

# Bennett County Natural Hazard Mitigation Plan

Expiration Date: xx/xx/xx

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# I. INTRODUCTION

**Changes/Revisions to Introduction:** The format of the plan was revised.

## INTRODUCTION

Bennett County is exposed to natural hazards which can harm the welfare of its citizens and infrastructure. Natural hazards have caused serious damages throughout the county in many past instances. It is impossible to eliminate these hazards, but the cost of response and recovery can be substantially reduced when focusing on mitigating their impacts before they occur. The process of hazard mitigation is an effort to create more resilient communities when faced with natural hazards. The planning process includes 1) hazard identification, 2) the analysis of associated risks, and 3) the development of mitigation strategies to reduce or eliminate identified risks. The Bennett County Natural Hazard Mitigation Plan serves as a multi-jurisdictional plan, involving both Bennett County and the City of Martin.

## AUTHORITY

In October of 2000, the Disaster Mitigation Act (DMA2K) was signed to amend the 1988 Robert T. Stafford Disaster Relief and Emergency Assistance Act. Section 322 of the Disaster Mitigation Act requires local governments to have a natural hazard mitigation plan in place as a condition of receiving federal disaster mitigation funds. The Plan must:

1. Identify hazards and their associated risks and vulnerabilities.
2. Develop and prioritize mitigation actions; and
3. Encourage cooperation and communication between all levels of government and the public.

To be eligible for FEMA's Hazard Mitigation Assistance (HMA) grant programs, the Disaster Mitigation Act of 2000 (DMA 2000) requires local governments to have a FEMA-approved mitigation plan in place. In the mitigation plan, local jurisdictions must demonstrate proposed mitigation projects have a basis in a solid planning process where the unique risks and capabilities of each community are assessed. Mitigation plans must be updated every five years to demonstrate progress has been made toward meeting the community's mitigation goals and ensure the plan continues to be an effective mitigation tool to meet the needs of the county and the communities located within.

## PURPOSE

The purpose of the *Bennett County Natural Hazard Mitigation Plan* is to fulfill federal, state, and local hazard mitigation planning responsibilities consistent with the Federal Emergency Management Agency's guidelines. This Plan will promote mitigation measures; implement short/long range strategies to minimize suffering, loss of life, damage to infrastructure, and property damage; eliminate or minimize conditions that would have an undesirable impact on the citizens, economy, environment, and the well-being of the county. This Plan will educate and facilitate communication with the public, build public and political support for mitigation activities, and develop implementation and planning requirements for hazard mitigation projects.

## **PLAN USE**

This *Bennett County Natural Hazard Mitigation Plan* should be used to help local elected and appointed officials plan, design, and implement policies, programs, and projects to help reduce their community's vulnerability to natural hazards. The Plan should also be used to facilitate inter-jurisdictional coordination and collaboration related to natural hazard mitigation planning and implementation. Formal adoption of the updates to the Plan will keep the County and its communities in compliance with the Disaster Mitigation Act of 2000.

### **Scope**

- Provide opportunities for public input and encourage participation and involvement regarding the mitigation plan.
- Identify hazards and vulnerabilities within the county and local jurisdictions.
- Combine risk assessments with public and emergency management ideas.
- Develop goals based on the identified hazards and risks.
- Review existing mitigation measures for gaps and establish projects to sufficiently fulfill the goals.
- Prioritize and evaluate each strategy/objective.
- Review other technical documents and planning processes for cohesion and incorporation with mitigation planning.
- Establish guidelines for updating and monitoring the Plan.
- Present the Plan to Bennett County and the participating jurisdictions for adoption.

### **Local Goals**

- Protection of life to the extent possible through mitigation planning efforts.
- Protection of critical facilities and public infrastructure to the extent possible through mitigation planning efforts.
- Protection of private property to the extent possible through mitigation planning efforts.
- Promote continuity among all levels of government (federal, state, county, city) by connecting mitigation planning efforts to existing local planning activities.
- Protection of the economy, businesses, industry, education opportunities, and the cultural fabric of a community to the extent possible through mitigation planning efforts.
- Protection of natural resources and the environment, to the extent possible through mitigation planning efforts.

### **Goals of Mitigation Programs as Established by FEMA**

- Eliminate or reduce the long-term risk to human life and property from identified natural and man-made hazards.
- Aid both the private and public sectors in understanding the risks they may be exposed to and exploring mitigation strategies to reduce those risks.
- Avoid risk of exposure to identified hazards.
- Minimize the impacts of those risks when they cannot be avoided.
- Mitigate the impacts of damage as a result of identified hazards.
- Accomplish mitigation strategies in such a way that negative environmental impacts are minimized.
- Provide a basis for funding projects outlined as hazard mitigation strategies.
- Establish a regional platform to enable the community to take advantage of shared goals, resources, and the availability of outside resources.

## **WHAT IS HAZARD MITIGATION?**

Hazard mitigation is defined as any cost-effective action(s) that reduces or prevents vulnerability of people, property, and infrastructure in regard to identified hazards and their associated risks. Hazard mitigation measures fall into three categories:

- Keep the hazard away from people, property, and structures.
- Keep people, property, and structures away from the hazard.
- Reduce the impact of the hazard on the victims.

Hazard mitigation measures must be practical, cost-effective, and environmentally and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the value of anticipated damages.

Mitigation actions should be incorporated into the activities associated with comprehensive and capital improvement planning with consideration given to areas with the greatest vulnerability to natural hazards. Capital investments whether for homes, roads, public utilities, pipelines, power plants, or public works, determine to a large extent the nature and degree of hazard vulnerability to a community. Once a capital facility is in place, it becomes more difficult to correct any errors in location or construction with respect to hazard vulnerability. For these reasons zoning, building codes, and other ordinances that manage development in high-vulnerability areas ensure new buildings and infrastructure are built to avoid or withstand the damaging forces of hazards. These actions are useful mitigation approaches local governments can implement.

Historically, city and county mitigation measures have been the most neglected programs within emergency management and planning departments. Since the priority to implement mitigation activities is generally low in comparison to the perceived threat, some important mitigation measures take time to implement. Mitigation success can be achieved when accurate information is portrayed through complete hazard identification and impact studies and followed by effective mitigation management. Hazard mitigation is key in reducing or eliminating risk to people, property, and infrastructure from damage caused by known and/or expected hazards.

This Plan evaluates hazards, risks, and vulnerabilities within the jurisdictional area of the entire county. The Plan supports, aids, identifies, and describes mitigation projects for each of the local jurisdictions that participated in the update. The suggested actions and implementation strategy for local governments could reduce the impact of future natural hazard occurrences. Reducing the impact of natural hazards can prevent such occurrences from becoming disastrous but will only be accomplished through a coordinated partnership with emergency managers, political entities, public works officials, community planners, and other dedicated individuals working to implement the strategies outlined in this plan.

## COUNTY PROFILE

# Bennett County

South Dakota

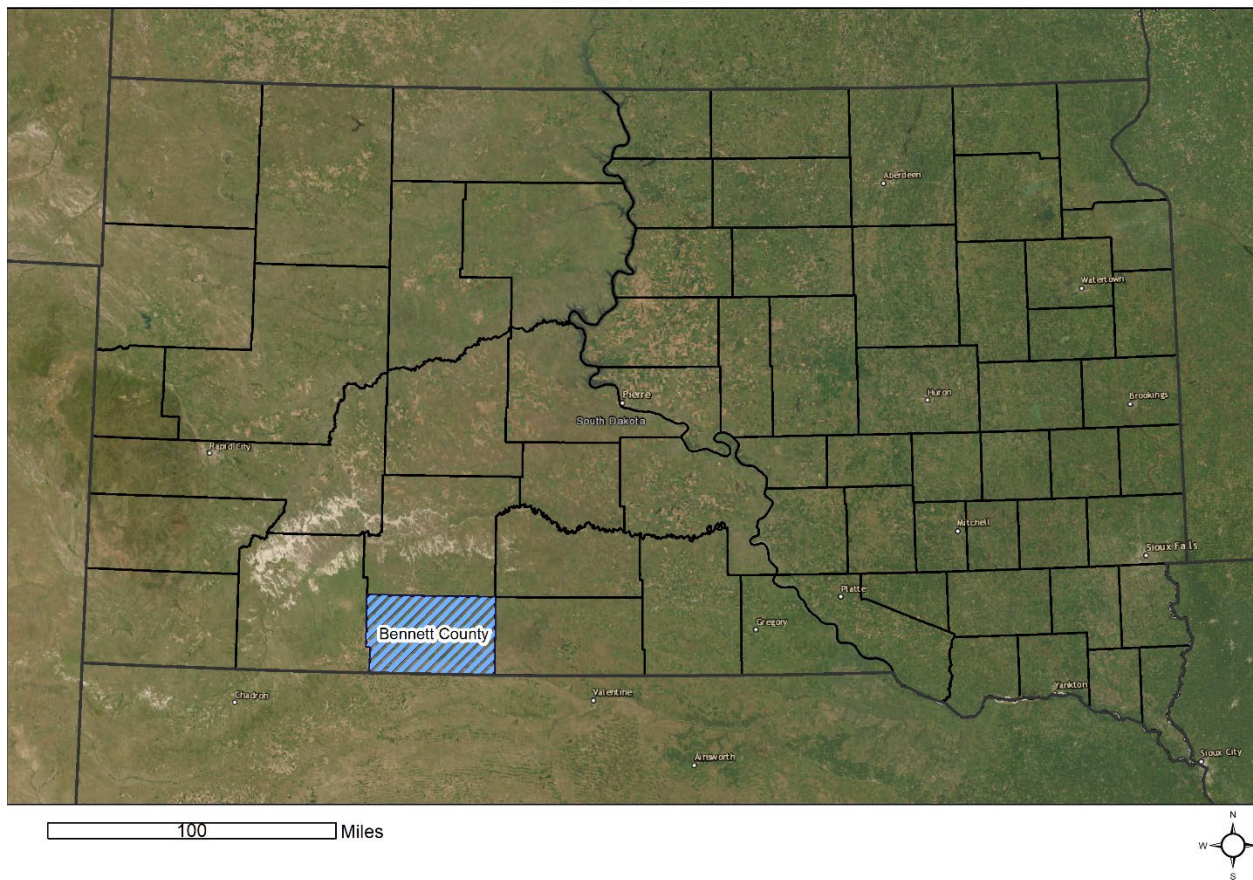


Figure 1.1 Location of Bennett County, South Dakota.

Bennett County Geographical Quick Facts	
• <b>Bordering Counties:</b>	• Jackson, SD; Mellette, SD; Todd, SD; Oglala Lakota, SD; Cherry, NE; Sheridan, NE
• <b>Townships or Unorganized Territories</b>	• Blackpipe, Harrington, Tuthill, Vetal
• <b>Census-Designated Places</b>	• Allen – population 460
• <b>Population per square mile:</b>	• 2.85
• <b>Soils:</b>	• Mostly silt loams and sandy loams, with fine sands in some parts of the county.
• <b>Vegetation:</b>	• Native perennial grasses such as wheatgrasses, Indiangrass, green needlegrass, and bluestem grass.
• <b>Major transportation routes:</b>	• South Dakota State Highway 73 and US Highway 18

Table 1.1 Geographic quick facts of Bennett County, South Dakota.

Bennett County Population Demographics	
Location	Population
Bennett County	3,381
Martin	938

Table 1.2 Population of Bennett County and towns. (U.S. Census Bureau Decennial Census 2020).

Bennett County Climate	
Season	Average Temperature
Winter	23°F
Spring	44°F
Summer	70°F
Fall	47°F
Precipitation	
Average annual precipitation from 1895-2010	18.5 inches

Table 1.3 Climate data of Bennett County, South Dakota. (U.S. NOAA: National Centers for Environmental Information, *Climate at a glance*).

### National Flood Insurance Program Participation

Bennett County and local communities do not currently participate in the National Flood Insurance Program (NFIP) and there are no effective flood hazard maps or materials for the region.

Bennett County Municipalities Overview				
Towns	Population	Location	Elevation	NFIP
Martin	938	43° 10' 21" N, 101° 43' 57" W	3,307 ft	No

Table 1.4 Bennett County Municipalities Overview, including participation in National Flood Insurance Program (NFIP). (Bennett County. *Google Earth Pro*, U.S. Census Bureau Decennial Census 2020).

## II. PREREQUISITES

**Changes/Revisions to Planning Process:** The planning team was formed with at least one representative from each adopting jurisdiction. BHCLG and Bennett County Emergency Manager also met with each adopting body's elected officials to discuss the Plan update.

### ADOPTION BY THE LOCAL GOVERNING BODY

The local governing body that oversees the update of the *Bennett County Natural Hazard Mitigation Plan* is the Bennett County Commission. The Commission has tasked the Bennett County Emergency Manager with the responsibility of ensuring the Plan is compliant with Federal Emergency Management Agency (FEMA) Guidelines and corresponding regulations.

### MULTI-JURISDICTIONAL PLANNING PARTICIPATION AND ADOPTION

*Requirement 201.6(c)(5)...*For multi-jurisdiction plans, has the governing body of each jurisdiction officially adopted the plan to be eligible for certain FEMA assistance?

**F2-a.** To receive approval, the participants must adopt the plan and provide documentation that the adoption has occurred.

This multi-jurisdictional plan serves the entire geographical area within the boundaries of Bennett County, South Dakota. The one jurisdiction within the county elected to participate in the planning process and the update of the existing *Bennett County, South Dakota Hazard Mitigation Plan* (2019). The participating local jurisdiction is the City of Martin.



The *Bennett County Natural Hazard Mitigation Plan (2024)* will be adopted by resolution by the Bennett County Commission and the Martin City Council. The Resolutions of Adoption are included as supporting documentation for the Plan. The dates of adoption by resolution for each of the jurisdictions are summarized in Table 2.1.

Dates of Plan Adoption by Jurisdiction	
Jurisdiction	Date of Adoption
Bennett County	xx/xx/xx
Martin	xx/xx/xx

Table 2.1. Participating jurisdictions' date of Bennett County Hazard Plan adoption date.

All participating jurisdictions involved in the Plan updated their information, provided feedback on new developments and any changes since the last update. The local jurisdiction has also presented the Resolution of Adoption to their councils and passed the resolutions upon FEMA approval of the Plan. The resolutions are included in Appendix I. Table 2.2 shows the “participation” of jurisdictions that intended to adopt the Plan.

Nature of Participation	Bennett County	Martin
Attended Meetings or work sessions (a minimum of 2 meetings will be considered satisfactory).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Provided inventory and summary of reports and plans relevant to hazard mitigation.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Provided Risk Assessment	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Provided descriptions of what is at risk (including local critical facilities and infrastructure at risk from specific Hazards)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Submitted a description or map of local land-use patterns (current and proposed/expected).	-	-
Developed goals for the community.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Developed mitigation actions with an analysis/explanation of why those actions were selected.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Prioritized actions emphasizing relative cost-effectiveness.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Reviewed and commented on draft Plan.		
Hosted opportunities for public involvement (allowed time for public comment at a city council meeting during public comment period)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

### III. PLANNING PROCESS

**Changes/Revisions to Planning Process:** The planning process for this update focused on ensuring there was participation and involvement from all of the adopting jurisdictions, state, and federal agencies. BHCLG and County Emergency Manager met with all adopting bodies commissions/boards and councils. A planning team was created with representation from both the city and the county.

#### DOCUMENTATION OF THE PLANNING PROCESS

*Requirement 201.6(c)(1)...* Does the plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction.

**A1-a.** The plan must describe the current planning process.

**A1-b.** The plan must list the representatives from each of the participants in the current plan that will seek approval and how they participated in the planning process.



Meeting Summaries		
Date	Location	Summary
12/8/23	Bennett County Courthouse Martin, SD	The initial informational meeting was held during the regularly scheduled <b>Bennett County</b> Commission meeting. The purpose of this meeting was to inform the public and county commissioners about the required update and planning process. The commission approved the contract for Black Hills Council of Local Governments (BHCLG) to complete the update of this plan. The <b>Bennett County Emergency Manager</b> will serve as the point of contact for BHCLG for the duration of the update.
12/18/23	BHCLG Office, Rapid City, SD	The <b>Bennett County</b> Emergency Manager attended a meeting with BHCLG to discuss the overview for the mitigation plan update, including technical documents review, formation of planning team, and stakeholders.
1/10/24	Bennett County Courthouse, Martin, SD	BHCLG (attended by Zoom) and Bennett County's EM met with the <b>City of Martin</b> during the regularly scheduled city council meeting. BHCLG informed the public and city council about the required update and planning process. Martin tasked <i>Mayor Gary Rayhill</i> to serve as the primary point of contact for the plan update.
1/22/24	Bennett County Courthouse, Martin, SD	The <b>Planning Team</b> met to discuss the update of the mitigation plan, review of 2019 plan, public survey draft, and stakeholder meeting. In attendance: <b>Bennett County, City of Martin.</b>
2/20/24	Martin Fire Station, Martin, SD	BHCLG met with representatives for the <b>City of Martin</b> for a work session meeting to discuss hazards and mitigation activities for the City of Martin. In attendance was <b>Martin Volunteer Fire Department, City Finance Officer, Lacreek Electric Assoc., Martin City Foreman, a member of the public, Martin Mayor, and County EM.</b>
2/20/24	Martin Fire Station, Martin, SD	BHCLG met with representative for <b>Bennett County</b> for a work session meeting to discuss hazard and mitigation activities for the county. In attendance was the <b>County EM, a county commissioner, Martin VFD, Martin Mayor, LEPC, and National Weather Service.</b>
2/20/24	Martin Fire Station, Martin, SD	<b>Bennett County</b> hosted a stakeholder's meeting to discuss risks and vulnerabilities from natural hazards in the county, while brainstorming possible mitigation projects. A list of stakeholders invited to the meeting can be found in Appendix A. In addition to the identified stakeholders, the public was encouraged to attend. In attendance included <b>Bennett County Commissioner, NWS, Martin VFD, Vetal VFD, Lacreek Electric Assoc., Martin Mayor, and County EM.</b>

Table 3.1 Mitigation Meeting dates, location, and summary.

**Requirement 201.6(b)(2)...** Does the plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development as well as businesses, academia, and other private and non-profit interests to be involved in the planning process

**A2-a.** The plan must provide documentation of an opportunity for stakeholders to be involved in the current planning process

Representatives were chosen for each jurisdiction to serve as planning team members, Table 3.4. Representatives from the Bennett County School District, Bennett County Rural Healthcare, and the Oglala Sioux Tribe were also invited to participate in the plan update. Each member was

requested to attend the planning team meeting, review the previous Plan, provide planning documents/studies/ordinances, provide a list of critical facilities and infrastructure, identify risks and vulnerabilities, and update mitigation projects.

In addition to the planning team meetings, on February 20, 2023, Bennett County hosted a stakeholders meeting to receive sufficient feedback from the community. BHCLG worked with the Bennett County Emergency Manager and guidance from FEMA's *Local Mitigation Planning Policy Guide* to create a stakeholders list. The list including agency and contact method can be found in **Appendix A**.

The meeting minutes, sign-in, and notices/agendas (when applicable) from each of the meetings are included in **Appendix A**. Commissioners, board members, and public officials involved in the Plan are listed in Tables 3.2 and 3.3.

The County Emergency Manager met with the Local Emergency Planning Committee (LEPC) on January 25, 2024. This group consists of various community lifeline agencies in Bennett County, including the county sheriff, police department, hospital, Martin fire department, coroner, ambulance service, electric company, South Dakota Department of Transportation and South Dakota Office of Emergency Management. A list of all attendees can be found in **Appendix**. Additionally, various agencies were invited to the stakeholder meeting, including SDOEM, NWS, FSA, and the Bennett County Road Superintendent. A list of stakeholders invited can be found in **Appendix**.

\*\*Note: commissioners and council members as well as other elected and non-elected officials of the towns and counties change often. The names listed below are the most recent office/position holders.

<b>Bennett County Commissioners and Public Officials Involved in the Plan</b>	
Jeff Sisco	Emergency Manager
Dave Bakely	Commissioner
Susan Williams	Commissioner
Cole Blu Donovan	Commissioner
Keeley Clausen	Commissioner
Bill Livermont	Commissioner
Tasha Konotopka	Auditor
Sarah Harris	States Attorney
Jolene Donovan	Treasurer
Melissa Lessert	Highway Department

**Table 3.2** Bennett County officials involved in the Bennett County Natural Hazard Mitigation Plan Update.

<b>City of Martin Board Members and Public Officials Involved in the Plan</b>	
Gary Rayhill	Mayor
Cecilia Moffitt	Council Member
Gloria Claussen	Council Member
Gregg Claussen	Council Member
Lindsee Harris	Council Member
Jay Yohner	Council Member
Kevin Rascher	Council Member
Jean Kirk	Finance Officer
Paul Noel	City Foreman
Chris O'Bryan	Fire Chief

**Table 3.3** City of Martin officials involved in the Bennett County Natural Hazard Mitigation Plan Update.

<b>Planning Team Representatives</b>	
Jeff Sisco	Bennett County Emergency Manager
Gary Rayhill	City of Martin Mayor
Dave Bakely	Bennett County Commissioners Chairman
Matt Krotovil	Retired Lineman & Business Owner

**Table 3.4** Participating Plan representatives and title.

**Requirement 201.6(b)(1)**... Does the plan document how the public was involved in the planning process during the drafting state and prior to plan approval?

