH Network</i>
<i>KINI-FM 96.1</i>	<i>KTTW*</i>	
<i>KOTA</i>	<i>KELO*</i>	
<i>KTEQ-FM 91.3 FM</i>	<i>KBHE</i>	
<i>KSLT /KLMP</i>	<i>KSFY*</i>	

*KVSH\**

*\*Mellette County is within the Sioux Falls, SD market for satellite coverage*

**Telephonic (Land line and Mobile)**

**Mobile Telephone**

---

*Verizon*

*AT&T*

**Warning Systems**

**Emergency Alert System**

---

**Sirens**

- *White River*
- *Wood*

**NOAA weather radio stations**

<b>Station Name (County)</b>	<b>Call sign</b>	<b>Frequency</b>	<b>News Office</b>
<i>WHITE RIVER (Jones, Mellette and Todd)</i>	<i>WNG-558</i>	<i>162.550</i>	<i>RAPID CITY</i>
<i>VALENTINE, NE (Todd and Tripp)</i>	<i>WXN-82</i>	<i>162.450</i>	<i>NORTH PLATTE, NE</i>

**Category 3: Law Enforcement**

- *White River City Police*
- *Mellette County Sheriff*
- *South Dakota Highway Patrol*
- *Rosebud Police Department*
- *Federal Bureau of Investigations*

**Category 4: Fire Services**

## Mellette County Fire Departments

### Rosebud

---

*Rosebud Fire Department PO Box 200, Rosebud, SD 57570*

### Volunteer Fire Services

---

<i>White River VFD</i>	<i>PO Box 280 White River, SD 57579</i>
<i>Wood VFD</i>	<i>PO Box 303 Wood, SD 57585</i>
<i>Norris VFD</i>	<i>PO Box 152 Norris, SD 57560</i>

## Category 5: Emergency Medical Services

### Ambulance Services

---

<i>Rosebud Ambulance Service</i>	<i>LifeFlight Air Ambulance</i>	<i>SDNG Air Medivac</i>
<i>Mellette Co. Ambulance Service</i>		

### First Responder Units

---

<i>White River Fire Rescue</i>	<i>Mellette County Ambulance</i>	<i>WoodFire Rescue</i>
<i>Rosebud EMS</i>		

### Search and Rescue

---

*South Dakota Wing, Civil Air Patrol Regional Response*  
*Bennett County, K9 Rescue Team*

### Emergency Power

---

#### **a. Substations (All are on loop so can be operated if one feed is lost)**

- (1) *Cherry-Todd Electric Co-Op*  
*625 W 2nd St., Mission, SD 57555*

- (2) *LaCreek Electric Co-op*  
*PO Box 220, Martin, SD 57551*

**b. Generators (backups for utility)**

- (1) *Mellette County Emergency Management One portable generator.*

**Emergency Fuel**

---

*AmPride Bulk Fuel*

**Emergency Transportation**

---

<i>Private trucks, buses, and trailers</i>	<i>SD Department of Transportation</i>
<i>South Dakota National Guard</i>	<i>White River Schools Bus System</i>
<i>Rosebud Bus System</i>	<i>Headstart Buses</i>

**Evacuation Routes**

---

*In natural or technological emergencies/disasters, the decision to evacuate endangered areas will be made by the Incident Commander (IC). Governing officials will be notified of the situation as soon as possible and consulted about the evacuation, if time permits. Decisions on weather-related incidents will be made with advice from the National Weather Service.*

**Bridges Located on Evacuation Routes**

*Little White River Bridge on HWY 44 and HWY 83*  
*Big White River Bridge on HWY 83*  
*Pine Creek Bridge on HWY 44*  
*2 Bridges South of White River on HWY 83*

**Emergency Shelters: Primary Reception and Care Centers within Mellette County**

---

*Mellette County Emergency Services Building*  
*White River School*  
*Wood Community Center*  
*Norris Township Hall*

## **Category 6 - Non-Emergency Response and Services**

*The Planning Team has identified the following essential non-emergency facilities for the everyday operation of Mellette County.*

### **Public Works**

---

*Mellette County Highway Department  
South Dakota Department of Transportation  
White River Public Works*

### **Power Utilities**

---

*Cherry-Todd, Mission  
LaCreek Electric, Martin*

### **Water Supply and Wastewater Treatment**

---

*West River/Lyman Jones Rural Water System  
Mni Wiconi Water System*

### **Schools**

---

*White River School  
Wood School  
Norris School*

### **Hospitals/Clinics**

---

#### **Hospitals**

*Rosebud Hospital, 43 15 23 91 N, 100 50 59 59 W      Valentine Hospital  
Winner Hospital      Martin Hospital  
Mission Clinic      St. Mary's Hospital, Pierre*

**Note:** *The above named hospitals, clinics, and nursing care facilities can convert to emergency treatment centers for emergencies/disasters, be used as casualty collection points to handle mass casualties.*

## **Category 7 - Facilities/Populations to Protect**

*The third category contains particularly vulnerable people and facilities that need to be protected in event of a disaster.*

### **1. Special Needs Population – Identified “populations” including, but not limited to, the following:**

- *Oxygen-dependent or those on dialysis*
  
- *People on lifeline*
- *People assisted by home health*
- *Shut-ins, disabled and the elderly*
- *Mentally challenged*
- *Hearing impaired and sight impaired*

### **2. Additional Facilities to Protect**

- *Mobile Home Parks*
- *Campgrounds and RV Parks*
- *Assisted Living Facilities/Senior Centers*
- *Childcare and Pre-school Centers*