**A3-a.** The plan must document how the public had an opportunity to be involved in the current planning process, and what that participation entailed, including how underserved communities and vulnerable populations within the planning area were provided an opportunity to be involved.

The public was provided several opportunities at county commission and town board meetings to comment during the drafting stage of the Plan update. State law requires that public meetings allow for public comment during the meetings as described in SDCL 1-25-1.

...The public body shall reserve at every regularly scheduled official meeting a period for public comment, limited at the public body's discretion, but not so limited as to provide for no public comment. At a minimum, public comment shall be allowed at regularly scheduled official meetings which are designated as regular meetings by statute, rule, or ordinance.

It was during this legally required public comment period that the public was allowed to provide comments. Mitigation Planning was listed on the required notices for the town board and county commission meetings. Notices for public meetings require a minimum of time, date, and location, and were posted in accordance with SDCL 1-25.1.1:

1-25-1.1. ...Each political subdivision shall provide public notice, with proposed agenda, that is visible, readable, and accessible for at least an entire, continuous twenty-four hours immediately preceding any official meeting, by posting a copy of the notice, visible to the public, at the principal office of the political subdivision holding the meeting. The proposed agenda shall include the date, time, and location of the meeting. The notice shall also be posted on the political subdivision's website upon dissemination of the notice if a website exists. For any special or rescheduled meeting, the information in the notice shall be delivered in person, by mail, by email, or by telephone, to members of the local news media who have requested notice. For any special or rescheduled meeting, each political subdivision shall also comply with the public notice provisions of this section for a regular meeting to the extent that circumstances permit.

No public comments were made during the Plan update meetings; however, discussion took place among the council members, finance officer, attorney (when relevant), fire specialists and city staff. Meeting minutes were collected for each local jurisdiction and published in the paper or record for each entity as required by law.

Bennett County Natural Hazard Mitigation Plan Survey was made available to the public on January 23 and closed February 13. Paper copies of the survey were made available at the Bennett County Emergency Management Office for citizens to complete. Attendees of the stakeholders meeting were encouraged to complete the survey as well. A total of 17 surveys were received and the information gathered was implemented into the plan. The survey results are available in **Appendix C**.

The stakeholders meeting held on February 20 was open to the public and advertised via flyers posted on community bulletin boards. The community newspaper, the Bennett County Booster, also published an article announcing the event (**Appendix**). The Bennett County Emergency Manager sent out several invitations and community surveys throughout the process. A total of 14 people participated in the stakeholders meeting.

After the draft of the Plan was complete, a hard copy of the plan was made available for public viewing at the Bennett County Office of Emergency Management. Notice was published in the local paper. The newspaper notice is included in Appendix. There was a total of XXX comments received any comments received have been addressed.

Notice was emailed to the emergency managers in the neighboring counties of: Jackson, SD; Mellette, SD; Todd, SD; Oglala Lakota, SD; Cherry, NE; and Sheridan, NE. A copy of the email along with any comments is included in **Appendix C**.

Neighboring Emergency Managers			
Neighboring County	Emergency Manager	Response Received	Comments
Jackson, SD	Jon Beck		
Mellette, SD	Karen O'Brien		
Todd, SD	Trevor Willcuts		
Oglala Lakota, SD	Gary Baker		
Cherry, NE	Matt Sandoz		
Sheridan, NE	Nan Gould		

**Table 3.5** Listing of all neighboring county emergency managers.

## TECHNICAL REVIEW OF EXISTING DOCUMENTS [§201.6(b)(3)]

**Requirement 201.6(b)(3)**... Does the plan describe the review and incorporation of existing plans, studies, reports, and technical information?

**A4-a.** The plan must document what existing plans, studies, reports, and technical information were reviewed and how they were incorporated, if appropriate, into the development/update of the plan.

A review and incorporation of existing plans, studies, reports, and technical information was completed. Each community was asked to provide a list of existing documents they had available. Documents incorporated into the Plan are cited throughout the document. In addition to the *Bennett County Hazard Mitigation Plan* (2019), the author reviewed several other existing documents including but not limited to:

- South Dakota State Hazard Mitigation Plan (2019 version and 2023 public review draft)
- South Dakota Hazard Identification and Risk Assessment (2022)
- South Dakota Drought Mitigation Plan (2015)
- South Dakota Forest Action Plan (2020 revision)
- USGS Karst Map and Expansive Soils Map
- Jackson County Mitigation Plan (2018)\*
- Other surrounding County's Mitigation Plans were not available for review

*Note:* Documents that were reviewed but not incorporated into this document are marked with an asterisk“\*”.

Record of Review – Bennett County	
Existing program/policy/technical documents	Year
Bennett County Hazardous Material Plan*	2014 (2023)
Bennett County Threat and Hazard Identification and Risk Assessment*	2019
Bennett County Civil Disturbance Annex*	2023
Bennett County Local Emergency Operations Plan*	2022
Bennett County All Hazards Emergency Response Annex*	2021

**Table 3.6** Review of Existing Documents for Bennett County

Record of Review – City of Martin	
Existing program/policy/technical documents	Year
City of Martin Municipal Code (Titles 3, 5, and 6)	2023

**Table 3.7** Review of Existing Documents for City of Martin

## REVIEW OF THE 2019 PLAN

Each section of the *Bennett County Hazard Mitigation Plan 2019* was reviewed. Much of the information taken from the 2019 version of the Plan was relevant. Specific areas that needed

improvement or changes include the planning process, mitigation strategy, risk assessment, and vulnerabilities. Bennett County and the participating jurisdiction were provided information on previous risks, concerns, and projects from the 2019 Plan. They were asked to review the information, to provide updates of completed projects and to identify new risks/concerns within their jurisdiction.

## IV. RISK ASSESSMENT

**Change/Revisions to Risk Assessment:** The risk assessment was completely reformatted. Additional specific information was collected for hazards as provided by the jurisdictions and County. After the review of the 2019 Plan, the following hazards were added: Dam Failure, Extreme Temperatures, Geological (subsidence and expansive soils) and Summer Storms.

### IDENTIFYING HAZARDS [§201.6(c)(2)(i)]

*Requirement 201.6(c)(2)(i)... Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events?*

**B1-a.** *The plan must include a description of all natural hazards that can affect the jurisdiction(s) in the planning area and their assets, such as dams, located outside of the planning area.*

A comprehensive list of hazards was evaluated, and disasters were placed in three separate columns depending on the likelihood of the disaster occurring in the planning jurisdiction. Table 4.1 was derived from the FEMA worksheets provided in the planning handbook for mitigation planning. Hazards that occur at least once a year or more were placed in the High Probability column. Hazards that may have occurred in the past five years but not on a yearly basis were placed in the Medium Probability category. Hazards that could occur every ten years or more or have the potential to occur were placed in the Low Probability column. Hazards or disasters that have never occurred in the area and are unlikely to occur in the planning jurisdiction in the future were placed in the Unlikely to Occur column. While man-made hazards were discussed briefly with the planning group, it was decided to eliminate man-made hazards from the Plan because those types of hazards are difficult to predict and assess due to wide variations in the types, frequencies, and locations. Types and scopes of manmade hazards are unlimited.

Only the natural hazards from the High, Medium and Low Probability columns will be further evaluated throughout this Plan. All manmade hazards and hazards in the Unlikely to Occur column will not be further evaluated in the Plan. **Table 4.1** below identifies the hazards addressed in the Plan throughout the planning process. Hazards were identified for this Plan in several ways including: observing development patterns, receiving input from jurisdictions, holding public meetings, public survey, historical occurrences, planning work sessions, evaluating previous disaster declarations and consulting the *State Hazard Mitigation Plan 2019* and *South Dakota Hazard Identification and Risk Assessment 2022*.

Natural Hazards Categorized by Likelihood of Occurrence			
High Probability	Medium Probability	Low Probability	Unlikely to Occur
Drought	Flood	Aircraft Accident	Avalanche
Extreme Cold	Wildfire	Civil Disorder	Coastal Storm
Extreme Heat	Utility Interruption	Communication Disruption	Hurricane
Freezing Rain/Ice	Tornado	Dam Failure	Volcanic Ash
Hail		Earthquake	Volcanic
Heavy Snow		Ice Jam	Tsunami

Lightning		Landslide	
Rapid Snow Melt		Radiological	
Strong Winds		Subsidence	
Thunderstorm		Biological	
Winter storm			
Transportation			

**Table 4.1** FEMA Assessing Risks list of hazards. (Mitigation Planning Workshop for Local Governments Student Manual May 2004. SM 4-14.

Jurisdiction Identified Hazards		
Natural Hazards Identified	Bennett County	Martin
Dam Failure	L	L
Drought	H	H
Earthquake	L	L
Expansive Soils	L	L
Extreme Cold	H	H
Extreme Heat	H	H
Flood	M	M
Hail	H	H
Heavy Rain	H	H
Landslides	NA	NA
Lightning	H	H
Heavy Snow	H	H
Strong Winds	H	H
Tornados	M	M
Wildfire	L	L
Winter Storms	H	H
NA	Not applicable; not a hazard to the jurisdiction	
L	Low risk; little damage potential (minor damage to less than 5% often jurisdiction)	
M	Medium risk; moderate damage potential (causing partial damage 5-10% of the jurisdiction, and irregular occurrence)	
H	High risk; signification risk/major damage potential (ex. destructive, damage to more than 10% of the jurisdiction and/or regular occurrence)	
O	Jurisdiction did not report hazards	

**Table 4.2** Natural Hazards identified by each jurisdiction.

### Significant Hazard Occurrences

**Requirement 201.6(c)(2)(i)...** Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events?

**B1-d.** The plan must include information on previous hazard events for each hazard that affects the planning area.

The Stafford Act has two types of disaster declarations: emergency declarations and major disaster declarations. These two types allow the President to provide supplemental federal disaster assistance. While there have been several emergency and major disaster declarations made statewide, Table 4.3 shows all recorded events that impacted Bennett County.

Federal Disaster Declarations	
Incident Period	Types of Disasters
12/12/2022 – 12/25/2022	Severe Winter Storms and Snowstorm (DR-4689-SD)
01/20/2020 – 05/11/2023	Covid-19 Pandemic
05/26/2019 – 06/07/2019	Severe Storms and Flooding (DR-4463-SD)
03/13/2019 – 04/26/2019	Severe Winter Storm, Snowstorm, and Flooding (DR-4440)
05/24/2013 – 05/31/2013	Severe Storms, Tornado, and Flooding (DR-4125)
05/01/2008 – 05/02/2008	Severe Winter Storm and Record/Near Record Snow
04/18/2006 – 04/20/2006	Severe Winter Storm



02/03/1997 – 05/24/1997	Severe Storms/Flooding
01/03/1997 – 01/31/1997	Severe Winter Storms/Blizzards
06/17/1976 – 06/17/1976	Drought
09/06/2005 – 10/01/2005	South Dakota Hurricane Katrina Evacuation
11/05/2008 – 11/07/2008	Severe Winter Storm and Record/Near Record Snow

**Table 4.3** Listing of federal disaster declarations. FEMA Declared Disasters.

## NATURAL HAZARDS IN THE PLAN JURISDICTION

Descriptions of the natural hazards likely to occur in the planning jurisdiction are listed in [Appendix E](#). National Oceanic Atmosphere Administration (NOAA) was used to research natural hazards and disasters having occurred within the last ten years within the geographic location covered under the Bennett County Plan. A summary of the findings for significant hazard occurrences from the past ten years are in Table 4.4.

Significant Hazard Occurrences 2013-10/2023		
Type of Hazard	# of days with an event Since 2013	Source
Blizzard	7	NOAA
Extreme Temperatures	6	NOAA
Drought (At least abnormally dry)	105	Drought.gov
Flash Flood	2	NOAA
Flood	4	NOAA
Hail	51	NOAA
Heavy Rain	1	NOAA
High Wind	19	NOAA
Lightning	0*	NOAA
Thunderstorm Winds	49	NOAA
Tornado	8	NOAA
Wildfire	149	National Interagency Fire Center
Winter Storm/Winter Weather/Heavy Snow	51	NOAA

Note: Hazards marked with an asterisk \* were reported by each jurisdiction, but no data was available on NOAA.

**Table 4.4** List of significant hazards from 2013-10/2023. (NOAA: National Center for Environmental Information, *Storm Event Database*), (Information was taken from National Interagency Fire Center: Historic Fires.) A complete listing of all hazards can be found in [Appendix B](#).

Most of the hazard events listed were obtained using the NOAA website. The data provided spans between January 1950 to December 2023, as reported by the National Weather Service. Data collection and processing procedures have changed over time, creating incomplete data. The information provided helps illustrate the hazards Bennett County faces. For a more comprehensive collection of the hazards in the county, other sources in the communities and the state were consulted.

The NOAA documented hazard events are believed to be incomplete. To get an accurate picture of Bennett County, additional sources were referenced when appropriate. With such a high number of occurrences it is reasonable to expect at least some property or crop damage was sustained in the communities during some of the occurrences, even though the damage may not have been reported or recorded. It is possible such damage was not reported because it was thought to be insignificant at the time, or because those responsible for reporting such information did not report to the proper agencies. Unfortunately, the total damage for each event is not available, but hopefully a method for collecting this data will evolve so it can be made available to local governments for mitigation planning.



## HARZARD PROFILE [§201.6(c)(2)(i)]

**Requirement 201.6(c)(2)(i).** Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events?

- B1-b.** The plan must include information on location for each identified hazard
- B1-c.** The plan must provide the extent of the hazards that can affect the planning area.
- B1-d.** The plan must include information on previous hazard events for each hazard that affects the planning area.
- B1-e.** The plan must include the probability of future events for the identified hazards that can affect the planning area.
- B1-f.** For the multi-jurisdictional plans, when hazard risks differ across the planning area and between participating jurisdictions, the plan must specify the unique and varied risk information for each applicable jurisdiction and their assets outside the planning area.

Geographic location of each natural hazard is addressed in this Plan. Most hazards identified have the potential of occurring anywhere in the county with the exception of dam failure and flooding which are more localized hazards. Wildfire occurs most frequently where forests and woodlands are prominent in the northwest corner of the county.<sup>1</sup> Previous occurrences are listed individually by the type of hazard and by location in the following tables. Table 4.5 identifies the latitude and longitude of the local jurisdictions along with the population, elevation, and number of occupied homes.

Communities within the County				
City	Population	Location	Elevation	Occupied Units
Martin	938	43° 10' 21" N, 101° 43' 57" W	3,307 ft	399

**Table 4.5.** Population, location, elevation, and occupied units for each of the adopting jurisdictions in Bennett County. (Bennett County. *Google Earth Pro*), U.S. Census Bureau Decennial Census 2020).

Additionally, the extent (i.e., magnitude or severity) of each hazard, information on previous occurrences of each hazard, and the probability of future events (i.e., chance or occurrence) for each hazard are addressed below. Due to the long listing of all hazard occurrences in the last 74 years, the complete history can be found in [Appendix B](#).

Future Probability was created using historical data when applicable and consideration for future climate change considerations.

Future Probability Ratings with Climate Variation Consideration	
<b>High</b>	More than 50% change of occurring in a given year.
<b>Med</b>	More than 10% but less than 50%
<b>Low</b>	Less than or equal to a 10% chance of occurring in a given year

**Table 4.6.** Future Probability Rating.

### **DAM FAILURE**

Dam Failure is typically associated with intense rainfall or prolonged flooding conditions, but it can occur in any weather condition. The future risk for Dam failure in Bennett County is low, with one known historical dam failure event in the county. In 2019, the Bad Hair Dam failed due to heavy

<sup>1</sup> Bennett County Hazard Mitigation Plan, 2019

rain falling on drifts of snow. The rain was unable to soak into the ground. The overflow system could not handle the large amount of water entering the dam, and the water began to overtop the structure. The water eventually began to move the soil and the dam failed. There was no downstream damage. This dam is not classified as a high-risk dam.

Dam failure can be caused by many different sources including faulty design, construction and operational inadequacies, intentional breaches, or a flood event which exceeds the design. The greatest threat from dam failure is to people and property in areas immediately below the dam, because flood discharges decrease as the flood wave moves downstream.

In the United States, from 1980-2018, an average of twenty-four dam failures per year were recorded.<sup>2</sup> Projected future weather patterns call for more intense rain events and longer dry periods, which has the potential to increase the overall risk of dam failure in the Northern Great Plains.<sup>3</sup> Future climate variations may have a higher impact on older dams with minimal design elements intended for intense dry and wet patterns.

The degree and extent of damage depends on the size of the dam and circumstances of the failure. A large dam failure may cause considerable loss of property, destruction of cropland, roads, and utilities, loss of income, environmental devastation, and even loss of life. Small dam failure can have consequences such as loss of irrigation water for a season and extreme financial hardship for many farmers. All dams in Bennett County are classified as ER (earthen dams).

Embankment dams are made mainly of rock and soil and have lower construction costs than concrete dams, but they are more likely to fail by overtopping. As the dam overtops, the material erodes until there is complete failure. These dams are also prone to seepage, piping, and internal erosion, all of which involve complete mechanisms. Insufficient drainage, corrosion of outlet pipes, deformation and settlement of the materials, surface erosion, loss of strength due to improper compacted fill or cycles of wetting and drying/freezing and thawing, vegetation, and animal activity can lead to structural failure. Internal erosion is the most common aging scenario of the foundation of earth and rockfill dams...<sup>4</sup>

South Dakota’s Department of Agriculture and Natural Resources Water Rights Program provided an inventory of the dams which are large enough to fall under South Dakota’s Safety of Dams Rules, see Appendix B. Bennett County has a total of 12 dams identified by the Water Rights Program Dam Inventory. The National Inventory of Dams uses five classifications of hazard potential for dams: low, significant, high, undetermined, and not available (Table 4.7). Dams with a classification of high-risk are required to have inspections every five years. With the threat posed by high-risk dams, new development in the identified hazard areas should be discouraged.

National Inventory of Dams Classification Table			
Dam Hazard Potential Classification	Low Hazard	Significant Hazard	High Hazard
Loss of human life	None expected	None expected	Probable
Economic losses	Low and generally limited to owner	Yes	Yes (but not necessary for this classification)
Environmental damages	Low and generally limited to owner	Yes	Yes (but not necessary for this classification)
Lifeline interests impacted	No	Yes	Yes (but not necessary for this classification)

Table 4.7. Dam Hazard Potential Classifications. The table was taken from the National Inventory of Dams. (National Inventory of Dams. 2022. *Managing Dams*)

Bennett County has two high-risk dams, Allen Dam and Little White River Dam. Information on the dam’s latest inspection can be found in Table 4.8. Both of these dams are federally regulated; Allen Dam is regulated by the Bureau of Indian Affairs and Little White River dam is regulated by the U.S. Fish and Wildlife Service. Both dams have an Emergency Action Plan prepared, but

<sup>2</sup> Concha Larrauru, Paulina & Upmanu Lall. 2020.

<sup>3</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1.*

<sup>4</sup> Concha Larrauru, Paulina & Upmanu Lall. 2020.

these documents were unavailable for review for the purpose of this plan update. The information in the table below was obtained from the National Inventory of Dams.

High-Risk Dams in Bennett County					
	Rating	Date of Inspection	Date Complete	Maximum Storage	Owner
Allen Dam	High	08/09/2012	1961	No Data	Federal
Little White River Dam	High	9/17/2019	1938	2,957 acre-ft	Federal
Classification Definitions					
Satisfactory	No existing or potential deficiencies are recognized				
Fair	No existing dam safety deficiencies are recognized for normal loading conditions. Rare or extreme hydraulic and/or seismic events may result in a dam safety deficiency				
Poor	A dam safety deficiency is recognized for loading conditions which may realistically occur. Remedial action is necessary				
Unsatisfactory	A dam safety deficiency is recognized that requires immediate or emergency remedial action				
Not Rated	This dam has not been inspected or have been inspected but not rated				

Table 4.8. High-Risk Dams in Bennett County. (South Dakota DANR Water Rights Program)

There are multiple dams located directly above Bennett County in Jackson County, SD that may have the possibility of affecting Bennett County if they were to fail. A review of these dams was conducted using the National Inventory of Dams, which showed these dams to be classified as low to significant risk. In the event of dam failure in Jackson County, there is no expected loss of life. The results showed no High-Risk Dams are present in the potential area of affect.

## Bennett County High Risk Dams

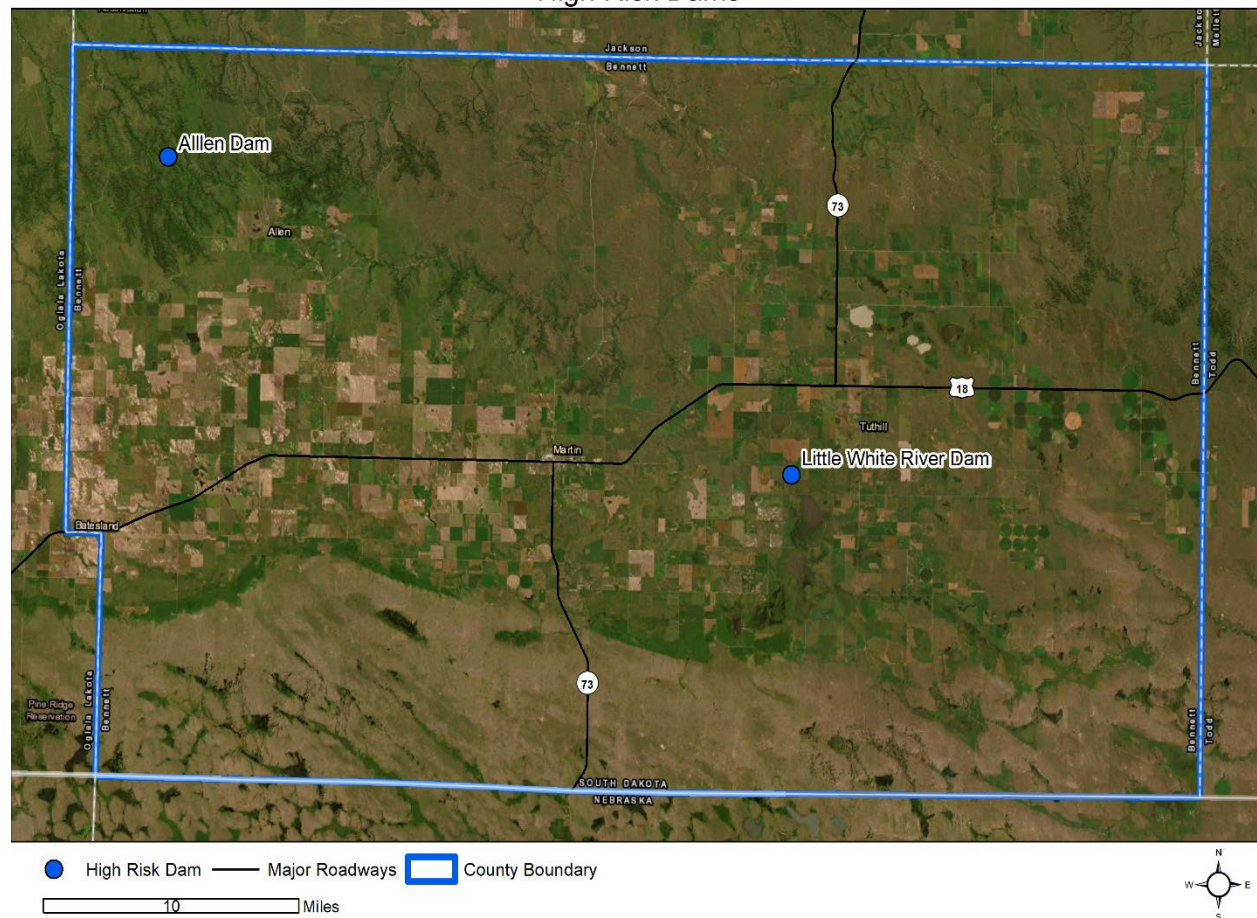


Figure 4.1. Bennett County High Risk Dams

Future Hazard Probability					
Event Type	Abnormally Dry	Moderate Drought	Severe Drought	Extreme Drought	Exceptional Drought
Probably w/ climate variation consideration	High	High	High	Med	Med
Calculations Based Off Historical Data					
Number of years with events	105	95	62	43	24
Years of recorded data	128 years (1895-2023)	128 years (1895-2023)	128 years (1895-2023)	128 years (1895-2023)	128 years (1895-2023)
Probability of future event in any given year	82%	74%	48%	34%	19%
Probability calculation	105/128=0.82	95/128=0.74	62/128=0.48	43/128=0.34	24/128=0.19

**Table 4.9.** Future probability of drought future occurrence based on National Integrated Drought Information System (National Integrated Drought Information System. *Drought Conditions for Bennett County: Historical Conditions for Bennett County*)

Drought Category System	
<b>DO – Abnormally Dry</b>	
<ul style="list-style-type: none"> <li>Grain and pasture growth is stunted</li> </ul>	
<b>D1 – Moderate Drought</b>	
<ul style="list-style-type: none"> <li>Topsoil is dry; grain crop yields decline</li> <li>Pasture and water supplies decline; cattle industry under stress</li> </ul>	
<b>D2 – Severe Drought</b>	
<ul style="list-style-type: none"> <li>Planting begins early, irrigation use increases</li> <li>Hay is short; cattle sales are early</li> </ul>	
<b>D3 – Extreme Drought</b>	
<ul style="list-style-type: none"> <li>Row crop loss is significant</li> <li>Producers haul water for cattle and provide supplemental feeding; cattle sales increase</li> </ul>	
<b>D4 – Exceptional Drought</b>	
<ul style="list-style-type: none"> <li>Row crop loss is significant; producers are selling livestock herds; market price fall</li> <li>Epizootic hemorrhagic disease spreads: wildlife populations decline; recreational fishing and hunting are affected</li> <li>Extremely low flow and river debris impair navigation of major rivers; commercial barge traffic slows; water use restrictions are implemented</li> </ul>	

**Table 4.10.** U.S. Drought Monitor – Drought 5-Category System. (National Integrate Drought Information System. 2024. *Drought Conditions for Bennett County: Current Conditions for Bennett County*)

Bennett County has experienced many droughts throughout history. **Figure 4.5** shows the complete drought history for the county from 1895 to 2023. From 2019 to 2023, there have been roughly 20 months classified as at least abnormally dry drought conditions. The risk for drought in Bennett County is high. FEMA’s National Risk Index scores the drought risk for Bennett County as very low when compared to the rest of the country. This score represents the relative level of likely agricultural loss due to drought conditions. <sup>5</sup>

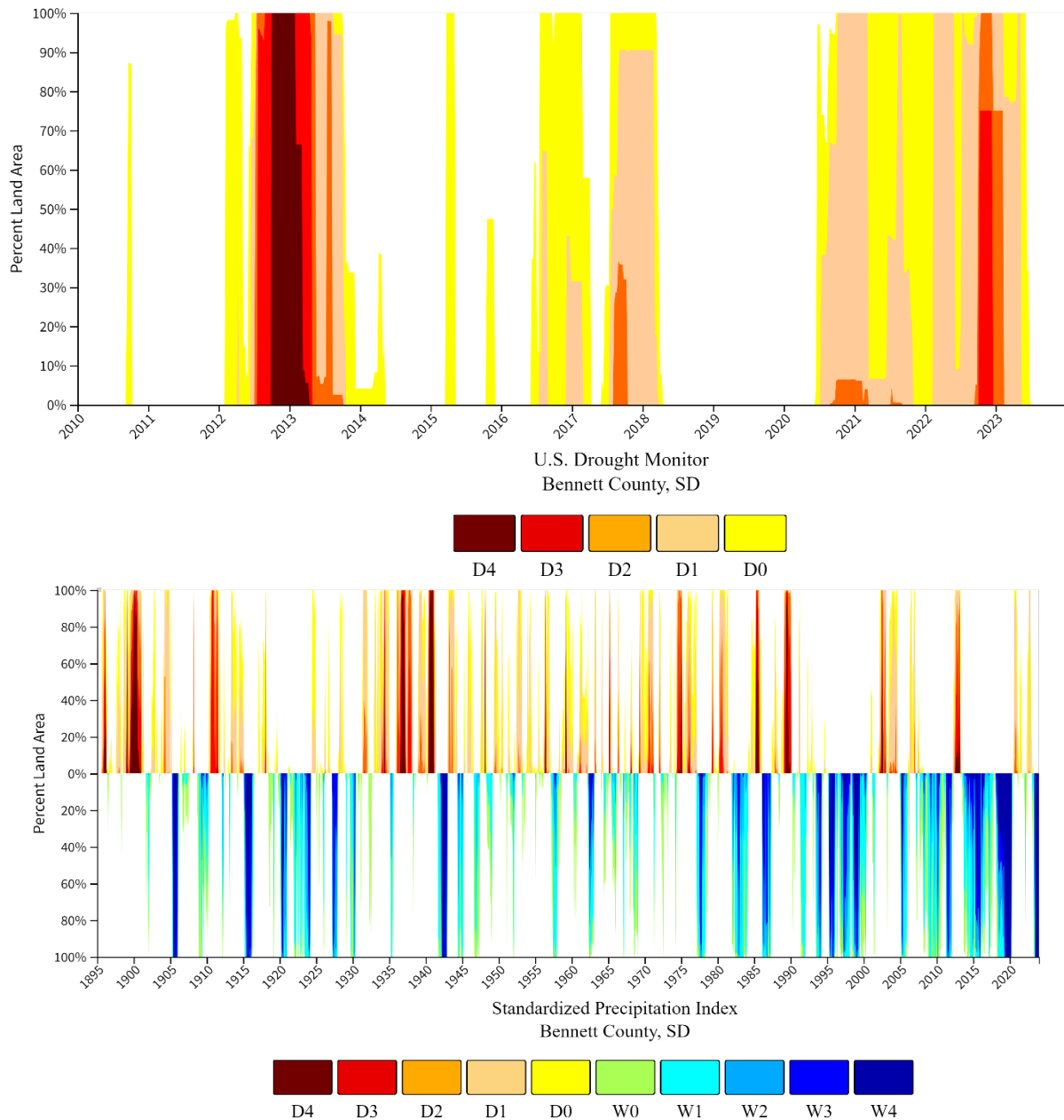
The Northern Great Plains region is predicted to have a rise in temperatures and an increase in extreme precipitation, with longer spans between bouts of precipitation. All of these factors have an impact on the future drought conditions for the region. It is projected that from 2020s to 2040s,

<sup>5</sup> National Risk Index. *Drought*.



there will be an increase of 0.3 dry days at higher emissions.<sup>6</sup> Higher temperatures impact the effect evaporation rates have on soil moisture, streamflow, and snowpack.<sup>7</sup> South Dakota is expected to see increases in evaporation rates as a result of rising temperature. More information on raising temperature can be found in the Extreme Temperatures Section of this plan. The higher evaporation rates are predicted to impact the warm-season's soil moisture loss and intensity of droughts.<sup>8</sup> Increased drought conditions are also connected to other hazard risks such as flash flooding and wildfire.

Figure 4.4 shows the drought conditions from 2010 to January 2023. It is highly probable there can be a drought in any given year. Long-term drought in Bennett County ranges from extreme drought to wet. The long-term drought information, Figure 4.6, is derived from several different methodologies, including, PDSI, Z-index, 6-month, 1-year, 2-year, and 5-year SPI estimates.<sup>9</sup>



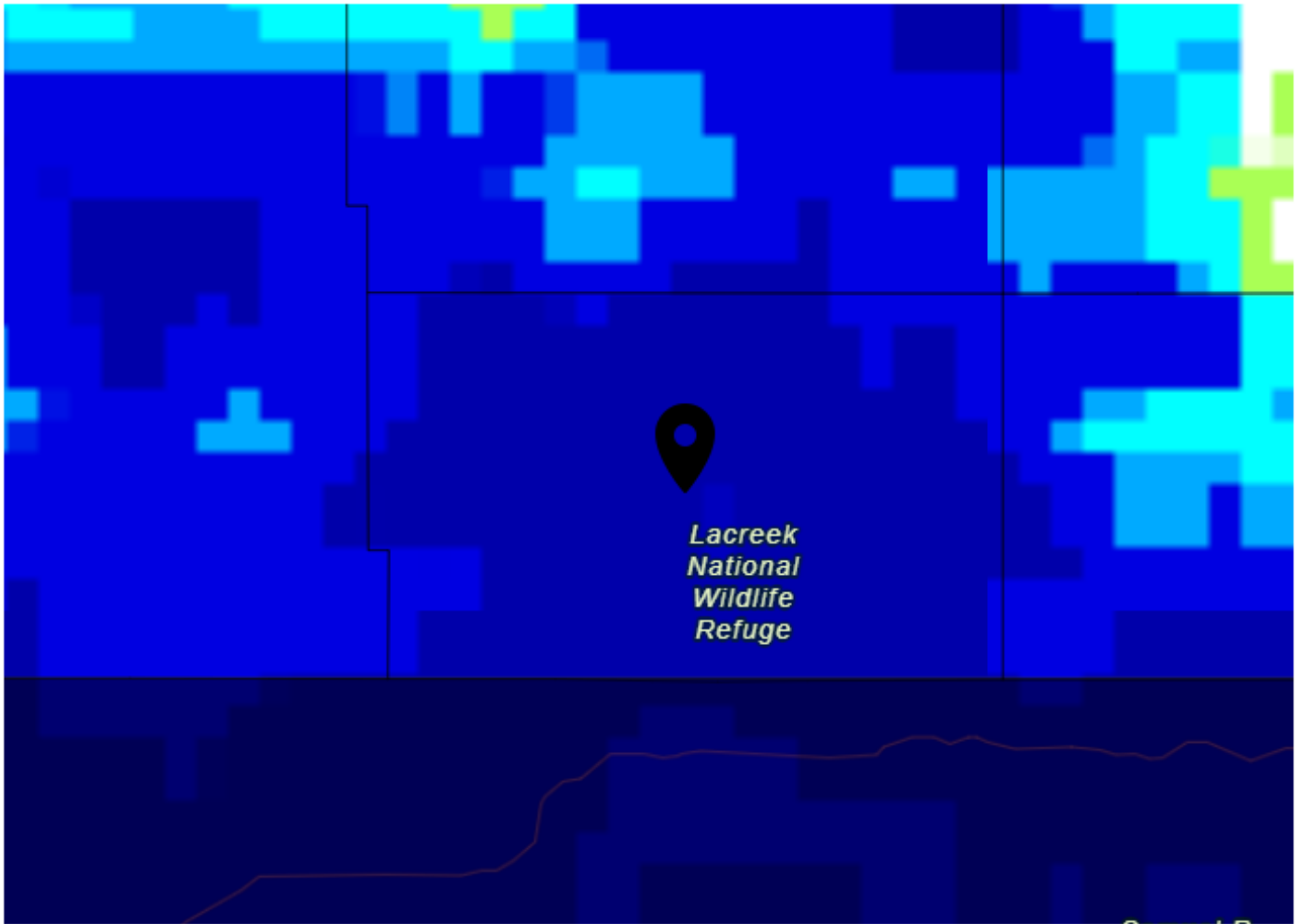
<sup>6</sup> U.S Federal Government. 2023: U.S. Climate Resilience Toolkit Climate Explorer.

<sup>7</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*

<sup>8</sup> Frank, R. et al. 2022.

<sup>9</sup> National Integrated Drought Information System. *Drought Conditions for Bennett County: Historical Conditions for Bennett County*

# Long-Term Multi-Indicator Drought Index (MIDI)



## Dry Conditions



## Wet Conditions



Source(s): UC Merced, via Climate Engine  
Data Valid: 10/17/23

**Drought.gov**

# EXTREME TEMPERATURE

Future Hazard Probability			
Event Type	Cold/Wind Chill	Extreme Cold/Wind Chill	Heat*
Probably w/ climate variation consideration	Med	Med	Low
Calculations Based Off Historical Data			
Number of historical events	4	3	-
Number of years with events	4	3	-
Years of recorded data	24 years (1997-2021)	8 years (2014-2022)	-
Possible number of days with event per year	0.17	0.38	-
Probability of future event	17%	38%	-
Occurrence calculation	4/24=0.17	3/8=0.38	-
Probability calculation	4/24=0.17	3/8=0.38	-

Note: Hazards marked with an asterisk \* were reported by each jurisdiction, but no data was available on NOAA.

**Table 4.11.** Probability future extreme temperatures occurrence. Calculations based on NOAA weather data. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

Extreme temperatures encompass extreme cold, extreme heat, and cold wind chills. Defining extreme temperatures is subjective. People in the area may have adapted to extreme temperatures which results in these weather events not being reported as often as they occur. FEMA’s National Risk Index for Bennett County shows cold wave risk as relatively moderate.<sup>10</sup> The risk index for heat wave in Bennett County is listed as relatively low.

Most of the county falls in the Köppen climate type of Dfa (warm continental climate/humid continental climate) Bennett County is classified as warm to hot with humid summers and occasionally cold winters.<sup>11</sup>

The Northern Great Plains are predicted to see an increase in warm temperatures and a decrease in colder temperatures over time. Nationwide, warmer temperatures were most prominent during the winter months with an increase of 1.5°F. The Northern Great Plains experienced generally cooler summer months. This region, compared to the contiguous United States, has seen one of the highest temperature increases of cold days<sup>12</sup>. Similarly, South Dakota has seen very little warming during summer months, with warming generally seen during winter months. Another observation of the State is that the nighttime minimum temperatures show an increase nearly double that of daytime maximums, which may be attributed to the increase of absolute humidity<sup>13</sup>.

In the United States, between 1895-2016, average temperature has increased around 1.2°-1.8°F. Using the difference in temperature between present day (1986-2016) and the last century (1901-1960), the Northern Great Plains has seen an annual average temperature increase of 1.69°F<sup>14</sup>. From 1900-2020 South Dakota has seen an increase of 2°F<sup>15</sup>. The State Climate Summary 2022

<sup>10</sup> National Risk Index. *Cold Wave*.

<sup>11</sup> Peel, MC, Köppen-Geiger Climate Classification – 2007.

<sup>12</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

<sup>13</sup> Frankson, R. et al. 2022.

<sup>14</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

<sup>15</sup> Frankson, R. et al. 2022.



projects that temperature changes in the next 100 years can range from around 2.5°F to slightly above 15°F. This range is highly dependent on the emission levels over time <sup>16</sup>.

Northern Great Plains Temperature Changes	
Change in Annual Average Temperature	1.69°F
Change in Coldest Day of the Year	4.40°F
Change in Warmest Day of the Year	-1.08°F

**Table 4.12.** Temperatures based on the difference between present-day (1986-2016) to the last century (1901-1960). (USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1.*)

Heat Factor was used to estimate the risk for Bennett County in the next 30 years (Table 4.13). The methodology used considers several factors such as landscape, vegetation, elevation, urbanization, and distance to water bodies and coastlines. Overall, Bennett County has a minor risk from heat. This is determined by averaging the current and future high “feels like” temperatures for the county. <sup>17</sup>

Bennett County Heat Factor: Heat risk over the next 30 years			
Risk Type	Definition	This year	+30 years
Heat Wave Likelihood	3+ or more days of temperatures feeling like 95°F or higher.	49%	81%
Health Caution Days	Feels like 90°F or higher can be physically hazardous, especially high-risk individuals.	37 days	50 days
Dangerous Days	Feels like 100°F or higher can be dangerous over a period of time.	3 days	8 days
Hot Days	Feels like 97°F or higher in Bennett County.	7 days	16 days

**Table 4.13** Heat Factor present and future risk for Bennett County. Definitions and projects are specific to Bennett County, SD. Risk Factor. 2023. Heat Factor

The location for extreme temperatures is not specifically identified by jurisdiction due to the vast area across South Dakota affected by extreme temperatures. Below is an example of events of extreme temperatures; a listing of all events can be found in [Appendix B](#).

Significant Weather Events – Extreme Temperatures	
Historic	<ul style="list-style-type: none"> <li>• <b>01/12/1997</b> – Arctic air lowered temperatures into the ten to 30 below zero range for overnight lows with highs remaining below zero. A persistent northwest wind produced wind chill indices from 30 to 70 below zero through the period. The bitter cold made digging out from the recent blizzard difficult. Also, the cold contributed to damage and loss of livestock.</li> <li>• <b>7/15/2006</b> - High pressure brought record heat to western South Dakota, with many locations setting all-time record high temperatures. The National Weather Service cooperative observer 8 miles north-northwest of Usta in Perkins County recorded a maximum temperature of 120 degrees on July 15th, which tied the previous all-time record high in South Dakota, first set on July 5th, 1936 in Gann Valley. A woman died of heat exhaustion while hiking in the Badlands National Park on July 16th.</li> <li>• <b>01/06/2014</b> - A surge of Arctic air, combined with strong winds, produced dangerous wind chills from northwestern through south central South Dakota. Wind chill values were 30 below to 50 below, with the lowest values across northwestern South Dakota.</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• <b>1/1/2018</b> - Bitterly cold air remained across the area into the beginning of the new year. Lows on New Year's Day morning ranged from 15 below to 35 below zero across much of the area, with some locations across northwestern South Dakota dropping to 35 below to 45 below. Wind chills were as low as 35 below to 50 below on the plains. Very cold conditions continued into the morning of January 2 across northwestern and west central South Dakota.</li> <li>• <b>12/23/2022</b> - An Arctic airmass settled over the region, bringing bitter cold temperatures and gusty winds that produced wind chills of 30 below to 55 below zero at times from late</li> </ul>

<sup>16</sup> Frankson, R. et al. 2022.

<sup>17</sup> Risk Factor. 2023. *Methodology used to determine community Heat Factors.*

	day on the 20th through the 23rd. A period of light snow developed across much of the area on the 21st, bringing light accumulations and blowing snow, greatly reducing visibility at times through the 22nd.
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**Table 4.14** Significant weather events of extreme temperature in Bennett County. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).