## **Category 8 - Miscellaneous Resources**

### **Private Non-Profit Organizations**

---

*American Red Cross*

*Salvation Army*

*Ministerial Association*

# Mellette County

## Pre-Disaster Mitigation Plan

### Chapter 5 – Determining the Effects of Defined Hazards

---

*In Chapter 3, the hazards were analyzed in terms of the level of the community or county's vulnerability to the hazard. Vulnerability to the hazard is the susceptibility of life, property, and the environment to injury or damage if a hazard occurs. Representatives from each participating jurisdiction and the Planning Team rated their perception to hazard vulnerability for their specific geographical location and for countywide risks.*

*The hazards have been given a low, moderate or a high-risk rating level. To formulate the risk rating level, several factors are considered: including both the environment and history of the area. Hazards categorized as low might not have occurred in the area although the team identified a possibility of such a hazard and where and how it could affect the communities.*

**The greatest hazard threats were found in the following categories:**

- I. Flood, Drought, Extreme Heat, and Wildfire*
- III. Tornado, Thunderstorms and Severe Wind*
- IV. Winter Weather (Snow, Ice Storm and Extreme Cold)*

#### **A. Identifying Vulnerable Facilities**

*It is important to determine which critical facilities are the most vulnerable while estimating their potential loss. The first step is to identify the facilities most likely to be damaged in an incident. To begin, the locations of Category 1 critical facilities were compared to the location of various topographical elements, floodplains, roads and water bodies. Comparing their location to possible hazard events subsequently identified vulnerable facilities.*

## **B. Calculating the Potential Loss**

*The next step in completing the loss estimation is to assess the level of damage from an event as a percentage of the facility's structural value. The Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS) have developed a regional multi-hazard loss estimation model, called HAZUS. The HAZUS software is a powerful risk assessment methodology for analyzing potential losses from floods, hurricane, and earthquakes. In HAZUS, current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after, a disaster occurs.*

*Potential loss estimates analyzed in HAZUS include:*

- *Physical damage to residential and commercial buildings, schools, critical facilities, and infrastructure;*
- *Economic loss, including lost jobs, business, repair and reconstruction costs; and*
- *Social impacts, including estimates of shelter requirements, displaced households, and population exposed to scenario floods, earthquakes, and hurricanes.*

*Primarily local, state and regional officials would use these loss estimates to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.*

*In Mellette County, the assessed values were determined for every structure. The potential loss was calculated by multiplying the assessed value of the structure by the percent of damage expected from a hazard event (i.e., 100-year, 4-foot flood, etc.). For example, FEMA estimates that in the event of a 100-year, 4-foot flood, 76% of residential structures in the 100-year floodplain would be affected.*

### **Estimating Dollar Losses to Structures Due to Hazards other than Flood**

*Within the state's codified laws, South Dakota SDCL 58-10-10, it states that insurance against, fire, tornado or lightning must measure damages where property is wholly destroyed the amount of insurance written in the policy shall be understood conclusively, to be the true value of the property insured and the true amount of loss and measure of damages.*

*The insurance industry guidelines, for example, are established within Marshall, Swift and Boeckh. These guides contain the information to determine the local replacement cost and cost less depreciation for single or multi-family dwellings, high value dwellings, mobile-manufactured*

homes, commercial, industrial, agricultural and institutional building types. Each guide includes a base cost for six construction types.

Additionally, adjustments for story height, substructure, exterior wall type, heating and cooling types, miscellaneous additions, and construction quality and area/perimeter relationship are included. These publications furnished a guide for making general estimates of costs to replace specific types of construction and summarized the potential loss estimates to structures (residential and non-residential) due to natural or man-made hazard events.

### Summary of Analysis

On the following pages, charts were run from the HAZUS model software supplied by the South Dakota State Office of Emergency Management for Mellette County. The charts on the following pages are summary of the loss by flood, for critical structures for Mellette County. Many values within the charts are zero, which means these structures are not in the flood plain, and the probability is low that they would sustain flood damage.

Chart 1 and 2 present the relative distribution of value with respect to the general occupancies by Study Region and Scenario, respectively. There are an estimated 1,324 buildings in the area with a total building replacement value (excluding contents) of 79 million dollars. Approximately 96.60% of the buildings (and 76.63% of the building value) are associated with residential housing.

**Chart 1: Study Region = Mellette County**

**Building Exposure by Occupancy Type for the Study Region**

<b>Occupancy</b>	<b>Exposure (\$1000)</b>	<b>Percent of Total</b>
Residential	60,666	76.6%
Commercial	5,154	6.5%
Industrial	1,034	1.3%
Agricultural	3,637	4.6%
Religion	1,928	2.4%
Government	3,269	4.1%
Education	3,479	4.4%
<b>Total</b>	<b>79,167</b>	<b>100.00%</b>

**Chart 2: Scenario=Flood**

### Building Exposure by Occupancy Type for the Scenario

Occupancy	Exposure (\$1000)	Percent of Total
Residential	23,770	81.8%
Commercial	1,831	6.3%
Industrial	432	1.5%
Agricultural	2,259	7.8%
Religion	679	2.3%
Government	93	0.3%
Education	0	0.0%
<b>Total</b>	<b>29,064</b>	<b>100.00%</b>

### Building Related Losses

*Building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes from flood. The total building-related losses were 5.69 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 55.44% of the total loss. Chart 3 provides a summary of the losses associated with the building damage.*