## FLOOD

Future Hazard Probability		
Event Type	Flash Flood	Flood
Probably w/ climate variation consideration	Med	Med
Calculations Based Off Historical Data		
Number of historical events	5	7
Number of years with events	3	3
Years of recorded data	22 years (1997-2019)	23 years (1996-2019)
Possible number of days with event per year	0.60	0.30
Probability of future event	28%	13%
Occurrence calculation	$5/22=0.23$	$7/23=0.30$
Probability calculation	$3/22=0.14$	$3/23=0.13$

**Table 4.15.** Probability flood occurrence. Calculations based on NOAA weather data. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

Flooding/flash flooding is a temporary overflow of water onto lands which are not normally covered by water. Flooding produces measurable property damage or forcing the evacuation of people and resources. Floods can result in injuries and even loss of life when fast-flowing water is involved. Six inches of moving water is enough to sweep a vehicle off of a road. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible. Flooding is a longer event than flash flooding. Flooding can last for days to weeks, while flash flooding is generally inundation lasting less than 6 hours. Flash flooding often occurs after heavy or excessive rain events.<sup>18</sup>

Many factors can affect flooding including deforestation, urbanization, dams, floodwater management activities, and different agricultural practices. The NOAA storm database does not have occurrences before 1996 documented. This is likely due to the lack of reporting that occurred prior to that time. However, this does run the risk of overstating the probability of flood and flash flood occurrence each year. FEMA's National Risk Index for riverine flooding, when a stream or river exceeds its capacity, does not have any data available for Bennett County.

The Northern Great Plains region is expected to see an increase in less frequent but more extreme precipitation events accompanied by longer periods without precipitation. Flooding is more likely to occur when drier soils are inundated with heavy amounts of water. As the region sees drier conditions with periods of extreme precipitation, it is more likely the amount of flash flooding events will also increase. Precipitation amounts vary from season to season. Over the past decades, general precipitation has increased throughout the United States. The season with the greatest increase was fall, which has had an increase of 15% since the twentieth century. The

<sup>18</sup> NOAA: National Centers for Environmental Information. 2022. *Flood and flash flood definitions*

winter months and summer months have shown a negative percent change over time, in some areas as much as -5% to -10%.<sup>19</sup>

Higher temperatures will also have an impact on the evaporation rates effect on soil moisture, streamflow, and snowpack.<sup>20</sup> The *South Dakota State Hazard Mitigation Plan 2019* points out that the special flood hazard areas are expected to increase nationwide by as much as 40%-50% over the next 100 years. This is attributed not only to the increase in precipitation but also to the increased urbanization of areas.<sup>21</sup>

*Risk Factor* can assist in projecting the future flooding risk of Bennett County. The First Street Foundation Modeling method shows specific locations at risk of flooding from rain, rivers, tides, and storm surge. The model is comprised of decades of peer reviews, climatology models, hydrology, and statistics.<sup>22</sup> Risk scores have five categories: minor, moderate, major, severe, and extreme. The scores are reflective of the weighted percentages of properties, facilities, and roads with operational risk at a given depth. The model also considers climate variations over time, such as altered frequency and severity of weather events.<sup>23</sup>

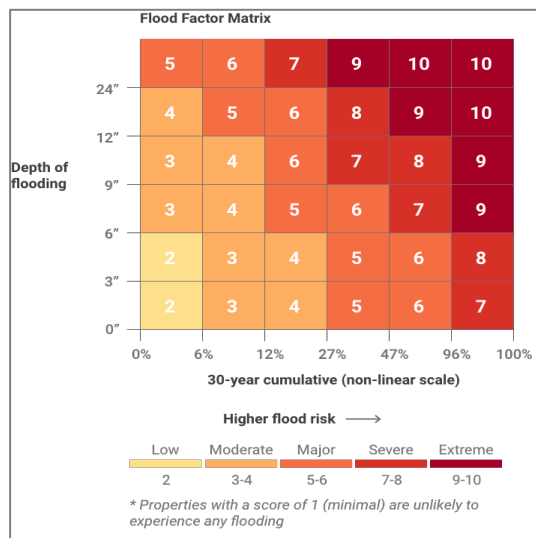


Figure 4.7. Flood factor matrix. The matrix shows the likelihood of flooding at different depth thresholds. (First Street Foundation. 2020. *First Street Foundation Flood Model 2020 Methodology Overview*).

Bennett County Flood Factor: Flooding risk over the next 30 years	
Category Type	Risk
Overall, Bennett County	Moderate
Residential	Moderate
Roads	Moderate
Commercial	Minor
Critical Infrastructure	Moderate
Social	Severe

Table 4.16. Flood Factor Summary. Bennett County, SD. (Risk Factor, 2024, Flood Factor).

A large portion of Bennett County is undeveloped, so vegetation may help to alleviate flooding conditions. Structural flooding is not as prevalent due to the few numbers of structures in the county. Participants of the stakeholders meeting and one on one meetings brought up areas of concern for flooding issues in both Bennett County and Martin. Specific information for the City of Martin is outlined in the *Unique and Varied Risk* section of the plan. Stakeholders mentioned that County Line Road in the eastern part of the county is prone to flooding and expressed worries about potential flooding on the county's roads due to rapid snow melt. In 2019, at least three of the five river crossings on Tuthill Road flooded out. These have been replaced since then.

Significant Weather Events – Flood	
Historic	<ul style="list-style-type: none"> <li><b>5/30/1996</b> - A slow moving closed low pressure system and persistent upslope flow contributed to rainfall amounts of 4 to 8 inches over much of Western South Dakota from 5/21 through 5/27. Widespread flooding began on 5/27. Minor property damage, such as flooding to basements, was common. Numerous roads and bridges were washed out and several residents and campers near streams had to be evacuated. A mud slide along Highway 34 near Sturgis cut off water to a hospital and school for several days. River</li> </ul>

<sup>19</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

<sup>20</sup> Ibid. USGCRP.

<sup>21</sup> *State of South Dakota Hazard Mitigation Plan. 2019*

<sup>22</sup> First Street Foundation. *First Street Foundation Flood Model 2020 Methodology Overview*

<sup>23</sup> Risk Factor. *Community methodology – Is your community at risk of flooding? 2022*.

	<p>flooding occurred along the Moreau, Cheyenne, Little Missouri, Bad, White, and Little White Rivers.</p> <ul style="list-style-type: none"> <li>• <b>06/01/1997</b> - During the late afternoon and early evening hours, a significant flash flood occurred from southwest to south-central South Dakota. Large hail, gusty winds and flooding rains were a result of these thunderstorms. In Bennett county, 5 miles west of Martin, two cars were washed off Highway 18 by rushing water over the road. No injuries were reported in either case. Highway 18 had numerous places where water covered the road in Bennett County.</li> <li>• <b>05/25/2008</b> - Minor flooding was observed along Bear-in-the-Lodge Creek and its tributaries. Heavy rain flooded several highways and secondary roads across southwestern South Dakota.</li> <li>• <b>07/05/2015</b> - A supercell thunderstorm developed over eastern Jackson County and moved south-southeastward across Bennett County. The storm produced large hail and gusty winds. Four inches of rain fell in less than two hours northeast of Martin, causing flash flooding.</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• <b>05/24/2019</b> - A powerful storm system slowly moved from the Four Corners region northeastward through the Plains, leading to a prolonged period of precipitation across western South Dakota May 20-22. This three day period was among the coldest, wettest, and snowiest on record for late May, with several temperature and precipitation records set. Runoff from the rain and melting snow led to flooding of creeks, rivers, low-lying areas, and some roads across western and south central South Dakota.</li> <li>• <b>07/04/2019</b> - A large, long-lived supercell thunderstorm developed over Oglala Lakota County and tracked slowly eastward across southern South Dakota through the late afternoon and early evening. The storm produced a large swath of large hail and strong winds, eventually producing mostly strong winds as it moved across far south central South Dakota. Brief tornado touchdowns were reported over Bennett County, but did not cause damage. Heavy rain also produced flooding in some areas of Oglala Lakota and Bennett Counties.</li> <li>• <b>08/11/2019</b> - A severe thunderstorm stalled over east central Oglala Lakota County, producing locally large hail and very heavy rainfall. Runoff from three to five inches of rain caused flash flooding across parts of eastern Oglala Lakota County into western Bennett County.</li> </ul>

**Table 4.17** Significant weather events of flooding in Bennett County. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).



## GEOLOGICAL

Geological hazards in Bennett County are low, based off very little to no occurrences on record. Geological hazards can include events such as earthquakes, landslides, subsidence, and expansive soils. While data on earthquakes can be easily found, records of landslides, subsidence, and expansive soils incidents are limited.

Probability of Future Occurrence				
Event Type	Earthquake	Landslide*	Subsidence*	Expansive Soils*
Probably w/ climate variation consideration	Low	Low	Low	Low
Calculations Based Off Historical Data				
Number of historical events	5	-	-	-
Number of years with events	5	-	-	-
Years of recorded data	117 years (1906-2023)	-	-	-
Possible number of days with event per year	0.04	-	-	-
Probability of future event	4%	-	-	-

<b>Occurrence calculation</b>	5/117=0.04	-	-	-
<b>Probability calculation</b>	5/117=0.04	-	-	-

Table 4.18. – Probability geological occurrence. Calculations based on data provided from South Dakota Geological Survey. Appendix. \*No data available for these hazards.

Earthquakes: Bennett County has experienced five earthquakes in recorded history, with the most recent being in 2023 and the earliest record in 1906. Areas east of the Rocky Mountains experience infrequent earthquakes. Earthquakes that do occur are often of a low magnitude and rarely result in major damages, like those seen on the western coast of the United States.<sup>24</sup> FEMA’s National Risk Index rates Bennett County as having a very low risk of earthquakes compared to the rest of the country.<sup>25</sup> The South Dakota Geological Survey explained that earthquakes happen every few years in South Dakota but are not large enough to be considered threatening to life or property. Since 1872, there have been nearly 100 recorded earthquakes in South Dakota. Since South Dakota doesn’t have any major faults, the South Dakota Geological Survey states:

*The likely cause of these earthquakes are adjustments deep in the basement rocks underlying the state or ongoing rebound of the earth’s crust from compression by ice sheets during the last ice age.*

Although variations in climate have the potential to increase earthquake-related hazards due to rising temperatures, there is not enough data to suggest that it will cause the county to experience more earthquakes.

Landslides: Bennett County has a low risk of landslides. FEMA’s National Risk Index scores landslide risk for Bennett County as relatively low compared to the rest of the country<sup>26</sup>. The Planning Team reported that they were unaware of areas with land sliding issues. Landslides tend to occur after bouts of heavy rainfall or rapid snowmelt. Areas that have been impacted by wildfires have a higher probability of having landslides due to the lack of vegetation to take in precipitation. Areas most prone to landslides are places where previous landslides have occurred, bases of steep slopes, bases of drainage channels, and developed hillsides using leach-field systems.<sup>27</sup> Landslides have the potential to happen in Bennett County. The *State of South Dakota Mitigation Plan 2019* shows areas in Bennett County that have a low risk (less than 1.5% of the area involved) (Appendix B).

<b>Significant Weather Events - Geological</b>	
Historic	<ul style="list-style-type: none"> <li>• <b>05/10/1906</b> – An earthquake with a magnitude of 3.7 was recorded at (43.0,101.3)</li> <li>• <b>03/28/1964</b> – An earthquake with a magnitude of 5.1 was recorded at (42.9,101.8)</li> <li>• <b>09/13/1981</b> – An earthquake with a magnitude of 3.4 was recorded at (43.04, 101.9)</li> <li>• <b>05/25/2003</b> – An earthquake with a magnitude of 4.0 was recorded at (43.08, 101.79)</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• <b>12/18/2023</b> – An earthquake with a magnitude of 2.7 was recorded at (43.06, 101.7)</li> </ul>

Table 4.19. – Recorded earthquake events in Bennett County. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

Climate variations have the potential to increase the likelihood of landslides. With heavy rain events being one of the causes for landslides, the projected increase of heavy rainfall can cause a higher likelihood of landslides, especially in areas with past occurrences.<sup>28</sup>

<sup>24</sup> USGS. *East vs West Coast Earthquakes*.

<sup>25</sup> National Risk Index. *Earthquake*.

<sup>26</sup> National Risk Index. *Landslide*.

<sup>27</sup> *State of South Dakota Hazard Mitigation Plan. 2019*

<sup>28</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

Subsidence: Bennett County has a low risk of subsidence. The *State of South Dakota Hazard Mitigation Plan* shows Bennett County with no areas of rock formations, such as gypsum or carbonates, which are susceptible to subsidence (Appendix B).<sup>29</sup> Stakeholders explained that there has not been any issues with subsidence.

Similar to landslides, evaporate or carbonate rock formations susceptible to water erosion may create a higher future probability of subsidence with an increase of heavy precipitation. However, Karst maps show no areas in Bennett County with risk.

Expansive soils: Bennett County has a low risk of expansive soils. Expansive Soils mainly consist of clays, and are susceptible to swelling and shrinkage due to changes in soil moisture.<sup>30</sup> These types of soils are present in all states in the United States and can cause billions of dollars in damage each year.<sup>31</sup> The clay's expansive nature can cause permanent damage to structures and infrastructure over time, potentially causing troublesome, dangerous situations.<sup>32</sup> The County and stakeholders said that they have not experienced any issues with expansive soils.

Due to the nature of these soils, future climate variations can play an important role in the way these soils act. Future predictions of more intense precipitation and longer dry periods with increased heat<sup>33</sup> will aid in the natural expanding and shrinking nature of these soils.

## HIGH/SEVERE WIND

Future Hazard Probability	
Event Type	High Wind
Probably w/ climate variation consideration	High
Calculations Based Off Historical Data	
Number of historical events	46
Number of years with events	23
Years of recorded data	26 years (1996-2022)
Possible number of days with event per year	1.77
Probability of future event	88%
Occurrence calculation	46/26=1.77
Probability calculation	23/26= 0.88

**Table 4.20.** Probability high wind occurrence. Calculations based on NOAA weather data. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

High/Severe wind events are common in western South Dakota. FEMA's National Risk Index for strong wind risk scores Bennett County as very low, compared to the rest of the country.<sup>34</sup> However, historical data would suggest a high risk for the county. Several times a year, the residents of Bennett County can expect to experience strong winds of more than 40 mph. Gusts of wind in excess of 90 mph have also been recorded for the area. High wind history for Bennett County can be found in Appendix B. It is currently unknown if predicted future weather conditions will have any effect on the intensity or frequency of severe winds.<sup>35</sup>

<sup>29</sup> *State of South Dakota Hazard Mitigation Plan*. 2019

<sup>30</sup> Cuelho, Eil, & Michelle Akin. *Mitigation of Expansive Soils in South Dakota Study SD2014-13 Final Report*

<sup>31</sup> *Ibid.* *State of South Dakota Hazard Mitigation Plan*.

<sup>32</sup> *Ibid.* Cuelho, Eil, & Michelle Akin.

<sup>33</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

<sup>34</sup> National Risk Index. *Strong Wind*.

<sup>35</sup> *State of South Dakota Hazard Mitigation Plan*. 2019



*Risk Factor* was consulted to help gauge any predicted change in high/severe wind for Bennett County. The *Wind Factor* rates the county as having a minimal risk based on the likelihood of hurricane, tornado, and severe storm winds impacting the county.

Significant Weather Events – High/Severe Wind	
Historic	<ul style="list-style-type: none"> <li>• <b>07/01/1997</b> - Winds were sustained over 40 mph much of the day across western and south central South Dakota, and higher gusts were frequent. Damage included downed trees, power outages, and structural damage. Most damage occurred in the central Black Hills where numerous large trees were blown down, localized major structural damage occurred, and numerous small wildfires were sparked.</li> <li>• <b>05/06/1999</b> - A slow moving low pressure system moved across western South Dakota and deepened as it moved into the eastern portions of the state while high pressure pushed in over the Rocky Mountains. Very strong northwest winds developed in western South Dakota and continued for nearly 48 hours. Numerous businesses had large signs blown down and billboards on the interstate were broken at their bases. Airlines cancelled flights into and out of Rapid City due to the high winds. Numerous power outages were also reported due to trees falling across the power lines.</li> <li>• <b>05/24/2010</b> - An intense low pressure system and cold front produced strong winds across southwestern South Dakota. Ahead of the low, strong south to southwest winds developed across south central South Dakota during the early afternoon. Behind the front, winds switched to the west across southwestern South Dakota in late afternoon. Sustained winds of 30 to 45 mph, with gusts to 70 mph, were recorded over much of the area.</li> <li>• <b>02/07/2016</b> - A clipper system raced through the region, bringing strong northwest winds to western and south central South Dakota for a prolonged period. The initial cold front brought a period of very strong winds Saturday afternoon and evening. After the winds diminished overnight, stronger winds developed Sunday morning and persisted through the late afternoon and early evening. The strongest winds on Sunday were sustained at 35 to 50 mph with a few gusts around 75 mph, especially from northwestern into west central South Dakota.</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• <b>01/28/2019</b> - A strong Canadian cold front moved through the Northern Plains during the afternoon and evening. Strong winds developed behind the front and lingered early the next morning. The strongest winds were across the northwest and west central South Dakota plains, where wind gusts around 70 mph were recorded.</li> <li>• <b>11/12/2021</b> - A strong cold front raced through the area, bringing a prolonged period of very gusty winds to much of the western and south central South Dakota plains. The strongest winds developed across the northwestern and west central South Dakota plains, where gusts of 60 to 80 mph were recorded.</li> <li>• <b>04/07/2022</b> - An intense low pressure system moved slowly across the Northern Plains, producing a prolonged period of strong northwesterly winds across the area. The strongest winds developed during the early morning of the 6th and continued into the daytime hours of the 7th. Sustained winds of 30 to 50 mph and gusts of 60 to 80 mph were recorded at times, especially across the northwestern and west central South Dakota plains. Several tractor-trailers were blown over on Interstate 90 east of Rapid City.</li> </ul>

**Table 4.21.** Significant weather events of high/severe winds in Bennett County. (NOAA: National Centers for Environmental Information, 2023. *Storm Events Database*).



## SUMMER STORM

Probability of Future Occurrence				
Event Type	Hail	Lightning*	Heavy Rain**	Thunderstorm Winds
Probably w/ climate variation consideration	High	High	High	High
Calculations Based Off Historical Data				



<b>Number of historical events</b>	132	0	1	94
<b>Number of years with events</b>	41	0	1	37
<b>Years of recorded data</b>	58 years (1964-2022)	-	1 year (2019)	64 (1958-2022)
<b>Possible number of days with event per year</b>	2.3	-	100%	1.47
<b>Probability of future event</b>	71%	100%*	100%**	58%
<b>Occurrence calculation</b>	132/58=2.3	-	1/1=1	94/64=1.47
<b>Probability calculation</b>	41/58=0.71	-	1/1=1	94/37=0.58

**Table 4.22.** Probability future summer storm occurrence. Calculations based on NOAA weather data. \*It is likely that lightning was unreported. \*\*It is likely that many heavy rain events went unreported. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*.)

Summer storm occurrences in the county are very common. FEMA’s National Risk Index scores hail risk <sup>36</sup> and lightning <sup>37</sup> Bennett County as relatively low. The index score shows the score and rating of a community when compared to the rest of the United States. Thunderstorms in Bennett County usually occur in the summer months but have occurred as early as April. Record of summer storm events in Bennett County can be found in [Appendix B](#).

Summer storms in Bennett County often are accompanied by bouts of hail. Hail occurrences are common in Bennett County and a full history by location throughout the county can be found in [Appendix B](#). Since 1964, there has been a total of \$1,337,500 of reported property damage and \$1,300,500 reported for crop damage. It is believed that this is underreported. Unfortunately, the total damages for each event are not available, but hopefully a method for collecting this data will evolve soon so that it can be made available to local governments for mitigation planning.

The extent or severity of lightning can range from significant to insignificant depending on where it strikes and what structures are hit. Water towers, cell phone towers, power lines, trees, and common buildings and structures all have the possibility of being struck by lightning. Lightning strikes are also known to cause wildfires. Since lightning is common in this region of the United States and Bennett County, it is evident that the information reported on the NOAA website is inaccurate and incomplete. Wildfire data shows that the source of ignition was lightning strikes.

Future weather predictions expect an increase in the intensity and frequency of storms. Warmer weather accompanied by wet conditions often leads to severe storms. With current models showing expected warmer temperatures and higher rates of evaporation, it is likely hail events will also increase. No information was found regarding how or if the size of hail would be impacted. <sup>38</sup>

<b>Significant Weather Events – Summer Storms</b>	
Historic	<ul style="list-style-type: none"> <li>• <b>08/15/1993</b> - A severe thunderstorm dumped marble to golf ball-size hail and heavy rains of 3.00 to 6.00 inches in eastern Bennett County near Harrington. A road was washed out east of Harrington and water came across the roads in numerous places.</li> <li>• <b>06/01/1997</b> - During the late afternoon and early evening hours, a significant flash flood occurred from southwest to south-central South Dakota. Large hail, gusty winds and flooding rains were a result of these thunderstorms. In Bennett County, 5 miles west of Martin, two cars were washed off Highway 18 by rushing water over the road. No injuries were reported in either case. Highway 18 had numerous places where water covered the road in Bennett County.</li> <li>• <b>08/02/2000</b> - An intense thunderstorm moved from northeastern Wyoming into the foothills of the northern Black Hills. Hail to golf ball the storm moved to the southeast, high winds over 60 mph were reported for nearly 45 minutes between Sturgis and Rapid City. In Rapid City, the National Weather Service office measured wind gusts of 70 mph.</li> </ul>

<sup>36</sup> National Risk Index. *Hail*.

<sup>37</sup> National Risk Index. *Lightning*.

<sup>38</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

	<p>The only damage reported were tree limbs down. The storm weakened as it moved southeast of Rapid City but was still at severe limits as it passed over the Badlands National Park and went southward into Bennett County. Observers in Martin reported 60 mph wind gusts. The storm dissipated before reaching Nebraska.</p> <ul style="list-style-type: none"> <li>• <b>06/15/2003</b> - A supercell thunderstorm developed over eastern Bennett County and moved slowly southward across the county. Hail to the size of quarters were reported as it moved through Vetala and Tuthill. As the storm began to dissipate, golf ball sized hail and wind gusts to 70 mph were reported southeast of Martin.</li> <li>• <b>05/28/2006</b> - A cluster of severe thunderstorms moved northeast across Shannon, Jackson, Bennett, southern Haakon, and western Mellette counties. These storms produced wind gusts to 80 mph and hail to the size of golf balls. The combination of hail and wind produced minor damage across parts of the area.</li> <li>• <b>06/20/2006</b> - A supercell thunderstorm moved northeastward from Nebraska and across Bennett and northwestern Todd Counties. This storm produced golf ball sized hail across much of western Bennett County, including the Martin area, before gradually weakening over eastern Bennett and northwestern Todd Counties.</li> <li>• <b>07/19/2010</b> - Severe storms moved from Montana southeastward across western South Dakota into south central South Dakota, merging with another area of storms over west central South Dakota. The storms produced a wide swath of hail and strong winds from northern Butte County, through southern Meade, eastern Pennington, Jackson, and Bennett Counties. Millions of dollars in crop damage was reported, along with some damage to homes and automobiles.</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• <b>05/22/2019</b> - A powerful storm system slowly moved from the Four Corners region northeastward through the Plains, leading to a prolonged period of precipitation across western South Dakota May 20-22. This three day period was among the coldest, wettest, and snowiest on record for late May, with several temperature and precipitation records set. Runoff from the rain and melting snow led to flooding of creeks, rivers, low-lying areas, and some roads across western and south central South Dakota. A resident measured 5.8 inches of rain in 24 hours.</li> <li>• <b>07/03/2019</b> - A large, long-lived supercell thunderstorm developed over Oglala Lakota County and tracked slowly eastward across southern South Dakota through the late afternoon and early evening. The storm produced a large swath of large hail and strong winds, eventually producing mostly strong winds as it moved across far south central South Dakota. Brief tornado touchdowns were reported over Bennett County, but did not cause damage. Heavy rain also produced flooding in some areas of Oglala Lakota and Bennett Counties.</li> <li>• <b>07/10/20</b> - A long-lived supercell thunderstorm tracked from northeastern Wyoming, across the northern Black Hills, and to Bennett County before moving into Nebraska. The storm brought a swath of very large hail and strong wind gusts from south of Spearfish, to the Rapid City area, and across portions of the west central and southwestern South Dakota plains. The storm produced two tornadoes; one across the northern Black Hills and the other over western Bennett County.</li> <li>• <b>05/28/2022</b> - A thunderstorm became severe as it tracked east-northeast across Bennett and Todd Counties. Hail around quarter size and eventually wind gusts around 70 mph accompanied the storm before it weakened over eastern Todd County.</li> </ul>

**Table 4.23.** Significant weather events of summer storms in Bennett County. (NOAA: National Centers for Environmental Information, 2023. *Storm Events Database*).



Future Hazard Probability	
Event Type	Tornado
Probably w/ climate variation consideration	Med
Calculations Based Off Historical Data	
Number of historical events	23
Number of years with events	17
Years of recorded data	63 years

	(1957-2020)
<b>Possible number of days with event per year</b>	0.37
<b>Probability of future event</b>	27%
<b>Occurrence calculation</b>	23/63=0.37
<b>Probability calculation</b>	17/63=0.27

**Table 4.24.** Probability future tornado occurrence. Calculations based on NOAA weather data. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

All of Bennett County is susceptible to summer storms which have the potential to form tornados. FEMA’s National Risk Index scores tornado risk in Bennett County as very low, when compared to the rest of the country.<sup>39</sup> Warning time for summer storms is normally several hours, sufficient for relocation and evacuation if necessary. However, tornados may occur with little or no warning. The *Climate Science Special Report* anticipates that overtime, the Northern Plains will see a high frequency of severe summer storm.<sup>40</sup> While there is no evidence to show the anticipated extent or intensity of storms in the region, it is currently unknown if the county will experience an increase of intensity or frequency of tornado events.<sup>41</sup>

<b>Fujita Damage Scale</b>	
<b>Prior to 2010</b>	<b>2010 - current</b>
F0=winds less than 73 m/h	EFU=unknown
F1=winds 73-112 m/h	EF0=winds 65-85 m/h
F2=winds 113-157 m/h	EF1=winds 85-110 m/h
F3=winds 158-206 m/h	EF2=winds 111-135 m/h
F4=winds 207-260 m/h	EF3=winds 136-165 m/h
F5=winds 261-318 m/h	EF4=winds 166-200 m/h
F6=winds greater than 318 m/h	EF5=winds greater than

**Table 4.25.** Fujita Damage Scale.

There are five warning sirens throughout the entire county. These are up to date and tested every month to ensure they are working properly. Warning sirens are important to have for vulnerable populations which do not have the technology to receive mobile notifications.

<b>Significant Weather Events – Tornados</b>	
Historic	<ul style="list-style-type: none"> <li>• 06/06/1963 – F3 - Reported Damage: \$250,000</li> <li>• 03/29/1982 – F2 – Reported Damage: \$250,000.</li> <li>• 07/03/2003 – F2 - A supercell thunderstorm moved southeastward across western Jackson County and Bennett County. The storm dropped up to golf ball sized hail and produced a tornado north of Tuthill. The tornado touched down about a mile north of the junction of highways 18 and 73, where it destroyed a garage. The tornado moved south-southeast and destroyed a mobile home just to the southeast of the highway intersection and then dissipated just north of Tuthill. No one was injured.</li> <li>• 05/28/2013 – EF1 – A tornado touched down on the west side of Allen Road south of Allen and rolled a mobile home down a hill. It tore off the roof and collapsed several walls of a small stick built house on the east side of the road before dissipating. Reported Damage: \$100,000</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• 06/29/2019 – EF1 - A tornado formed in a field southwest of Allen and spun in a two-mile area, first moving west, then south, and finally north. It damaged a house and barn, blew over a couple of grain bins, snapped large trees and two power poles. It also ripped corn from the fields, killed several deer, and picked up some grain bags and carried them along its track before dropping them as it dissipated. A tornadic thunderstorm developed rapidly along a boundary located over western Bennett County. The tornado was unusual because it lasted 40 minutes and only moved within a two mile wide area, mainly over corn fields. The storm dissipated relatively quickly after it moved away from the boundary.</li> <li>• 07/11/2020 - An EF1 tornado tracked southeast across areas western Bennett County west and south of Swett. A mobile home was destroyed as it rolled 50 feet from its</li> </ul>

<sup>39</sup> National Risk Index. *Tornado*.

<sup>40</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

<sup>41</sup> Ibid. USGCRP.

	previous location. A few other homes on the edge of the tornado path were also damaged. Some large trees and branches were downed.
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**Table 4.26.** Significant weather events of tornados in Bennett County. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database.*)



Future Hazard Probability	
Event Type	Wildfire
Probably w/ climate variation consideration	High
Calculations Based Off Historical Data	
Number of historical events	314
Number of years with events	43
Years of recorded data	42 years (1981-2023)
Possible number of days with event per year	7.48
Probability of future event	100%
Occurrence calculation	314/42=7.48
Probability calculation	43/42=1.02

**Table 4.27.** Probability future wildfire occurrence. ( USGS-GeoMac and Wildfire Interagency Fire Center)

Wildfires are a concern for Bennett County. Compared to other counties in the United States, Bennett County has an 87% higher risk of wildfire<sup>42</sup>. The community survey showed that 35.29% of respondents selected ‘very concerned’ for wildfire risk in Bennett County. 47.06% of respondents were ‘somewhat concerned.’

FEMA’s National Risk Index scores Bennett County with a relatively low risk of wildfire, compared to the rest of the country.<sup>43</sup> The occurrence of major fire events is heightened when there is prolonged drought or severe storms affiliated with widespread tree damage. With a predicted decrease in precipitation and an expected higher frequency of drought conditions, the intensity and frequency of wildfire events are expected to increase.<sup>44</sup>

Much of the county is comprised of prairie lands, which allows wildfires to spread quickly, especially during periods of high winds. The northwest corner of the county has forests of ponderosa pines and areas of woodlands. Wildfires occur most frequently in this area. Wildfires in forested areas may burn slower and last longer due to the fuel types present. The historical data collected on Bennett County shows that many fires occurred during the summer months, but wildfires can occur at any time of the years. Major fire events have a higher likelihood of occurring either during or after conditions of prolonged drought, high winds, widespread tree damage, and insect infestations. The overall magnitude of wildfires depends upon different factors such as the base fuel, terrain, and weather conditions. Table 4.28 and Table 4.29 show the historical wildfires location and approximate acres burned.

According to NOAA, 3 wildfire events were reported in Bennett County between 1950 and 2023. This is extremely underreported. Data was compiled from two separate agencies to get a more comprehensive idea of the wildfire impact in Bennett County. Table 4.28 has wildfire data ranging from July 2014 to April 2023. This data was produced by the National Interagency Fire Center ArcGIS Online Organization. USGS-GeoMAC has kept records of federal fire occurrences from 1981-2014, which is outlined in Table 4.29. This data is no longer available online.

<sup>42</sup> USDA Forest Service. *Wildfire Risk to Communities: Bennett County, SD Overview*

<sup>43</sup> National Risk Index. *Wildfire.*

<sup>44</sup> FEMA. *Assessing Future Conditions: Meeting FEMA’s State Mitigation Plan Requirements.*

National Interagency Fire Center Wildfires July 2014 – April 2023	
<b>Total Wildfires</b>	102
<b>Acres Burned</b>	<b>Total Wildfires</b>
0-0.29 acres	101
0.3-9.9 acres	1
10-99.9 acres	0
100-299.9 acres	0
300-900.9 acres	0
1000-4999.9 acres	0
5000+ acres	0

**Table 4.28.** National Interagency Fire Center Historic Data – InFORM Fire Occurrence Data Records. Acres Burned: A measure of acres reported for the fire. More specifically, the number of acres within the current perimeter of a specific, individual incident, including unburned and unburnable islands. Minimum size must be 0.1. Accessed 01/10/2024

USGS-GeoMAC 1981-2014	
<b>Total Wildfires</b>	212
<b>Acres Burned</b>	<b>Total Wildfires</b>
0-0.29 acres	55
0.3-9.9 acres	98
10-99.9 acres	32
100-299.9 acres	8
300-900.9 acres	11
1000-4999.9 acres	8
5000+ acres	0

**Table 4.29.** USGS-GeoMAC Data. Acres Burned: A measure of acres reported for the fire. More specifically, the number of acres within the current perimeter of a specific, individual incident, including unburned and unburnable islands. Minimum size must be 0.1. Data no longer available online; accessed 1.10.2024. (Appendix B)

Several factors can contribute to the frequency and intensity of wildfire including temperature, soil moisture, humidity, wind, and fuel types. Drought and extreme temperatures (heat) are attributing to the increase of wildfire in the United States.<sup>45</sup> Rising temperatures evaporate moisture at a high rate, which causes trees, shrubs, and grasses to dry up. Vegetation lacking water can become a target for insects and diseases. Dried up or dead plant life creates more fuel for fires. The climate variations may contribute to more destructive wildfires. The projected increase of temperatures may cause an increase in the size, frequency, and severity of wildfires.<sup>46</sup>

Using the First Street Foundation Wildfire Model can help to determine the probability of a facility and community being directly or indirectly impacted by embers. The community risk also incorporates the impacts wildfire can have on infrastructure, emergency services, transportation, businesses, and finances of homeowners (Table 4.30). The risk is determined using a relative ranking ranging from 1-minimal to 10-extreme. Minimal risk would indicate no wildfire risk. The risk represents the weighted number of facilities/properties with direct or indirect exposure to wildfires. The change in risk also considers the projected change in weather patterns over the next 30 years.<sup>47</sup>

*Fire Factor* explained that the change in the risk over time is caused by several environmental factors, rising air temperatures, precipitation changes, and a decrease in humidity. Rising temperatures cause a higher rate of evaporation that leads to vegetation and soil drying more quickly, creating fuel for fires. Similarly, decreasing humidity can help increase the speed at which vegetation dries.<sup>48</sup> Future predictions calling for longer spans without precipitation only exacerbates the risk.

<sup>45</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1.*

<sup>46</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1.*

<sup>47</sup> Risk Factor. 2022. *How is my fire factor calculated?*

<sup>48</sup> Risk Factor. 2023. *Fire Factor.*



Future modeled weather conditions play a role in the predicted risk increase. Increased temperatures, drier conditions, and increased extreme precipitation events are likely to create a favorable environment for wildfires to occur more frequently.<sup>49</sup>

Bennett County Fire Factor: Fire risk over the next 30 years	
Overall County	Major Risk
Residential	Major Risk
Commercial	Major Risk
Critical Infrastructure	Major Risk
Social Facilities	Major Risk
Minor Risk	Properties with a Fire Factor 2 (less than a 1% chance of burning over 30 years)
Moderate Risk	Properties with a Fire Factor 3 or 4 (1%-6% chance of burning over 30 years)
Major Risk	Properties with a Fire Factor 5 or 6 (6%-14% chance of burning over 30 years)
Severe Risk	Properties with a Fire Factor 7 or 8 (14%-26% chance of burning over 30 years)
Extreme Risk	Properties with a Fire Factor 9 or 10 (more than 26% chance of burning over 30 years).

Table 4.30. Bennett County Wildfire Risk over the next 30 years. (Risk Factor. 2023. Fire Factor).

The *Forest Service Research Data Archive* created a model for the United States wildfire risk. By using vegetation and wildland fuels data from LANDFIRE 2014, an annual probability model for wildfire was created.<sup>50</sup> Figure 4.10 shows the relative risk to homes from wildfire. Figure 4.12 displayed the likelihood of areas where wildfire can occur, based on several factors including historical events, weather, and topography. Figure 4.11 demonstrates the indirect and direct risk of exposure to wildfire. Bennett County ranks at 87% for greater risk from wildfire to homes in the United States.<sup>51</sup>

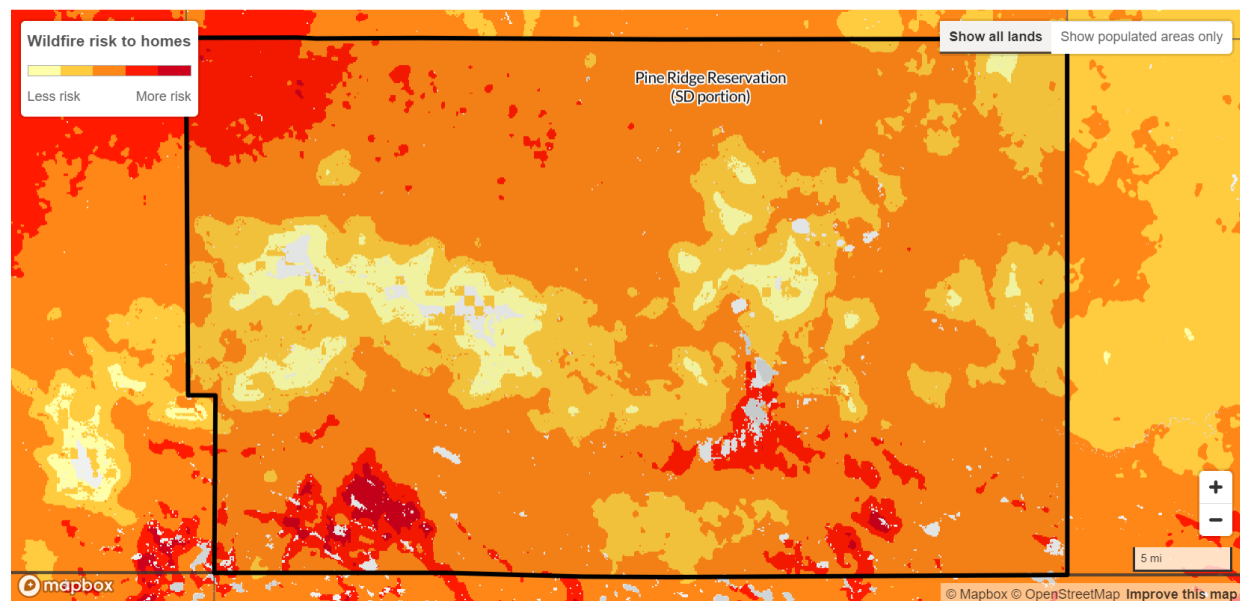


Figure 4.10. Risk to Homes in Bennett County, SD (Image taken from Wildfire Risk.org) Accessed 3/22/2024

<sup>49</sup> State of South Dakota Hazard Mitigation Plan. 2019

<sup>50</sup> Scott, Joe H. et al. 2020. Wildfire Risk to Communities

<sup>51</sup> USDA Forest Service. *Wildfire Risk to Communities: Bennett County Risk to Homes.*

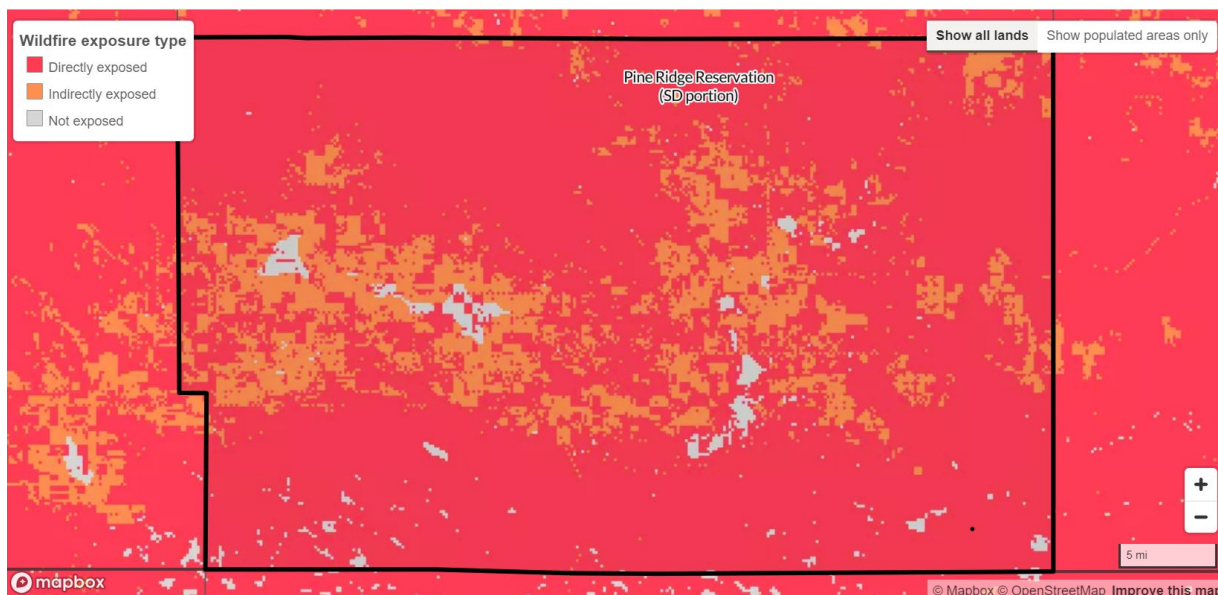


Figure 4.11. Exposure to Wildfire in Bennett County, SD (Image taken from Wildfire Risk.org) Accessed 3/22/2024

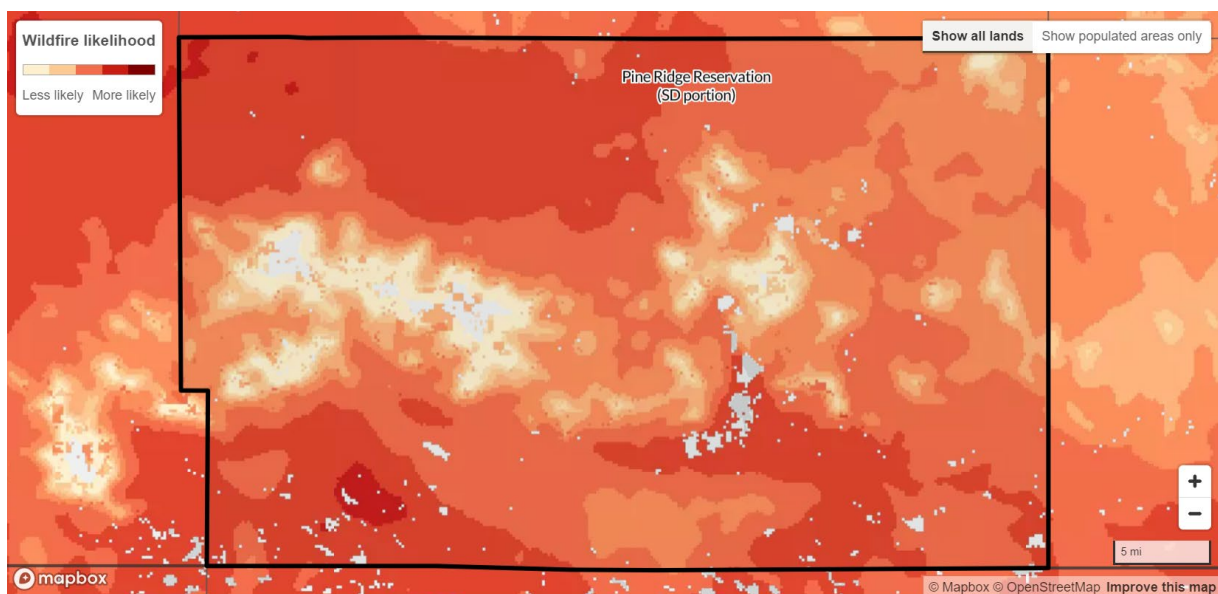


Figure 4.12. Wildfire Likelihood Bennett County, SD (Image taken from Wildfire Risk.org) Accessed 3/22/2024.