**Chart 3: Building-Related Economic Loss Estimates (in millions of dollars)**

Category	Area	Residential	Commercial	Industrial	Others	Total
<b>Building Loss</b>						
	Building	1.47	0.01	0.00	0.02	1.50
	Content	0.74	0.03	0.01	0.04	0.82
	Inventory	0.00	0.00	0.00	0.01	0.01
	<b>Subtotal</b>	<b>2.22</b>	<b>0.04</b>	<b>0.01</b>	<b>0.07</b>	<b>2.33</b>
<b>Business Interruption</b>						
	Income	0.00	0.00	0.00	0.00	0.00
	Relocation	0.00	0.00	0.00	0.00	0.00
	Rental Income	0.00	0.00	0.00	0.00	0.00
	Wage	0.00	0.00	0.00	0.00	0.00
	<b>Subtotal</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>ALL</b>	<b>Total</b>	<b>2.22</b>	<b>0.04</b>	<b>0.01</b>	<b>0.07</b>	<b>2.33</b>

For **Essential Facilities**, there are no hospitals in the county. There are 3 schools, 3 fire stations, 1 police station and 1 emergency operation center.

**Chart 4: Expected Damage to Facilities**

Classification	# Facilities			
	Total	At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	0	0	0	0
Hospitals	0	0	0	0
Police Stations	1	0	0	0
Schools	7	0	0	0

### Debris Generation

HAZUS estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) **Finishes** (dry wall, insulation, etc.), 2) **Structural** (wood, brick, etc.) and 3) **Foundations** (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 758 tons of debris will be generated. Of the total amount, **Finishes** comprises 43% of the total, **Structure** comprises 28% of the total. If the debris tonnage is converted into an estimated number of truckloads, it will require 30 truckloads (@25 tons/truck) to remove the debris generated by a flood.

### Shelter Requirements

HAZUS estimates the number of households, expected to be displaced from their homes due to the flood and the associated potential evacuation. HAZUS also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 74 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 100 to 115 people will seek temporary shelter in public shelters.

### Building Value

The total economic loss estimated for a flood is 2.33 million dollars, which represents 8.02% of the total replacement value. Chart 5 provides a general distribution of the building value by Region and County.

**Chart 5: Building Value, Mellette County**

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
<b>South Dakota</b>				
Mellette	2,083	60,666	18,501	79,167
<b>Total</b>	<b>2,083</b>	<b>60,666</b>	<b>18,501</b>	<b>79,167</b>
<b>Total Study Region</b>	<b>2,083</b>	<b>60,666</b>	<b>18,501</b>	<b>79,167</b>



**Chapter 6 – Existing Hazard Mitigation Programs**

With the hazards identified, the Planning Team’s next step in the planning process is to outline existing community strategies that have a mitigation component to deter hazards that might affect the communities and plans that align with mitigation in the form of prevention and response. This section outlines those programs and recommends improvements or changes to them, to ensure they are up-to-date and responsive to community needs and short to long-range planning efforts.

### A. Other Community Plans

The County LEOP describes the preparation and emergency response created for the county to react to emergencies that require area resources. The plan also provides information on the disasters and hazards most likely to affect Mellette

Table 3. Existing Mitigation Strategies and Proposed Improvements					
Existing Protection Program	Description	Area Covered	Enforcement Department	Effectiveness	Improvements or Changes Needed
Hospital Emergency Response Plan	Mass Casualty, Bio-terrorism, Evacuation, and Infectious Diseases	Regional	Hospital Administration	High	Changes are up dated on annual basis
Mellette County POD Plan	Pandemic/ Counter Measure	Local Area	Department of Health	Medium	Need to review, Changes on biennial schedule
County Pandemic Plan	Pandemic/ Counter Measure	Regional and Local	Mellette County, SD DoH, EMS, hospitals & clinics	High	Need to review
County LEOP	Emergency Operations Plan	County and Regional	Mellette County Emergency Management	High	Annual review

# Mellette County

## Pre-Disaster Mitigation Plan

County.

### Chapter 7 – Plan Goals and Objective Development

---

*This chapter discusses goals and actions that have been developed in response to the risk assessment and hazard analysis completed in previous chapters.*

## **A. Goals, Objectives and Actions**

*This plan bases our community's mitigation goals on the findings of the local and state risk assessments. It describes a long-term vision for hazard reduction and enhancement of mitigation capabilities. The goals are intended to identify the overall improvements that Mellette County wants to achieve. They are general guidelines that describe what our communities would like to ensure over a period of time (short, medium and long-term). The goals in the document provide a long-range vision and are less likely to be subject to change.*

### **Examples of Goal Statements:**

- *Protect and expand essential facilities*
- *Improve the quality of life in the community*
- *Ensure that public funds are used in the most efficient manner*

*Objectives define strategies or steps to achieve the goals that have been set. They are more specific and narrow in scope than goals. It is important that the objectives be attainable and measurable so the communities will have the best opportunity to successfully implement the strategies. The public has been invited to participate in the development of the community's goals and objectives to ensure fair representation of all citizens.*

### **Examples of objectives:**

- *Move or retrofit homes in the floodplain.*
- *Increase awareness and preparedness activities for citizens.*
- *Practice responsible land management in drought ridden terrain to prevent grass fires*

*For each hazard, the plan presents a goal reflecting the desired outcome for obtaining, as part of this plan. For each goal, objectives have been identified that work toward the completion of the goal and they are listed on the following pages. Objectives are separated into action items that need to be addressed and actions that are a continuation of existing programs. These items are most likely to change over time as needs change and opportunities arise, and are highly contingent upon the availability of funding sources.*

*Below are the overarching goals and objectives for each of the hazards. The most noteworthy and measurable objectives will be developed into a comprehensive strategy outlining attainable actions.*