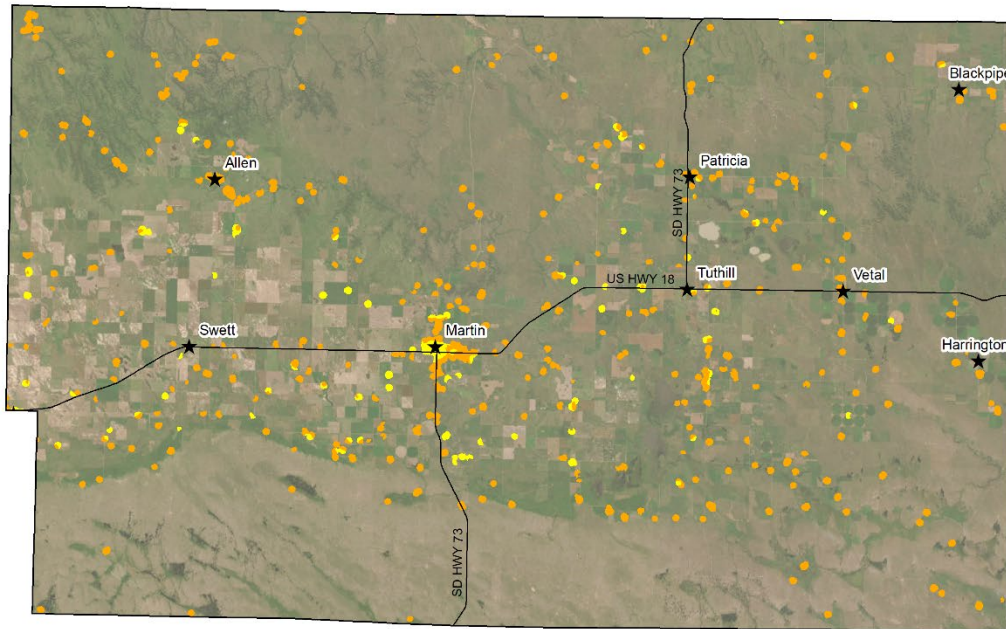
The Wildland Urban-Interface (WUI) is a set of conditions that exist when structures and other human development meet or intermingle with wildland or vegetative fuels. South Dakota is estimated to have anywhere between 15.1%-30% of homes in the WUI relative to total houses in the state.<sup>52</sup> The WUI map, Figure 4.13, was created by a methodology of Microsoft data set data accessed in 2019 and using the 0.3m resolution high-resolution satellite images of building footprints take from Bing Maps and the 2016 National Land Cover Dataset. The figure shows the WUI neighborhood radii: 500m.

<sup>52</sup> U.S. Fire Administration. 2022. *What is the WUI?*

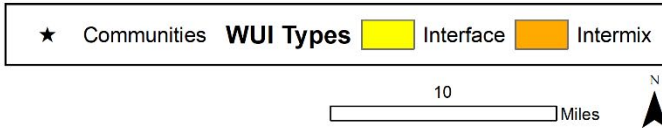


# BENNETT COUNTY, SD

## WUI - 500m Neighborhood Radius



**Bennett County Natural Hazard Mitigation Plan**  
 Coordinate System: NA 1983  
 Projection: State Plane SD S.  
 Scale: 1: 410,000  
 Date Created: 01/21/2022  
 Cartographer: BHCLG  
 Source: Carlson, Amanda R, et al. 2022.



**Figure 4.13. Bennett County Wildland Urban-Interface**

The factors that influence wildfires include weather and topography. When looking at weather, wind is a significant factor because it has the ability to move a fire towards different fuel sources. The temperature may also influence wildfire. Fuel sources will absorb solar radiation, making it much more susceptible to ignition in higher temperatures than in lower temperatures. The topography of an area also plays an important role when mitigating the risk of wildfire. Slope, aspect, and features in an area will slow down or contribute to the spread of fire. Slope will determine how a fire moves up or down hills. If a fire were to start at the bottom of a slope, it would quickly spread upwards because of the contributing rising hot air.<sup>53</sup>

One of the greatest issues that faces not only Bennett County but most of western South Dakota is an adequate water supply. There were no identified issues regarding road access, road egress, or concerns of access to evacuation routes. A majority of Bennett County is undeveloped and used primarily for agricultural purposes. During the planning process, the biggest concern in regard to wildfire was the potential loss of fencing and hay ground.

## WINTER STORMS

Future Hazard Probability				
Event Type	Blizzards	Heavy Snow	Winter Storm	Winter Weather

<sup>53</sup> National Park Service. 2023. *Wildland Fire Behavior*.

<b>Number of historical events</b>	19	10	50	26
<b>Number of years with events</b>	10	10	23	11
<b>Years of recorded data</b>	26 years (1996-2022)	25 years (1996-2021)	26 years (1997-2023)	14 years (2009-2023)
<b>Possible number of days with event per year</b>	0.73	0.4	1.92	1.86
<b>Probability of future event</b>	38%	40%	92%	79%
<b>Occurrence calculation</b>	19/26=0.73	10/25=0.4	50/26=1.92	26/14=1.86
<b>Probability calculation</b>	10/26=0.38	10/25=0.4	23/26=0.88	11/14=0.79

**Table 4.31.** Probability future winter storm occurrence. Calculations based on NOAA weather data. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

Winter storms in Bennett County are not unusual. FEMA’s National Risk Index scores winter weather risk in Bennett County as relatively moderate compared to the rest of the country.<sup>54</sup> Historical weather data for the county suggests a high risk for winter storms. These storms usually take place from November until May. The snow and high winds created by winter storms often create hazardous driving conditions. While such storms would be considered extreme in many parts of the Country, the consistent nature of such weather hazards are expected in this area. Thus, planning and response mechanisms for blizzards, snow, and ice storms are vital and are routine procedures in Bennett County due to the common nature of such storms.

Winter storms in South Dakota are known to cover large geographical areas. Often an entire county or multiple counties can be affected by a single storm. All of the winter storm hazards, identified in Appendix B, were considered to have occurred countywide. Due to the multiple categories NOAA has for winter weather, the probability of winter storms combines several hazard events including blizzards, winter weather, winter storm, and heavy snow.

It is projected over time that winter storms throughout South Dakota will increase in frequency. The intensity of future events, however, is unknown.<sup>55</sup> Coverage of the Northern Great Plains has seen little to no overall change. The greatest trends seen since the 1960s have been an increase in snow in the fall and a decrease in the spring. Spring snow melt is important for water supply in the Northern Great Plains. However, since 1980 there has been a decline associated with warm springs in the area. Drier winters also lead to several issues such as drought and wildfire.<sup>56</sup>

Information is being reported and recorded more accurately now than in previous decades, which is most likely a result of technology, internet, and a coordinated and focused effort to share information between agencies and local governments and to track weather and climate patterns.

<b>Significant Weather Events – Winter Storms</b>	
Historic	<ul style="list-style-type: none"> <li><b>04/06/1997</b> - Snowfall of 1 to 2 feet was common over the northern Black Hills and northwest plains of South Dakota with 6 to 12 inches reported elsewhere. Maximum snowfall was 34 inches at Lead. Drifts of 5 to 15 feet developed as sustained winds over 45 mph with frequent gusts over 60 mph ripped across the area for nearly 24 hours. Peak winds included 71 mph at Ellsworth AFB, 69 mph at Rapid City, 70 mph at Buffalo, and 67 mph at Winner. Almost all roads were blocked or closed and other forms of travel were impossible. Travel was banned in most areas and many emergency response activities were made impossible. Widespread power outages occurred. East of the Black Hills, the problems were compounded by the heavy rain and sleet that fell before the</li> </ul>

<sup>54</sup> National Risk Index. *Winter Weather*.

<sup>55</sup> FEMA. *Assessing Future Conditions: Meeting FEMA’s State Mitigation Plan Requirements*.

<sup>56</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*.

	<p>blizzard developed. Hardest hit by the blizzard were ranchers who suffered major livestock losses as calving season was underway. Damages Reported: \$5,000,000</p> <ul style="list-style-type: none"> <li>• <b>05/01/2002</b> - A weak, low-pressure system moved across the Central Plains producing generally light snow. Locally heavy snow developed over Bennett County during the morning through early afternoon hours. The town of Martin received nine inches of snow while Lacreek received seven, and Allen reported six inches. Elsewhere across the county and adjacent counties, generally three to four inches of snow fell.</li> <li>• <b>11/06/2008</b> - An intense fall storm produced blizzard conditions across the South Dakota plains for over 24 hours. Precipitation started as rain during the day and changed to heavy, wet snow during the evening of the 5th. Snow and blowing snow continued through much of the 6th with visibility near zero much of the time. Snowfall amounts were six to 18 inches with drifts 12 feet high. More than two thousand power poles were downed, causing widespread power outages that affected thousands of residents. Some locations did not have power for over a week, especially across the Pine Ridge Reservation. Most roads across the area, including Interstate 90, were closed for 24 hours or longer. Many livestock died from hypothermia. Officials estimated total damage around 5 million dollars.</li> <li>• <b>03/10/2010</b> - A slow moving storm system brought heavy snow to portions of Shannon and Bennett Counties in southwestern South Dakota. Rainfall changed to snow during the early morning of the 9th, with the heavy snow continuing through the early morning of the 10th. Snowfall amounts were generally in the four to eight inch range, with some higher elevations from Porcupine to Martin receiving around a foot of snow.</li> <li>• <b>02/26/2011</b> - An upper level disturbance brought snow to southwestern South Dakota during the night. Most areas received two to five inches of snow, but a heavier band of snow developed across Shannon, Jackson, and Bennett Counties and produced as much as nine inches of snow in an area from Porcupine to Kadoka to Martin.</li> <li>• <b>03/03/2015</b> - A fast moving winter storm moved across the region during the overnight and early morning hours. The storm produced two to five inches of snow across much of southwest and south central South Dakota, with the heaviest amounts of snow along the Pine Ridge area of southwestern South Dakota. Gusty northwest winds around 40 mph early on the 3rd produced areas of blowing snow and reduced visibilities to a quarter mile at times.</li> </ul>
Since 2018	<ul style="list-style-type: none"> <li>• <b>03/14/2019</b> - A very strong winter storm moved across the region, bringing heavy snow and blizzard conditions to much of western and south central South Dakota. Snow developed during the morning hours, with rain and snow changing to snow southeast of the Black Hills by the early afternoon. Northwest winds increased during the late morning and afternoon, with blizzard conditions developing across much of the plains. Snow ended the next morning, with winds gradually tapering off by late afternoon. Snowfall amounts were widely variable across the area, ranging from an inch or less over parts of Harding County to one to two feet in some portions of Haakon, Jackson, and Bennett Counties and portions of the northern Black Hills. Drifts of six feet and higher were reported where the heaviest snow fell on the plains. Much of Interstate 90 across western South Dakota were closed for more than 36 hours.</li> <li>• <b>11/30/2019</b> - An intense winter storm brought heavy snow and strong winds to western and south-central South Dakota. Snowfall amounts ranged from 5 to 10 inches across much of far southern South Dakota and the southern Black Hills to 10 to 20 inches across much of the northwest and west central South Dakota plains. Over the northern Black Hills, 15 to 30 inches of snow were recorded. Strong northwest winds over 50 mph produced significant blowing and drifting snow and blizzard conditions on the plains. Many highways were nearly impassible or closed, including Interstate 90.</li> <li>• <b>12/10/2021</b> - A potent upper-level system tracked across the Black Hills and southern South Dakota, bringing a swath of heavy snow to much of these areas. The heaviest snow bands developed across far southern South Dakota, where ten to 20 inches was reported. Five to ten inches of snow accumulated across most of the Black Hills and west central South Dakota. Amounts tapered off significantly into northwestern South Dakota, where little or no snow was reported.</li> </ul>

**Table 4.32.** Significant weather events of winter storms in Bennett County. (NOAA: National Centers for Environmental Information. 2023. *Storm Events Database*).

## ASSESSING VULNERABILITY

**Requirement 201.6(c)(2)(ii).** Does the plan include a summary of the jurisdiction’s vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?

**B2-a.** The plan must describe the vulnerability of each participant to the identified hazards. The description must include current and future assets and the risk that makes them susceptible to damage from the identified hazards.

## VULNERABLE POPULATIONS

Natural Hazards can take a heavy toll on vulnerable populations such as the elderly, young children, impoverished, and disabled. Social vulnerability addressed the effects natural hazards can have on vulnerable and underserved populations. FEMA’s National Risk Index scored social vulnerability in Bennett County as very high.<sup>57</sup> From 2010<sup>58</sup> to 2020<sup>59</sup>, Bennett County had a population decrease of 1.5%. In 2020 and in 2010, the population density in Bennett County was 2.8 persons per square mile.<sup>60</sup> The 2022 American Community Survey shows the median age of 27 and an estimated 12.7% of residents are 65 years or older.<sup>61</sup> It is estimated that 11.1% of residents have a disability including difficulties with hearing, vision, cognitive, ambulatory, self-care and/or independent living.<sup>62</sup>

Bennett County Age	
Age	Percentage
Under 5 years old	8.9%
65 years and older	11.8%
75 years and older	5.1%

**Table 4.33** U.S Census Bureau. 2023. (American Community Survey. Age and Sex)

Young children and the elderly are more vulnerable to different natural hazards. Young children have a higher vulnerability to respiratory-related issues that can be caused by things such as wildfire smoke, airborne particles, and allergens. These can be associated with risks such as wildfires, high winds, and extreme temperatures. The immune systems of young children are also still developing, causing children to be more susceptible to disease. This risk can be caused by issues with public water systems, compromised sanitation, and the spread of disease.<sup>63</sup>

Those individuals without a means of transportation can have difficulty in emergencies that may require evacuations, such as wildfire or flooding. They can also be limited in the ability to access emergency shelters that may be able to provide shelter and supplies during events such as summer and winter storms.<sup>64</sup> Roughly 9% of residents of Bennett County have no vehicle available.<sup>65</sup>

The median household income in Bennett County is \$44,821 with a 29.6% poverty rate.<sup>66</sup> Poverty or lower income households are similarly vulnerable to those without vehicles. These individuals often require the most assistance during hazardous weather but lack the means or ability to get help. Additionally, those in poverty are less likely to have the means to take proactive measures to mitigate hazards.<sup>67</sup>

## Bennett County Demographic

<sup>57</sup> National Risk Index. *Social Vulnerability*.

<sup>58</sup> U.S. Census Bureau. 2010. Table P1

<sup>59</sup> U.S. Census Bureau. 2020. Table P1

<sup>60</sup> U.S. Census Bureau 2020. Population per square mile 2020

<sup>61</sup> U.S. Census Bureau. 2021. Age and Sex

<sup>62</sup> U.S. Census Bureau. 2020. Age by number of disabilities

<sup>63</sup> Ibid. Headwater Economics.

<sup>64</sup> Headwater Economics. 2023. *A Profile of Wildfire Risk*.

<sup>65</sup> U.S. Census Bureau. 2020. Physical Housing Characteristics for Occupied Housing Units

<sup>66</sup> U.S. Census Bureau. 2023. Quick Facts

<sup>67</sup> Ibid. Headwater Economics.

Race	Percentage
White	29.9%
Black	0.2%
Native American or Alaska Native	61.9%
Asian	0.2%
Native Hawaiian and other Pacific Islander	0%
Other race	0.1%
Two or more races	7.6%

**Table 4.34** Population and Race demographics of Bennett County, South Dakota. (U.S. Census Bureau Decennial Census 2020).

Headwater’s *Populations at Risk* report explained that minority populations tend to have more vulnerability to disasters and extreme temperatures. Barriers in language, culture, quality of housing, community isolation, and housing patterns can attribute to these vulnerabilities. Natural disasters can result in negative impacts on the environment, which can lead to situations that can affect the health of the population. Some races have an increased risk of poorer health outcomes.<sup>68</sup>

**City of Martin Ordinance No. 230:**

All mobile homes, trailers, and/or manufactured homes parked within the boundaries of the City of Martin shall be skirted. Skirting shall be of material suitable for exterior exposure and contact with the ground. Skirting shall be adequately secured to assure stability, to minimize vibration and susceptibility to wind damage, and to compensate for possible frost heave.

In 2021, Bennett County had roughly 4.8% of housing classified as mobile homes, compared to the national percentage of 5.2%. Headwater Economics reports that mobile homes are more susceptible to damage and injury caused by extreme weather events.<sup>69</sup> Mobile/Manufactured homes built before June 15, 1976, regardless of modification, do not meet HUD standards.<sup>70</sup>

### **ASSESSING VULNERABILITY: OVERVIEW**

The following paragraphs summarize the description of the jurisdiction’s vulnerability to each hazard and the impact of each hazard on the jurisdiction. Most hazards have the potential to occur anywhere in the county. Hazards unique to the participating municipalities can be found in the unique and varied risk section of this Plan.

**Blizzards** are characterized by high winds, blowing snow, cold temperatures, and low visibility. Blizzards create conditions such as icy roads, closed roads, downed power lines and trees. Bennett County’s population is especially vulnerable to these conditions because people tend to leave their homes to get places such as work, school, and stores rather than staying inside. Traffic is one of the biggest hazards in Bennett County during a blizzard because people often get stuck, stranded, and lost when driving their vehicles, which usually prompts others such as family and or emergency responders to go out in the harsh conditions to rescue them. Bennett County only has one incorporated community that can provide shelter for stranded travelers. In rural communities, residents typically take care of themselves and check on their neighbors during snowstorms. Lacreek Electric Association has worked to bury power lines and will keep doing so in the future.

**Dam Failure** can be caused by overtopping, foundation defects, cracking, inadequate maintenance and upkeep, and piping. Bennett County has a total of 12 dams. Most of these dams are in areas where if failure occurred, there would be little damage to property. Bennett County has two dams classified as high-risk. High-risk dams have the risk of not only property damage, but more importantly loss of life. The classification is based on the potential of downstream

<sup>68</sup> Headwater Economics. 2023. *Populations at Risk*.

<sup>69</sup> Ibid. Headwater Economics.

<sup>70</sup> U.S. Department of Housing and Urban Development. *FAQ*. 2023.

consequences of the dam failing, not the condition of the dam. It is due to this reason that these dams are required to have an emergency action plan in the event of a failure. In addition, there is a requirement by the state of South Dakota that all high-risk dams are inspected every five years. Vulnerable populations would be those with potential to be impacted by the downstream hazard, such as homeowners or travelers on roadways.

**Drought** can be defined as a period of prolonged lack of moisture. High temperatures, high winds, and low relative humidity all impact drought conditions. A decrease in the amount of precipitation can adversely affect stream flows and reservoirs, lakes, and groundwater levels. With the lower levels of moisture caused by drought, the chance of wildfire increases. Drought can also impact many factors, both directly and indirectly. These factors include higher water and food prices, water restrictions, air and water quality, and restricted access to recreational areas.<sup>71</sup> Water shortages can affect supplies for domestic, municipal, industrial, agricultural, and recreational uses. Crops and other vegetation are harmed when moisture is not present within the soil. South Dakota's economy is closely tied to agriculture and only magnifies the potential loss, which could be suffered by the state's economy during drought conditions. The agriculture sector is severely affected by the lack of vegetation and water for livestock. Crop and pasture yields can be greatly diminished during periods of drought.

Drought conditions can also be harmful for vulnerable populations such as the elderly, young children, and those with medical conditions such as respiratory conditions, which are often exacerbated by increased dust. The CDC states that long-term health problems can occur due to poor quality drinking water and the impacts from poor air quality, sanitation hygiene, and food and nutrition.<sup>72</sup>

Among the survey takers, 52.94% replied they felt somewhat concerned about the impact of drought in Bennett County. Agriculture is very important in Bennett County, with a majority of land use designated as agriculture. Stakeholders expressed that drought has an impact on livestock, hay loss, grazing, water, and ultimately the entire agricultural economy.