## **Flooding**

**Goal:** *Lessen the occurrence of flooding and damage to flood prone structures.*

### **Objectives:**

- 1. Promote appropriate storm water drainage systems.*
- 2. Ensure flash flood warning systems are operable and installed.*

## **Drought**

**Goal:** *Assist in lessening the damage to drought prone areas.*

### **Objectives:**

- 1. Regulate county and city water usage.*
- 2. Promote appropriate water saving practices.*
- 3. Increase public education and awareness.*

## **Fire**

**Goal:** *Reduce the loss of property and life and the economic impact of lost businesses, jobs and residences.*

### **Objectives:**

- 1. Assure that fire departments are adequately equipped and properly trained to respond to wildfires and urban fires.*
- 2. Practice responsible land management to prevent fires.*
- 3. Promote preparedness programs in the community, in schools and in businesses.*
- 4. Increase smoke and fire alarm awareness programs in schools and in homes.*

## **Tornadoes/High Winds/Hail**

**Goal:** *Reduce injuries and the loss of life during violent weather.*



**Objectives:**

1. *Provide adequate warnings when violent weather is imminent.*
2. *Ensure that people have proper shelter from damaging high winds and/or tornadoes.*
3. *Increase public education and awareness on warning devices and preparedness actions that individuals and families can employ.*

**Severe Winter Weather**

**Goal:** *Decrease the effects of a power loss on the population during severe winter storms.*

**Objectives:**

1. *Upgrade existing emergency power systems with generators or transfer switches.*
2. *Ensure that citizens are informed of shelter locations when power to residences or businesses is lost.*
3. *Encourage citizens to participate in severe winter weather preparedness actions.*

**Biological Pests/Infectious Disease**

**Goal:** *Prevent and lessen the spread of biological pests on property and grassland or a contagion on the population.*

**Objectives:**

1. *Ensure that effective and rapid counter measures are available to the public.*
2. *Provide education and information to citizens on the control and abatement of the pest or disease.*



**Hazardous Materials**

**Goal:** *Identify and contain all hazardous materials in the county.*

**Objectives:**

1. *List and map all hazardous material in and around county (intra highways and railways).*
2. *Increase training for local fire departments and law enforcement to handle materials and respond to spills.*

3. *Promote the continued use of the HAZMAT areas response team.*

### **Transportation Incident**

**Goal:** *Decrease the vulnerability to motor vehicle crashes resulting in loss of life, explosion and/or fire.*

**Objectives:**

1. *Promote regular full-scale operational training through law enforcement, fire and first responders.*
2. *Have mass casualty and mass fatality plans in place along with alternate care site agreements for families of loved ones.*

### **Dam Failure**

**Goal:** *Ensure structures are safe.*

**Objectives:**

1. *Provide yearly and thorough dam inspections.*
2. *Promote public awareness on flooding effects to property.*

### **Power Failure**

**Goal:** *Lessen the vulnerability to a power failure and resulting emergency situation if event occurs during high heat or severe winter weather.*



**Objectives:**

1. *Ensure backup generators are available for critical facilities and shelters.*
2. *Provide public education on mitigation of power outages.*

### **Communication Isolation**

**Goal:** *Reduce the occurrence of communication disruption to residents, government and emergency services.*

**Objectives:**

1. *Provide frequent transmission tower, switching centers and overall infrastructure inspections.*

- 2. Increase interoperable communications between jurisdictions through redundancy and diversity of systems.*



## **Chapter 8 – Potential Mitigation Strategies**

---

*Building on the work in the previous chapters, the hazard mitigation planning team can set mitigation goals, develop the objectives and begin defining the hazard mitigation strategy or action plan.*

*A hazard mitigation action plan provides direction for the community's efforts to reduce the potential losses identified in the risk assessment. If the strategy is to be implemented, it should be based on existing local authorities, policies, programs and resources. The approach should be flexible enough to be expanded, reduced and/or improved upon if existing conditions change.*

*A benefit-cost review of proposed hazard mitigation actions is helpful in establishing priorities for the strategy because such an analysis, studies the effectiveness of the actions with respect to their cost. FEMA's hazard mitigation plan review criteria, requires each community participating in a multi-jurisdictional planning effort to identify the specific actions they will undertake.*

## **A. Potential Mitigation Strategies**

*Hazard mitigation strategies to reduce specific risks can vary from basic to complex. They are comprised of one or more hazard mitigation actions. There are many different hazard mitigation actions, which are best classified into the following six categories:*

- *Prevention*
- *Property protection*
- *Structural projects*
- *Emergency services*
  
- *Critical facilities protection*
- *Public education and awareness*

### **Prevention**

*Prevention measures are intended to keep a hazard risk from getting worse and ensure that future development does not increase hazard losses. Communities can achieve significant progress towards hazard resistance through prevention actions. This is particularly true in undeveloped and redeveloped areas. Examples of prevention measures or actions are:*

- *Planning and zoning (floodplain regulations)*
- *Building codes*

- *Capital improvement planning (no infrastructure extended into hazard area)*
- *Land development regulations (large lot sizes)*
- *Open space preservation (parks and recreation areas)*
- *Storm water management (clear ditches/larger retention basins)*

## **Property Protection**

*Property protection is used to modify buildings or their surroundings, rather than to prevent the hazard from occurring since they directly impact people and property. A community may find these to be inexpensive actions because they are usually implemented or cost-shared with property owners. Examples of property protection measures are; **acquisition, relocation, rebuilding and flood-proofing.***