If drought conditions in the region continue to increase, there will most likely be an increased demand for water and energy resources. As a result, the region may see the constraint of development, stress on natural resources, and increased competition for water.<sup>73</sup> The degree of impact depends on the length of a drought period. The longer the drought period, the higher degree of impact the land will experience. This can lead to the depletion of reservoirs and the decline of groundwater basin water levels.<sup>74</sup> Drought conditions lower the recharge of the aquifers.<sup>75</sup>

**Earthquakes** occur in the area. The magnitude and intensity of an earthquake is measured by the Richter scale and the Mercalli scale. Bennett County has had five recorded earthquakes. While earthquakes are not a common occurrence, a large earthquake would impact Bennett County in comparable ways to anywhere else. Populations residing in substandard structures are affected by the damage to homes or structures. Those with disabilities may have issues reaching a safe location in the event of an earthquake. Earthquakes could also impact the economy, especially if critical or commercial businesses were damaged due to earthquakes.

**Expansive Soils** are located in Bennett County. The expanding and shrinking of soils can cause damage to structures. Often foundations, floors, and basements are damaged, but all areas of a structure can be affected. This hazard often occurs over long periods of time as soil expands and shrinks repeatedly. Damage from expansive soils can often be mistaken as natural aging damage of structures. Populations of lower income or below poverty level may have difficulty in costly repairs to homes harmed by this hazard. Additionally, renters may find

<sup>71</sup> *State of South Dakota Drought Mitigation Plan*. 2015

<sup>72</sup> Center for Disease Control and Prevention. *Health implications of drought*. 2020

<sup>73</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*

<sup>74</sup> *State of South Dakota Drought Mitigation Plan*. 2015

<sup>75</sup> Driscoll et. al. *Hydrology of the Black Hills area, South Dakota*



themselves displaced due to damage to rental properties or during repairs. City and county stakeholders explained there are no known areas with expansive soils affecting structures.

**Extreme Cold** temperatures often accompany a winter storm, leaving people to cope with power failures and icy roads. When temperatures drop below normal and wind speed increases, heat can leave your body more rapidly. These weather-related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies for susceptible people, such as those without shelter or who are stranded, or who live in a home that is poorly insulated or without heat. Exposure is the biggest threat/vulnerability to human life; however, incidences of exposure are isolated and thus unlikely to happen.

**Extreme Heat** has caused worldwide catastrophic crop damage, thousands of deaths from hyperthermia, and widespread power failures due to increased use of air conditioning. Loss of power and crop and livestock damage are the largest vulnerability to the county during times of extreme heat. Extreme heat can also greatly affect those individuals who work primarily outdoors.<sup>76</sup> Both influence quality of life, however neither are detrimental to the existence of the population of Bennett County. If the region sees an increase of extreme heat and an alteration of seasonal temperature timings, the agriculture and ranching communities will need to begin adjusting accordingly.<sup>77</sup>

**Flooding** can result in injuries and even loss of life when fast flowing water is involved. Six inches of moving water is enough to sweep a vehicle off a road. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible. Damages to roads, bridges, and culverts disrupt the movement of people, goods and services which threatens the local economy.<sup>78</sup> Flooding can also have an impact on low-income families or those below the poverty level. Flooding damage can be extremely costly, not only for homeowners but renters could find themselves greatly affected financially or even displaced. The County is unmapped by FEMA. The County experiences roads flooding due to rapid snow melt.

**NFIP Requirement 201.6(c)(2)**  
Neither Bennett County nor Martin participates in the NFIP program. All of Bennett County is unmapped.

**Freezing Rain/Ice Storms** may cause build up on power lines, poles, trees, and structures. The additional weight can often cause weak structures to cave in and cause tree branches and power lines to break and fall. Bennett County and the local jurisdiction within are susceptible to these conditions due to the types of structures and surfaces that exist in the county that cannot be protected from freezing rain. Traffic on the roads and highways tend to be the biggest hazard during freezing rain conditions because vehicles often slide off the road, which prompts emergency responders and others to go out on rescue missions in adverse conditions.

**Hail** causes damage to property such as crops, vehicles, windows, roofs, and structures. Bennett County and its local jurisdictions are vulnerable to hail, like most other areas in South Dakota, due to the nature of the hazard. Mitigating hail is difficult and is usually found in the form of insurance policies for structures, vehicles, and crops. Hail damage can have a large impact on lower income families and those below poverty levels, who may have limited insurance policies for such damage or are unable to afford building structures that are more hail resistant. Renters may also find themselves temporarily displaced during times of repair or permanent damage.

**Heavy Rain** can cause damage to property such as homes and roads. Heavy rain in Bennett County can cause road inundation in low-laying areas. Roads and bridges can be washed out, thus causing traffic hazards for travelers and commuters. All areas of the county are vulnerable

<sup>76</sup> Headwater Economics. 2022. *Populations at Risk*.

<sup>77</sup> USGCRP, *Climate Science Special Report: Fourth National Climate Assessment, Volume 1*

<sup>78</sup> *Bennett County Hazard Mitigation Plan, 2019*

when heavy rains occur. Storm sewers are built for the typical storm and therefore do not accommodate excessive or heavy rains.

**High/Severe Wind** can cause damage to property, injury, or death. High winds can cause downing of trees and powerlines, buildings to collapse, and flying debris. Western South Dakota is susceptible to high wind events. High wind warning is issued for sustained winds reaching 40mph or greater, or if gusts of 58 mph or greater are predicted. The most mentioned impacts from high winds by stakeholders were damage to structures, such as mobile homes and grain bins. The City of Martin has a mobile home ordinance that does not allow for the placement of mobile homes of a certain age. HUDs wind standards for the region, while older homes may not meet this requirement.

**Ice Jams** cause damage to bridges, roads, and culverts due to water currents pushing large chunks of ice under or through small openings. The county mentioned that they experience ice jams, especially during spring thaw.

**Landslides** are caused by the movement of earth downslope. Areas where old landslides have occurred often include steep slopes, bases of drainage channels, and developed hillsides. Landslides that occur in developed areas can cause damage to property and infrastructure, and injury or loss of life. The *South Dakota Hazard Mitigation Plan* shows a low susceptibility to landslides in Bennett County. (Appendix B)

**Lightning** often strikes the tallest objects within the area. Most injuries from lightning occur near the end of thunderstorms. Individuals who sought shelter leave those areas prior to the entire completion of the thunderstorm. Believing it is safe to freely move around, lightning strikes catch them off guard. In towns, trees and poles often receive the most strikes. In rural areas, shorter objects are more vulnerable to being struck. Electrical lines and poles are also vulnerable because of their height and charge. Lacreek Electric Association has worked to bury power lines and will keep doing so in the future. In addition, many streetlights function with sensors. Since thunderstorms occur primarily during hours of darkness, lightning strikes close to censored lights cause the lights to go out, causing a potential hazard for drivers. Flickering lights and short blackouts are not at all uncommon in the county. One of lightning's dangerous attributes includes the ability to cause fires. The entire county is vulnerable to lightning strikes and subsequent fires.

**Severe Winter Storms** have a high risk of occurrence. Heavy snow can immobilize transportation, down power lines and trees, and cause the collapsing of weaker structures. Lacreek Electric Association has worked to bury power lines and will keep doing so in the future. Livestock and wildlife are also very vulnerable during periods of heavy snow. Most storms can be considered to have occurred countywide. Due to the multiple occurrences of winter storms each year, an exhaustive compilation is not possible. The greatest danger during winter weather is traveling. Many individuals venture out in inclement weather. Reasons include the necessity of getting to work, going to school, going out just to see how the weather is, and to rescue stranded persons. Vulnerable populations such as those with disabilities, the young or elderly, can be negatively impacted by factors such as loss of power related to heating or powering medical devices. These populations may also have difficulty reaching or receiving medical assistance due to limited travel abilities during storms.

**Subsidence** is a hazard that has a high probability of occurring in localized areas, but overall, a low probability of occurring in a majority of a county. Subsidence can cause damage to property, structures, infrastructures, and loss of life. The *USGS Karst Map* shows no areas with high risk of subsidence. Appendix B. During the stakeholders meeting, there were no known issues.

**Thunderstorms** cause lightning and large amounts of rain in a small timeframe. The entire county experiences thunderstorms on a regular basis and is only vulnerable when weather events outside the norm occur. Specific vulnerabilities are further identified in the paragraphs for "Lightning" and "Heavy Rains".

**Tornados** present significant danger and occur most often in South Dakota during the months of May, June, and July. The greatest period of tornado activity, about 82% of occurrence, is from 11 am to midnight. Within this time frame, most tornados occur between 4 pm and 6 pm. Often associated with summer storms are utility problems. Electric services have historically buried powerlines in the county. The county is currently looking into options to continue powerline burials.

**Wildfires** occur primarily during drought conditions but can occur with as little as one to two weeks with hot, dry, and windy weather conditions any time of year. Wildfires can cause extensive damage, both to property and human life, and can occur anywhere in the county. There can be large losses to standing timber, with the threat of erosion and debris buildup from rapid run off in areas burned. There is potential for loss of life, structures, and utility infrastructure, as well as impacts upon economic factors such as ranching. Even though wildfires can have various beneficial effects on wilderness areas for plant species that are dependent on the effects of fire for growth and reproduction, large wildfires often have detrimental atmospheric consequences, and too frequently wildfires may cause other negative ecological impacts. Moisture amounts have the biggest impact on fire situations. During wet years, fire danger is generally lower. More controlled burns are conducted and less mishaps occur.

Wildfire smoke, which is a combination of gases and particles from burned materials, can affect anyone, but those at an increased risk are those with asthma, chronic obstructive pulmonary disease, heart disease, children, pregnant woman, and responders.<sup>79</sup> During younger children's development stages, they are more sensitive to health problems and environmental stress. Those with poor health during childhood are more likely to see continued issues into adulthood. As an example, children have faster breathing rates than adults and tend to spend more time outdoors, causing a higher sensitivity to wildfire smoke. Older adults, those 65 and older, are also at a high risk from air pollutants, such as dust and particle matter. The poor air quality that is present during wildfire events creates a vulnerability to these individuals.<sup>80</sup>

The ability for evacuation during emergencies can affect populations such as the elderly and those with certain pre-existing medical conditions, compromised mobility, and compromised language and cultural barriers. These conditions make it harder to interact with agencies. There is the potential for miscommunication, and inability to follow directions.<sup>81</sup>

The *South Dakota Forest Action Plan Priority Areas* show high priority rankings for the riparian areas in Bennett County.<sup>82</sup> Wildfires can impact riparian areas either directly or indirectly. Riparian areas serve as critical habitats for plant and animal species. Wildfire can destroy or alter these important habitats. Wildfire can directly impact an area from the burning of vegetation, water temperatures, water quality from erosion and sedimentation entering the system. Wildfire can also create impact indirectly by altering the hydrology of the surrounding area.<sup>83</sup>

One of the big issues for those responding to fires is the lack of water source in undeveloped areas. Responders are in the habit of always taking tenders to fire sites. County and city stakeholders explained that fire equipment available to the department has been recently updated. Outside fire departments have been asked to help fight certain fires in the past.

## **ADDRESSING VULNERABILITY: REPETITIVE LOSS PROPERTIES**

**Requirement 201.6(c)(2)(ii).** *Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?*

<sup>79</sup> National Center for Environmental Health. 2022. *Protect yourself from wildfire smoke.*

<sup>80</sup> Headwaters Economics. 2022. *Populations at Risk.*

<sup>81</sup> Headwaters Economics. 2023. *Populations at Risk.*

<sup>82</sup> *South Dakota Forest Action Plan.* 2020. South Dakota

<sup>83</sup> DeBano, Leonard F. et al. 1996. *Effects of Fire on Riparian Systems.*

**B2-c.** *The plan must address repetitively flooded NFPI-insured structures by including the estimated numbers and types (residential, commercial, institutional, etc.) of repetitive/severe repetitive loss properties.*

Repetitive loss properties are those for which two or more losses of at least \$1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10-year period since 1978. Neither Bennett County or Martin participate in the National Flood Insurance Program.

## **ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES**

**Requirement 201.6(c)(2)(ii).** *Does the plan include a summary of the jurisdiction's vulnerability and the impacts on the community from the identified hazards? Does this summary also address NFIP insured structures that have been repetitively damaged by floods?*

**B2-b.** *The plan must describe the potential impacts on each participating jurisdiction and its identified assets.*

One of the purposes of this Plan is identifying critical facilities and determining to what extent these structures are vulnerable to natural hazards. In the event of a disaster, Bennett County and participating entities want to ensure they have the ability to prevent further loss of life by generator powered critical facilities and shelters. Tables 4.36-4.39 list inventory of assets for each community including critical facilities, vulnerable populations, economic assets, and historic assets that would cause the greatest distress if destruction occurred. The participants were asked to think of structures that would cause the most devastation to their communities if the structures were to be lost in a natural hazard event, "In other words, list those structures that you cannot live/operate without." Plan participants were then instructed to determine the value of those structures. Most of the values provided are the insured values from the insurance policies. The Plan author acknowledges that determining what is "critical" can mean something different to every community and that the information provided in the table is not comprehensive. However, the information provided by the plan participants was used as a baseline and can be supplemented in future years during the annual plan review and/or during the 5-year update. By using information provided by the representatives from each community, it also helps establish a sense of ownership in the mitigation plan.

Bennett County was asked to identify critical facilities vulnerable to natural hazards and future hazards due to climate variations. All facilities share the same risk for most all hazards, the County did not identify any critical facilities to have a higher vulnerability than others due to specific hazards. The County is unmapped by FEMA. The County explained that there were no localized hazards that make these assets more vulnerable than any other hazard such as summer storms, winter storms, etc...

Bennett County Inventory Assets									
Name of Asset	Critical Facility	Vulnerable Pop.	Economic	Historic	Size (sq ft)	Replacement Value	Content Value	Notes & Function	Capacity/ Occupancy
Bennett County Courthouse	<input checked="" type="checkbox"/>	-	-	-	-	-	-	County Government	15
Martin City Office	<input checked="" type="checkbox"/>	-	-	-	-	-	-	City Government	2
Power Substations	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Power Grid	-
Bennett County Hospital	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Hospital/Clinic	-
Horizon Health Care	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Clinic	-
IHS Medical Clinic	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Clinic	-
Martin Police Department Office	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Law Enforcement Office	5
Bennett County Sheriff's Office	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Law Enforcement Office	7
Lacreek Electric	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Power Cooperative	-
Martin Fire Department and EMS	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Fire Station Ambulance Base	-
Vetal Fire Department	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Fire Station	-
Tuthill Fire Department	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Fire Station	-
Marin Airport	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Local Airport	-
Bennett County Highway Shop	<input checked="" type="checkbox"/>	-	-	-	-	--	-	County Highway Shop	-
Bennett County Middle/High Schools	<input checked="" type="checkbox"/>	-	-	-	-	-	-	School	-
Bennett County Grade School	<input checked="" type="checkbox"/>	-	-	-	-	-	-	School Shelter	-
New Legion	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Multipurpose Shelter	-
Old Legion	<input checked="" type="checkbox"/>	-	-	-	-	-	-	Tornado Shelter	-
School Office	<input checked="" type="checkbox"/>	-	-	-	-	-	-	School Admin.	-

**Table 4.36** Assets for Bennett County as of 2024. Information was provided by Bennett County.

Martin was also asked to identify critical facilities vulnerable to natural hazards and future hazards due to climate variations. All facilities share the same risk for most all hazards. The City did not identify any critical facilities to have a higher vulnerability that others due to specific hazards.

City of Martin Inventory Assets									
Name of Asset	Critical Facility	Vulnerable Pop.	Economic	Historic	Size (sq ft)	Replacement Value	Content Value	Notes	Capacity/ Occupancy
3 Wells	<input checked="" type="checkbox"/>	-	-	-	-	\$3,000,000	-	-	-
Martin City Shop	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
Martin Fire Department	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
Martin City Office	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
Pressure Pump	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
Bennett County Hospital	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
2 Water Towers	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
Water Tank	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-
Golden West Telecommunications	<input checked="" type="checkbox"/>	-	-	-	-	-	-	-	-

**Table 4.37** Critical infrastructure for the City of Martin as of 2024. Information was provided by Martin.



## ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

- B2-a.** *For each participating jurisdiction, does the plan describe the potential impacts of each of the identified hazards on each participating jurisdiction?*

The following information shows the county and jurisdiction's structure vulnerabilities. Inconsistencies and missing information may result from lack of existing mechanisms, plans, and technical documents available to the communities. The data was collected using the county's assessment provided by the county's emergency manager for the county and Martin. No land values were included. During the planning process, it was concluded that all structures in Bennett County and the City of Martin are at equal risk for all hazards. Due to lack of flood mapping and based on conversations with stakeholders, there were no concerns for any localized hazards such as flooding or geological. This section of the previous Plan was scarce and did not address potential dollar losses.

Bennett County (unincorporated areas) Estimated Potential Dollar Losses to Vulnerable Structures		
Type of Structure	Number of Structures	Value of Structures
Residential	483	\$32,907,021
Commercial	32	\$8,182,092
Agricultural	328	\$12,204,860
<b>Total</b>	<b>843</b>	<b>\$53,293,973</b>

**Table 4.39.** Estimated dollar losses to vulnerable structures in Bennett County (unincorporated areas).

Martin Estimated Potential Dollar Losses to Vulnerable Structures		
Type of Structure	Number of Sites	Value of Structures
Residential	341	\$1,864,191
Commercial	68	\$7,762,960
Government	3	-
Education	3	-
Utilities	2	-
<b>Total</b>	<b>417</b>	<b>\$9,627,151</b>

**Table 4.40.** Estimated dollar losses to vulnerable structures in Martin.

## ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS

**Requirement 201.6(d)(3)** ... *Was the plan revised to reflect changes in development?*

- E1-a.** *The plan must describe changes in development that have occurred in the hazard-prone areas and how they have increased or decreased in vulnerability of each jurisdiction since the previous plan was approved.*
- E2-c** *The update plan must explain how the jurisdiction(s) integrated information from the mitigation plan into other planning mechanisms, as a demonstration of progress in local hazard mitigation efforts.*

Since the last mitigation plan update there has been little development in Bennett County or the City of Martin. The land use and development trends for each jurisdiction were identified by representatives from each. To look at development trends, Bennett County and Martin were asked to provide information on building permits in the last five years for new structures. The City of Martin has issued roughly 20 building permits in the last five years. These permits were primarily for fences in residential yards or for mobile homes. Bennett County does not have a comprehensive plan, building codes, or zoning. The County does have a Local Emergency Management Plan (LEOP), a Threat and Hazard Identification and Risk Assessment (THIRA),

and a Hazardous Material Plan. When applicable, these plans could assist in coordinating mitigation actions. No information from the previous mitigation plan was incorporated due to the lack of planning mechanisms in the county.

Under South Dakota Codified Law, any unit of government that has not adopted building codes falls under SDCL 11-10-6. There has been little to no development occurring in the county in the last five years. Bennett County is not mapped by FEMA and does not have a recognized flood map. Any development that occurs in the county has the potential to increase the vulnerability from hazard risks. The development that has occurred in the last five years is minimal and doesn't appear to have much impact on vulnerability, aside from what already exists. The county does not expect a significant population increase in the near future.

**South Dakota Codified Law  
11-10-6**

The design standard for construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal, and demolition of any building commenced after July 1, 2021, within the boundaries of any local unit of government that has not adopted an ordinance prescribing such standards pursuant to §11-10-5 shall be based on the 2021 edition of the International Building Code as published by the International Code Council, Incorporated. Each local unit of government may adopt an ordinance allowing local administration and enforcement of the design standard. The provisions of this section do not apply to any residential structure as defined in §11-10-12, mobile or manufactured home, or farmstead and any accessory structure or building thereto. For purposes of this section the term, farmstead, means a farm or ranch, including any structure or building located on the land. The provisions of this section do not apply to any mobile or manufactured home as defined in chapter 32-7A that is used for purposes other than residential that is constructed in compliance with the applicable prevailing standards of the United States Department of Housing and Urban Development at the time of construction if the structure complies with applicable accessibility standards for the occupancy intended. The provisions of this section do not apply to any specialty resort or vacation home established as defined in chapter 34-18 that is constructed in compliance with the requirements of Group R-3 of the 2021 edition of the International Building Code.

The County does not have a website, but discussions of creating a Facebook page to post updates on weather conditions and make citizens aware of weather alerts has taken place. The County utilizes FEMA's national system for providing information regarding emergencies, known as the Integrated Public Alert Warning System (IPAWS).

The consideration of not only adopting but also enforcing building codes should be explored to help mitigate potential impacts of natural hazards. An example would be having building standards for structures to withstand high winds throughout the County. At this time, the County does not have the capability for the enforcement of building codes.

The City of Martin has seen a 12% decrease in population from 2010 to 2020. Most of the development that has occurred in the last five years was for placement of mobile homes in the city. The City of Martin does not have a comprehensive plan or zoning. However, the city did adopt the 2021 IBC since the last plan update. Aside from building codes, no information from the previous mitigation plan was incorporated due to the lack of planning mechanisms in the county. In the last five years, roughly twenty structures have been removed from the city.

**UNIQUE OR VARIED RISK ASSESSMENT**

*Requirement 201.6(c)(2)(i).. Does the plan include a description of the type, location, and extent of all natural hazards that can affect the jurisdiction? Does the plan also include information on previous occurrences of hazard events and on the probability of future hazard events?*

**B1-f.** *For the multi-jurisdictional plans, when hazard risks differ across the planning area and between participating jurisdictions, the plan must*

specify the unique and varied risk information for each applicable jurisdiction and their assets outside the planning area.