**Acquisition** is public procurement and management of lands that are vulnerable to damage from hazards. Public acquisition includes:

- *Full market value purchase*
- *Purchase of foreclosure or tax delinquent property or bargain sales*
- *Donations*
- *Leases and easements*

**Relocation** involves permanent evacuation to safer areas and includes:

- *Physical removal of buildings to a safe and future use area*
- *Substitution of current use to another that is less vulnerable to the hazard(s) like utility relocation by burying or flood proofing*

**Rebuilding** or modifying structures to reduce damage along with adoption and enforcement of building codes. They include some of the following actions:

- *Masonry structures can be retrofitted to lessen damage in landslides*
- *Manufactured homes can be anchored for high wind speeds*
- *Lightning protection for elevated structures*

**Flood-proofing** is meant to protect flood-prone buildings by either dry flood-proofing, which seals a structure by making the lower level watertight, or wet flood-proofing, in which water enters the building and is allowed to minimize pressure on the structure.

## **Structural Projects**

*Structural projects involve construction of manmade projects to lessen or abate a hazard, ultimately protecting people and property at risk. Protection measures include:*

- *Placement of anemometers*
- *Dams and reservoirs*
- *Spillways*
- *Channel modifications*
- *Detaining walls*
- *Storm sewers*
- *Elevated roadways*
- *Enclosing hazardous facilities*
- *Detention/retention basins*
- *Larger culverts*
- *Higher flood standards for construction projects*

## **Emergency Services**

*Some examples of emergency services include:*

- *Local regional mutual aid agreements for assistance*
- *Resources and alternate care sites for casualties/patients*
- *Protection of critical facilities*
- *Regular health and safety maintenance*
- *Inventory of all assets and resources in the area*
- *Annual multi-jurisdictional exercises*
- *Annual review of operational plans*

## **Critical Facilities Protection**

*Protecting critical facilities is essential for the community to respond and recover from an incident. Damage or the closing of a critical facility can disrupt and impact the population and needed services.*

*Critical facilities include:*

- *Police stations, fire stations, emergency operation centers, hospitals, and other structures/entities that are involved in the response effort*
- *Facilities that care or house special needs populations, such as nursing homes, boarding schools, assisted living centers and prisons*
- *Power plants and hazardous materials production/storage facilities that create a secondary hazard*

- *Water supply sources and sewage treatment facilities*

## **Public Education and Awareness**

*It is highly beneficial for the public be aware of educational activities in the community. These components would include:*

- *Provision of map information*
- *Informational mass mailings especially to property owners in hazard-prone areas*
- *Posters in high traffic areas*
- *Real estate disclosure of flood hazards*
- *Mellette County Emergency Management website updates*
- *Tabbed page in local phone books*
- *Public announcements through print ads*
- *Radio and public access TV which provide updates on emergency situations*

*Table 4, identifies several potential mitigation strategies to eliminate or reduce the effects of the county's identified hazards along with subcategories of concern. Recognizing that hazards exist, occur locally and can be very damaging to the community is the primary step in the mitigation process. Specific mitigation projects should be addressed and prepared for on a local level, with the knowledge that if the incident overwhelms the community, regional and state assistance is available.*

**Table 4. Potential Mitigation Strategies**

<b>Hazard</b>	<b>Prevention</b>	<b>Property Protection</b>	<b>Structural Projects</b>	<b>Emergency Services</b>	<b>Critical Facilities Protection</b>	<b>Public Awareness &amp; Education</b>
<b>Loss of electrical service for emergency operations</b>	<i>Purchase generators for emergency facilities</i>	<i>N/A</i>	<i>N/A</i>	<i>Backup system for emergency services</i>	<i>Ensure every critical facility has one or more generators</i>	<i>N/A</i>
<b>Flooding</b>	<i>1. Address 100 and 500-year flood risks by all county jurisdictions in their land use maps and land use planning and zoning</i>	<i>1. Sandbag, sump pumps, and flood insurance for homeowners 2. Adoption of floodplain mapping and zoning in the land use map and in its zoning ordinances</i>	<i>1. Require all culvert and road projects be conducted in accordance with NFIP standards 2. Control and oversee new development on the 100-year floodplain</i>	<i>1. Know which routes would potentially be blocked in flood and plan accordingly 2. Able to oversee resources to counteract or lessen the effect of flood waters</i>	<i>1. Sandbagging and evacuation of building if needed. 2. Alternate sites used with agreements in place</i>	<i>1. Educate community about potentially flooded routes and encourage them to avoid in heavy storms</i>
<b>Storms in Recreational Areas</b>	<i>Develop an emergency evacuation plan for each facility</i>	<i>N/A</i>	<i>Determine the stability and capacity of structures at the facility and make appropriate upgrades</i>	<i>Share the emergency evacuation plan with each department</i>	<i>N/A</i>	<i>1. Lightning education 2. Post evac procedure in visible location and cable access channel</i>
<b>Fire (wildfire or urban)</b>	<i>1. Controlled burning 2. Posting of daily fire hazard</i>	<i>1. Family education and fire routes maps 2. Smoke alarms correctly installed and monitored</i>	<i>N/A</i>	<i>Designate what departments are responsible for action</i>	<i>1. Call 911 2. Fire training of SOPs within Emergency Operation Plans</i>	<i>Community education on wildfire prevention and fire within the home</i>
<b>Tornadoes, High winds and Hail</b>	<i>Compile Severe Storm Evac Plan that addresses responsibilities, evacuation procedures, safety precautions, etc.</i>	<i>1. Storm protection for elevated and/or exposed structures 2. Tie downs for mobile homes</i>	<i>Storm protection for elevated and/or exposed structures</i>	<i>1. Rapid storm detection 2. Identify the responsibilities of each city/town department</i>	<i>Follow SOPs's within Emergency Operation Plans</i>	<i>1. Encourage volunteers to become active in the severe storm spotters network 2. Severe storm education of tornadoes and high winds</i>

<p><b>Severe Winter Storm</b></p>	<p>1. Improve severe storm warning system for all county residents 2. Protect people and infrastructure from the impacts of severe weather 3. Assess adequacy of existing civil defense sirens</p>	<p>Evaluate the readiness of all homes and public buildings for preventing damage</p>	<p>1. Require that all new local electrical distribution lines be placed underground 2. Modify county codes to control tree growth near power lines; encourage cities to do the same</p>	<p>1. Ensure that emergency management personnel are notified as soon as possible in the event of a severe storm 2. Improve access to real-time weather data, ensure that all sectors of the county have immediate access to severe weather warnings</p>	<p>Follow SOPS's within Emergency Operation Plans</p>	<p>1. Develop guidelines for homeowners describing what they can do to protect home 2. Understand the need for Shelter-in-Place or know where community shelter is 3. Have supplies at home to last at least 72 hrs</p>
<p><b>HAZMAT Unit Development</b></p>	<p>1. Properly contain hazardous materials 2. List and map of all hazardous areas</p>	<p>N/A</p>	<p>N/A</p>	<p>Exercise and training on how to handle for each substance</p>	<p>Safety and hazardous training for employees</p>	<p>1 Educating public on who to contact if aware of an incident 2. Identify alt. travel routes</p>

The header graphic features a stylized, colorful background of a river or waterway with blue, purple, and yellow tones. The text 'Mellette County' is prominently displayed in a large, white, sans-serif font across the top. Below it, the title 'Pre-Disaster Mitigation Plan' is written in a smaller, bold, black font.

# Mellette County

## Pre-Disaster Mitigation Plan

### Chapter 9 – Feasibility and Prioritization of Mitigation Strategies

---

*The goal of each strategy is to reduce or prevent damage from a hazard event, while an important criterion is whether the proposed action mitigates, the particular hazards or potential losses. Is it effective in reducing flood damage? What will be the degree of impact in flood damage losses if this action is taken? Consider that although some proposed actions might not reduce the hazards or associated damages when done alone, they may be small and important steps toward more effective actions.*

*Additionally, each action should also be reviewed for its congruency with other goals. For example, actions the community wishes to make, that mitigates a particular hazard while coordinating with other community priorities and the hazard mitigation goals of federal and state agencies.*

#### **The advantages of coordination include:**

- *Improved access to technical assistance and financial resources*
- *Wide-ranging solutions developed for multiple problems*
- *Broader support provided for implementation*
- *Reduced chances of duplicating or conflicting with existing efforts*

*Additional questions that should be asked include, does this action affect the environment? Another issue is timing: How quickly does the action have to take place? Which actions will produce quicker results? This is particularly important to consider if funding sources have application time limits.*

*In order to determine their effectiveness in accomplishing this goal, a set of criteria was applied to each proposed strategy. The STAPLEE method analyzes the Social, Technical, and Administrative, Political, Legal, Economic and Environmental aspects of a project and is used by public administration officials and planners as a decision-making tool.*

- **Social:** *Is the proposed strategy socially acceptable to the community? Is there equity issues involved that would mean one segment of the community are treated unfairly? Will the action cause social disruption?*
- **Technical:** *Will the proposed action work? Will it create more problems than it solves? Does it solve a problem or only a symptom? Is it the most useful action in light of other goals?*
- **Administrative:** *Can the community implement the action? Is there someone to coordinate and lead the effort? Is there sufficient funding, staff and technical support available? Are there ongoing administrative requirements that need to be met?*
- **Political:** *Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?*
- **Legal:** *Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity? Are there legal side effects? Is the proposed action allowed by the comprehensive plan, or must the plan be amended to allow the proposed action. Will the community be liable for action or lack of action? Will the activity be challenged?*
- **Economic:** *What are the costs and benefits of this action? Do the benefits exceed the costs? Is initial, maintenance and administrative costs taken into account? Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit and private)? How will this action affect the fiscal capability of the community? What burden will this action place on the tax base or local economy? The actions contribute to other community goals, such as capital improvements or economic development? What benefits will the action provide? (This can include dollar amount of damages prevented or potential for funding under the HMGP program).*
- **Environmental:** *How will the action impact the environment? Will the action need environmental regulatory approvals? Will it meet local and state regulatory requirements? Are endangered or threatened species likely to be affected?*

*In drafting this initial prioritization of the mitigation actions the STAPLEE criteria, assisted the team in determining if each action was met or was likely to be completed. The criteria that were considered "met" are identified with a "3", and the criteria that were considered they would be*

more difficult to meet are identified with a “1”. The methodology also allows for a “-” designation when impacts are expected to be negative although, none of the mitigation actions were marked as adverse. The participants in this process have defined High, Medium, and Low priorities to be assigned as follows:

- *High: Meets at least six of the seven STAPLEE criteria, in purple color on the chart*
- *Medium: Meets at least five of the seven STAPLEE criteria, in tan color on the chart*
- *Low: Meets at least four of the seven STAPLEE criteria, in blue color on the chart*

*This prioritization is found in Appendix D and is considered preliminary and should be revisited on an annual basis by Mellette County Emergency Management Office and the participating municipalities or as funding becomes available.*



## **Chapter 10 – Mitigation Actions and Implementation Schedule**

---

*Mellette County and participating entities' greatest needs are mitigating flood hazards, backup generators for critical infrastructure, construction of storm shelters, and public awareness.*

*After focusing on damage caused by past events, and what could be done to ensure that future damage will be lessened or eliminated and the completion of the risk assessment (identification of hazards, probability of hazards and vulnerability to hazards), it was the mutual consensus of the Planning Team that the mitigation strategies would focus on the following hazards: severe winter and summer storms, flooding, fires (wild/urban), and power outages.*

*When identifying goals and objectives to the activities/ projects it was agreed upon, to include broad reaching benefits but due to scope or varying levels of importance to individual jurisdictions. In some instances, no specific cost, timeframe, or priority was assigned. Likewise many infrastructure projects and policies throughout the communities would mitigate hazards but were not located in the most vulnerable areas. For example all communities benefit from flood proofing critical structures or burying above ground electric utility lines.*

*In order to select the project actions that will achieve the community's hazard mitigation needs, the Planning Team establishes a formal minimum threshold. Of the actions that meet the minimum threshold, the team will select those that are the most likely to reduce damages while encompassing a majority of the community's acceptability criteria.*

*Once the actions have been selected, the Planning Team will prioritize them and focus on what is most effective in reducing overall damages. A few of the actions will be achieved in a short amount of time with little effort while the many of the major activities will not be executed so easily, due to lack of funding, current regulations, or lack of technical or staff support.*

*It is recommended the team highlight a couple of "achievable projects" as top priorities, such as a public education program or development of an online information portal. This will assist the jurisdictions in building "small successes" at the onset of the project and encourages them to continue with more challenging projects. The more complex and time-consuming actions can remain top priorities and be implemented through the lifespan of the project.*

*Upon adoption of the updated plan, each jurisdiction will become responsible for implementing its own mitigation actions. The planning required for implementation is the sole responsibility of the local jurisdictions and private businesses that have participated in the plan update.*

*With the formulation of our mitigation strategies, the action plan will be developed to begin a timeline for implementation of the activities. In this section the action plan is outlined with*

*information on whom is responsible for implementing each of the prioritized strategies, as well as when and how the actions will be implemented.*

*The following questions were asked to assist the planning team in developing an implementation schedule for the priority mitigation strategies.*

- **WHO?** *Who will lead the implementation efforts? Who will put together funding applications?*
- **WHEN?** *When will these actions be implemented, and in what order?*
- **HOW?** *How will the community fund these projects? How will the community implement these projects? What resources and partnerships will be needed?*

*Appendix E includes the Action Plan. The following information is provided for each action:*

- *The primary hazard being addressed with the associated action*
- *The party(s) primarily responsible for implementing the action*
- *The time frame to accomplish the action*
  - *“Short Term, ST” means actions that are intended to be initiated within one year*
  - *“Mid Term, MT” is for actions that will be begin within 1-4 years*
  - *“Long Term, LT” is for actions that are not launching for at least five years*
- *Potential sources of funding*
  - *The estimated cost - estimates for many of the actions were obtained from knowledgeable sources based on current information*
- *The local priority rating*

*Funding sources can make or break a successful project. Many worthy programs and projects are never implemented due to funding restraints. Given the existing financial reality of municipal and county budgets, most of the proposed actions, would not commence without substantial grant assistance that would otherwise put a large burden on small local budgets.*

*Funding resources are available from FEMA through the South Dakota Office of Emergency Management and include the Hazard Mitigation Grant Program, Pre-Disaster Mitigation grant program, and Flood Mitigation Assistance grant program. Other possible sources of funding include:*

- **State and Federal Government, Organizations and Programs**

- *Small Business Administration (SBA) Disaster Loans*
- *FEMA Assistance to Firefighters Grant program*
- *SD Conservation District Association*
- *Central South Dakota Water Development District*
- *SD Department of Environment and Natural Resources*
- *SD Department of Transportation*
- *US Department of Agriculture Rural Development Office*
- *FEMA Public Assistance*
- *Housing and Urban Development (HUD)*
- *Economic Development Administration (EDA)*
- *Environmental Protection Agency (EPA)*
- *Community Development Block Grant Program*
- *Economic Development Administration*
- *Homeland Security (HLS) Annual Grants*
- *SD Community Foundation Grants*

- **Local Government**

- *Year-end money*
- *Post-disaster recovery*
- *Capital improvement budget*
  
- *Economic development funds*
- *Staff time (in-kind)*
- *General obligation bonds*
- *Revenue bonds*

- **Private-sector**

- *Time and labor*
- *Subject Matter Experts (consultants)*
- *Materials and resources*
- *Private contributions*



## Chapter 11 – Monitoring, Evaluating and Updating the Plan

---

### Annual Review

*The Pre-Disaster Mitigation Plan shall be reviewed annually, or as the situation dictates following a disaster declaration. The Emergency Manager is responsible for initiating the yearly review and should consult with members of the Local Emergency Planning Committee and the Hazard Mitigation Planning Team. The evaluation process will include public notification of planning/review meetings through press releases in the local newspapers and radio stations.*

*The EM will review the plan annually and ensure the following:*

- *The County Elected body will receive an annual report and/or presentation on the implementation status of the PDM activities;*
- *The report will include an evaluation of the effectiveness and appropriateness of the mitigation actions proposed in the plan; and*
- *The report will recommend, as appropriate, any required changes or amendments.*

*Plan amendments will be considered by the County EM during the plan's annual review to take place the end of each fiscal year. Changes should be analyzed with the STAPLEE tool, an updated timeframe, the community's priorities and funding sources in mind. Priorities that that received a lower rating should be reviewed as well during this time to determine the possibility of a need for future implementation or removal.*

*Changes made to the plan should accommodate projects that have failed or are no longer considered practical, sufficient or altered due to different scenarios.*

- *Some actions will be carried out by the public sector, and some by the private sector*
- *Certain actions will be accomplished pre-disaster and some will not be feasible until after a disaster when post-disaster funding sources are available*
- *A few actions can be accomplished in the short term and others will may require years to accomplish*

*In keeping with the process of adopting the 2012 Mellette County Pre-Disaster Mitigation Plan, the Local Emergency Management Office shall conduct public hearings to receive input and comment on the Plan. Updates should be held during the annual review period and the final product adopted by the various Boards of Commissioners.*

*The process of adoption demonstrates community commitment to hazard mitigation efforts prepares the community for what they can expect before and after a disaster, ensures continuity of loss reduction efforts and guarantees eligibility for other federal programs.*

## **Five Year Review**

*Recognizing that many mitigation projects are ongoing, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates when necessary.*

*In the absence of a disaster, a thorough review should be conducted every five years (a DMA 2000 requirement) to initiate a full update of the Pre-Disaster Mitigation Plan. All information in the plan will be evaluated for completeness and accuracy based on new information or data sources and the full planning and research process will be repeated.*

*In future years, if Mellette County relies on grant dollars to hire a contractor to write the plan update, the county will initiate the process of applying for and securing funding in the third year to ensure the funding is in place by the fourth year of the plan process. The fifth year will then be used to write the update that in turn will prevent any lapse in time in which the county does not have an approved current plan on file.*

### **Other Plan Incorporation**

*The Mellette County Pre-Disaster Mitigation Plan shall be a part of any future Zoning Ordinances or Comprehensive Plans developed and approved in the County and should be referenced while implementing appropriate sections of the PDM, where applicable.*

*All municipality mitigation projects should be considered and prioritized in conjunction with non-mitigation projects, such as water and wastewater infrastructure improvements, new construction of residential areas, schools, libraries, parks, etc. In addition, all mitigation requirements, goals, actions, and projects should be studied during the budget process. Budget preparation is a favorable time to review the plan since municipalities are considering expenditures during this time.*



The banner features a stylized background of a river or waterway with colorful, abstract brushstrokes in shades of blue, purple, and yellow. The text 'Mellette County' is written in a large, white, sans-serif font across the middle of the banner. Below it, 'Pre-Disaster Mitigation Plan' is written in a smaller, black, sans-serif font.

# Mellette County

## Pre-Disaster Mitigation Plan

### References

---

*Appendix D Planning Process Toolkit. (n.d.). Retrieved from [http://www.nyc.gov/html/oem/downloads/pdf/hazard\\_mitigation/appendix\\_d\\_toolkit.pdf](http://www.nyc.gov/html/oem/downloads/pdf/hazard_mitigation/appendix_d_toolkit.pdf)*

*Appendix G STAPLEE Analysis of Mitigation Actions. (n.d.). Retrieved from [http://www.co.cumberland.nj.us/filestorage/Final\\_Draft\\_appx\\_G\\_STAPLEE\\_060109.pdf](http://www.co.cumberland.nj.us/filestorage/Final_Draft_appx_G_STAPLEE_060109.pdf)*

*City Data, White River, SD. Retrieved from [http://www.city-data.com/city/White\\_River-South-Dakota.html](http://www.city-data.com/city/White_River-South-Dakota.html)*

*County of San Diego Guidelines for Determining Significance. (n.d.). Retrieved from [http://www.sdcounty.ca.gov/pds/docs/Emergency\\_Response\\_Guidelines.pdf](http://www.sdcounty.ca.gov/pds/docs/Emergency_Response_Guidelines.pdf)*

*Economic Analysis of Natural Hazard Mitigation Projects. (n.d.). Retrieved from [http://darkwing.uoregon.edu/showcase/Current\\_Projects/pdfs](http://darkwing.uoregon.edu/showcase/Current_Projects/pdfs)*

*Executive Summary. (n.d.). Retrieved from <http://www.co.delaware.ny.us/departments/pln/docs>*

*FEMA, Section Title. (n.d.). Retrieved from <https://training.fema.gov/EMIWeb/IS/IS393A/Word/IS393final.doc>*

*Hazus | FEMA.gov. (n.d.). Retrieved from <http://www.fema.gov/hazus/>*

*Introduction - National Preparedness Directorate National (n.d.). Retrieved from <https://training.fema.gov/EMIWeb/IS/IS393A/PDF/IS393.A-Lesson4.pdf>*

*Mitigation Plans and the FEMA Planning Process - California (n.d.). Retrieved from <https://sites.google.com/site/cahazardprofilemitigationplan/california-hazard-profile>*

*Natural Hazards Mitigation Planning Guide. (n.d.). Retrieved from <http://www.docstoc.com/Natural-Hazards-Mitigation-Planning-Guide>*

*South Dakota Department of Public Safety: Emergency Services. Retrieved from [http://dps.sd.gov/emergency\\_services/emergency\\_management/hazard\\_vulnerability.aSpx](http://dps.sd.gov/emergency_services/emergency_management/hazard_vulnerability.aSpx)*

*South Dakota State Hazard Mitigation Plan. (n.d.). Retrieved from [http://dps.sd.gov/emergency\\_services/emergency\\_management/documents](http://dps.sd.gov/emergency_services/emergency_management/documents)*