After conducting the risk assessment for each jurisdiction, most hazards have the risk to impact all areas of the Bennett County and Martin equally. Martin was identified with a slightly higher risk for wildfire due to the WUI boundaries and an area with identified drainage issues.

To better examine the flood and wildfire risk in communities, *Risk Factor* was used as a reference. *Risk Factor* uses a *First Street Foundation* modeling method which shows risk of wildfires and flooding from rain, rivers, tides, and storm surge in specific locations. The model was created using decades of peer-reviews, climatology models, hydrology, and statistics<sup>84</sup>. The flood and wildfire risks evaluated are social, residential, commercial, infrastructure and roads. The overall rating ranges from minor, moderate, major, severe, and extreme. The rating system looks at the percentage of properties at risk with a 30-year prediction. The model considers the changing of climate in its findings.<sup>85</sup> The unique risk for each jurisdiction is listed below.

Flooding risk is based on the likelihood of a building footprint being flooded. Figure 4.7 shows the rating system for Flood Factor. The First Street Foundation Wildfire Model also assists in determining the probability of a community’s risk of being directly impacted by wildfire or indirectly impacted by embers. The risk rating incorporates the impacts wildfire can have on infrastructure, emergency services, transportation, businesses, and finances of homeowners.<sup>86</sup> **Table 4.42** outlines the rating scale.

Fire Factor Rating System	
Risk Rating	% of properties with chance of burn over next 30 years
Minimal	Little to no risk
Minor	Less than 1%
Moderate	1-6%
Major	6-14%
Severe	14-26%
Extreme	More than 26%

**Table 4.42.** Fire Factor Summary. (Risk Factor. 2024. *How is my fire factor calculated?*)

## City of Martin

The City of Martin does not have an effective flood hazard map and therefore is not currently participating in the National Flood Insurance Program (NFIP). In Martin, an area in the northwest corner has been close to flooding but tends to clear out before reaching that point. Of the survey takers that live in Martin, 17.42% were very concerned about flooding and 43.18% were somewhat concerned with flooding. Although only 33% said they had experienced flooding in the County in the last five years.

*Flood Factor* suggests that Martin has a minor risk of flooding over the next 30 years. Figure 4.14 shows the map of the likelihood of areas to experience flooding in 2024, while figure 4.15 shows the change in the next 30 years. The projection shows there will be no increase in properties at risk over time.

<sup>84</sup> First Street Foundation. *First Street Foundation Flood Model 2020 Methodology Overview*

<sup>85</sup> Ibid. First Street Foundation.

<sup>86</sup> Risk Factor. 2022

Flood Factor: Flooding risk over the next 30 years	
Category Type	Risk
Overall, Martin	Minor
Residential	Minor
Road	Minor
Commercial	Minor
Critical Infrastructure	Minimal
Social	Minimal

Table 4.43. Flood Factor Summary. Martin, SD. (Risk Factor, 2023, Flood Factor).

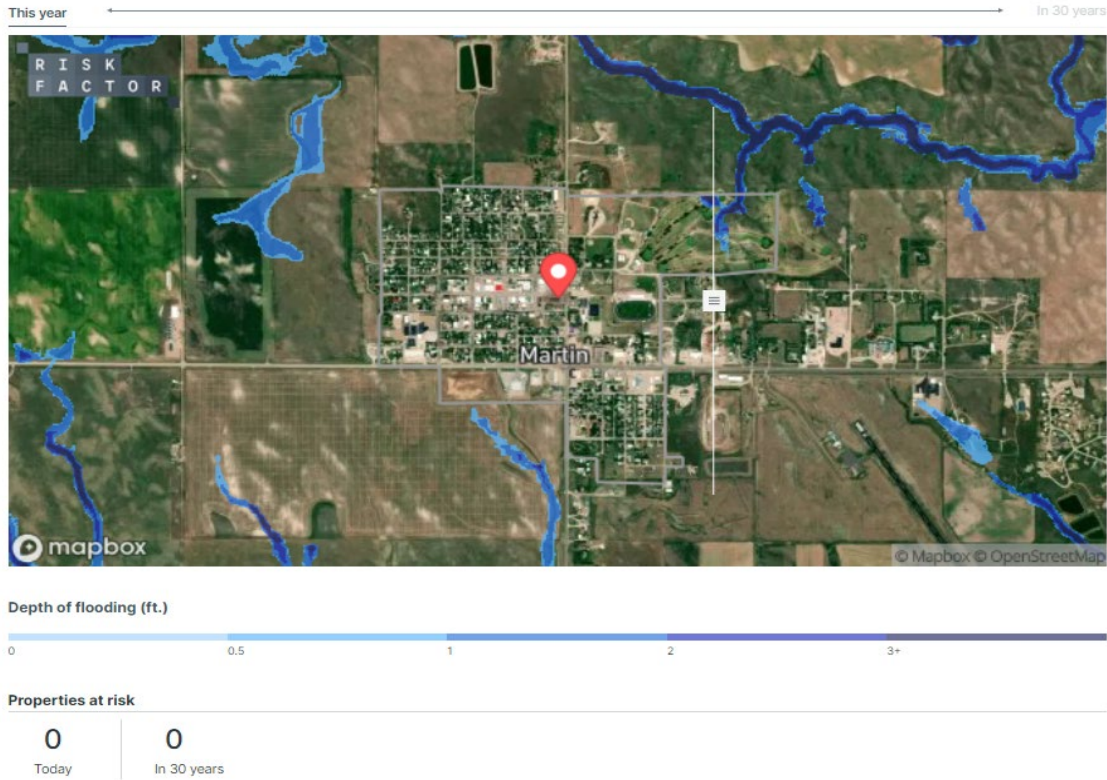
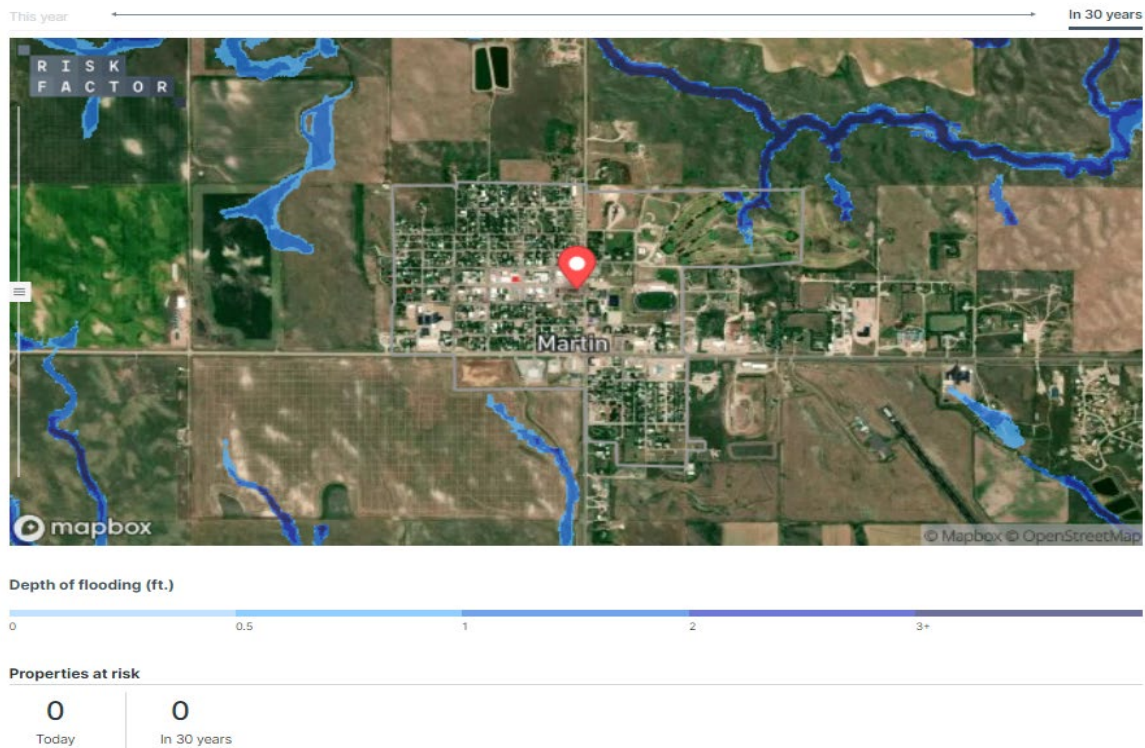


Figure 4.14. City of Martin map showing area of flood likelihood in 2024. (Image captured from Risk Factor, 2024, Flood Factor)



**Figure 4.15.** City of Martin map showing area of flood likelihood in 2054. (Image captured from Risk Factor, 2024, Flood Factor)

The removal of dilapidated structures can help to alleviate the potential impact of several hazards such as high wind, tornados, and wildfire. In the last five years it is estimated around 20 structures have been removed, with plans for more in the future. The Town will continue to encourage property owners to remove dilapidated structures.

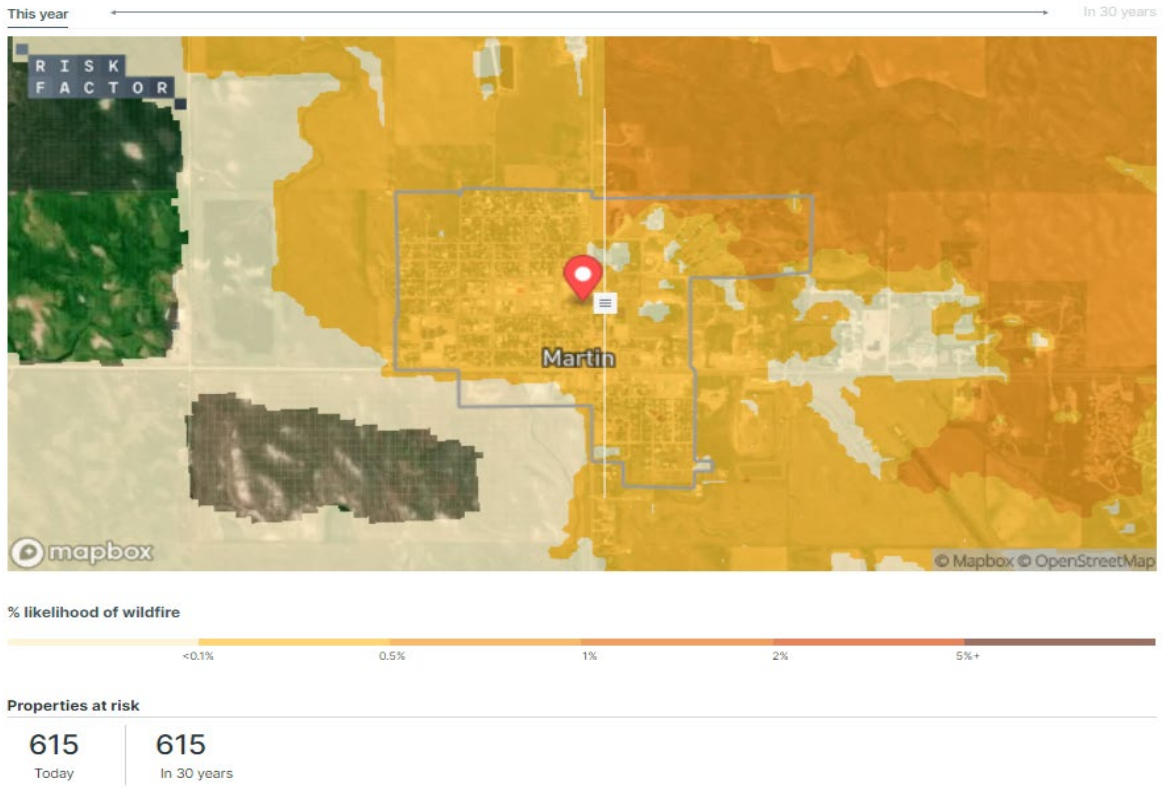
The New Legion and the Old Legion can serve as shelters for potential weather events such as winter storms but are not built as designated tornado shelters. Both locations have heating and cooling capabilities. Neither location has a generator.

Like most of the county, Martin is susceptible to wildfire. The survey results showed that of the people that answered they lived in Martin, almost 67% were somewhat concerned about wildfire. Wildfire was not ranked high as a hazard concern in the survey results for the residents of Martin. *Fire Factor* maps show the change in likelihood of wildfire in the City of Martin from 2024 to 2054, with no increase in probability in the next 30 years.

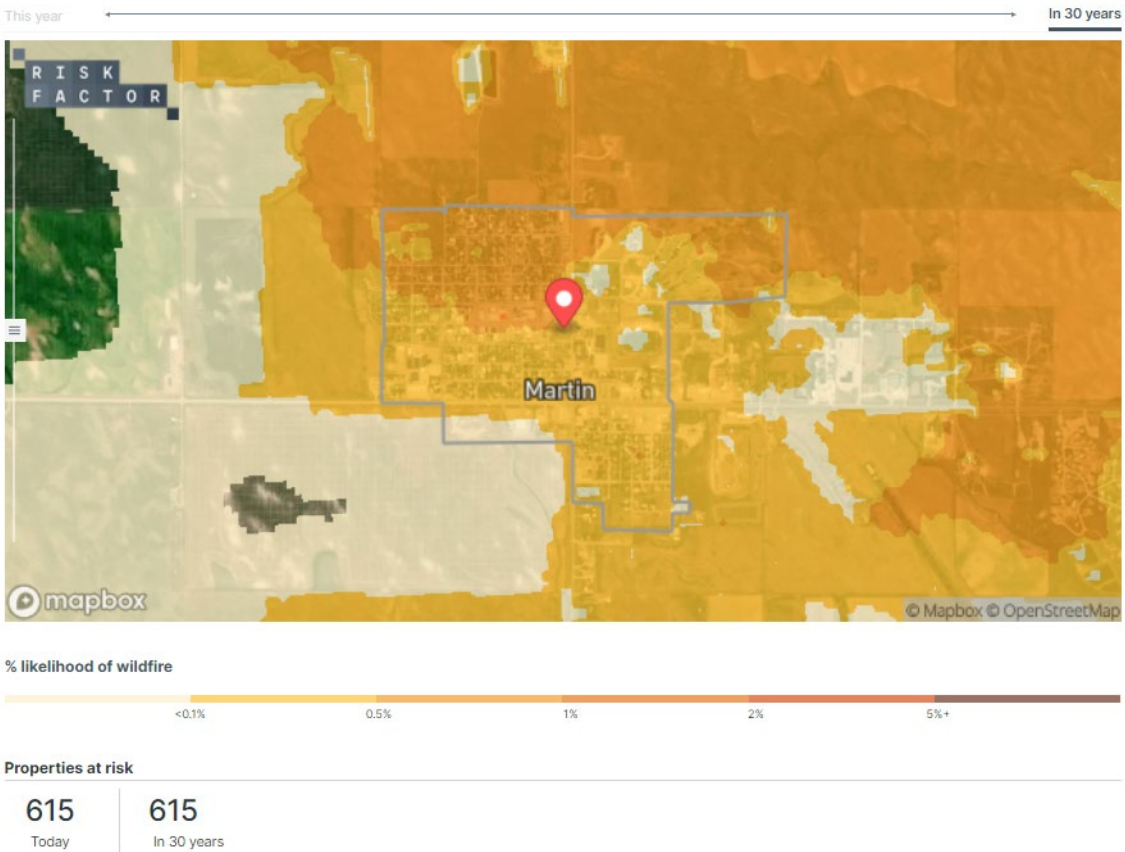
<b>Fire Factor: Wildfire risk over the next 30 years</b>	
Category Type	Risk
Overall, Martin	Major
Residential	Major
Commercial	Major
Critical Infrastructure	Major
Social	Major

**Table 4.44.** Fire Risk Summary. Martin, SD. (Risk Factor. 2023. Fire Factor).





**Figure 4.17.** City of Martin map showing area of wildfire likelihood in 2024. (Image captured from Risk Factor, 2024, Fire Factor)





## V. MITIGATION STRATEGY

**Changes/Revisions:** The mitigation strategy has been completely reformatted to include specific goals, objectives, and projects for not only the County but also the participating jurisdiction. Goals and projects from the previous Plan have been addressed in other sections of this Plan. Goals and projects that were completed have been removed from the list. Goals that were considered to be response and recovery were also removed. This reformatting looks at mitigation actions and projects that are specific to each hazard identified in the risk assessment. A complete list of updates of goals and actions from the previous plan are listed in [Appendix H](#).

### MITIGATION REQUIREMENTS

**Requirement 201.6(c)(3)**... *Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs?*

- C1-a.** *The plan must describe the existing authorities, policies, programs, funding, and resources of each participant are available to support the mitigation strategy.*
- C1-b.** *The plan must describe the ability of each participant to expand on and improve the capabilities described in the plan.*

**Requirement 201.6(c)(3)(i)**... *Does the plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards?*

- C3-a.** *The plan must include goals to reduce the risk of the identified hazards. Goals must be consistent with the hazards identified in the plan.*

**Requirement 201.6(c)(3)(iii)**... *Does the plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure?*

- C4-a.** *The mitigation strategy must include an analysis of a comprehensive range of actions of projects that the participants considered to specifically address vulnerabilities identified in the risk assessment.*
- C4-b.** *Each plan participant must identify one or more mitigation actions the participant(s) intends to implement for each hazard addressed in the risk assessment.*

**Requirement 201.6(c)(3)(iii)**... *Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by each jurisdiction?*

- C5-a.** *The plan must identify who is responsible for administering each action, along with the action's potential funding sources and expected time frames for completion.*
- C5-b.** *The action plan must identify who is responsible for administering each action, along with the action's potential funding source and expected time frames for completion.*

## MITIGATION OVERVIEW

The *State of South Dakota Hazard Mitigation Plan* addresses several mitigation categories including warning and forecasting, community planning, and infrastructure reinforcement<sup>87</sup>. After meeting with the local jurisdictions, stakeholders and public input, a series of mitigation goals were established to best aid the County and jurisdictions in reducing the impact of hazards. Projects previously identified in the Plan were discussed to determine which of the projects had enough merit to be included in the updated Plan and to determine if the projects met the hazard mitigation needs of the County and jurisdictions. These projects were evaluated based on a preliminary evaluation of cost/benefit and priority based on either historical damages or anticipated damage. Consideration of prioritization also included possible future impacts due to climate variations and vulnerable and underserved populations. A *high* priority classification means the project should be implemented as soon as possible and would minimize losses at a very efficient rate. A *moderate* classification means the project should be carefully considered and completed after the high priority projects have been completed. A *low* priority means the project should not be considered in the near future. However, it is a potential solution and should not be eliminated until further evaluation can be completed. Such projects may be completed considering the failures of all other projects striving toward the same goal.

A timeframe for completion, oversight, funding sources, and any other relevant issues were addressed. These implementation strategies are geared toward the specific goal and area. Notes were added to some projects for further clarification. Often, these projects will not encounter any resistance from environmental agencies, legal authorities, and political entities. Where these are a concern, address is made.

Neither Bennett County nor Martin have planning which can help to support mitigation strategies. Bennett County and Martin do not have comprehensive plans or zoning. However, the City of Martin does have adopted building codes. Building codes were adopted in 2022.

While Bennett County does not have adopted building codes it is acknowledged that building codes play an important role in mitigating many hazards. For this reason, consideration to adopt building codes was added as a mitigation item under several mentioned hazards. However, due to the lack of staffing availability and time, and potential political pushback, the County may not find benefit in adopting building codes. All adopting jurisdictions have room to expand and improve on their capabilities through the potential adoption of various planning mechanisms such as zoning or adoption of a comprehensive plan. However, since Bennett County and Martin have continued to see decreases in population and development, this is unlikely.

However, it is acknowledged that proper planning can help to reduce the impact of natural hazards on people, structures, and infrastructure. [Table 5.1 – Table 5.2](#) is used to help demonstrate both Bennett County and City of Martin's capabilities.

<sup>87</sup> *State of South Dakota Hazard Mitigation Plan*. 2019

<b>Mitigation Capabilities - Plans</b>		
<b>Plans</b>	<b>Bennett County</b>	<b>Martin</b>
Comprehensive Plan	No	No
Community Wildfire Protection Plan	No	No
Capital Improvements Plan (Annual Update/Review)	No	No
Community Operation Plan (updated as needed)	No	No
Environmental Review Plan – NEPA	No	No
Local Emergency Operations Plan (Annual Review)	Yes	No
Stormwater Management Plan	No	No
Transportation Plan	No	No

**Table 5.1.** Mitigation Capabilities Plans.

<b>Mitigation Capabilities – Land Use and Ordinances</b>		
<b>Land Use Planning and Ordinances</b>	<b>Bennett County</b>	<b>Martin</b>
Acquisition of land for open space/public use	No	No
Building Code	No	Yes
Flood Insurance Rate Maps	No	No
Floodplain Ordinance	No	No
Substantial Damage Plan	No	No
Natural Hazard Specific Ordinance	No	No
Subdivision Ordinance	No	No
Zoning Ordinance	No	No

**Table 5.2.** Mitigation Capabilities Land Use and Ordinances.

<b>Mitigation Capabilities - Administrative</b>		
<b>Administrative</b>	<b>Bennett County</b>	<b>Martin</b>
Chief Building Official	No	No
Civil Engineer	No	No
Community Planner	No	No
Emergency Manager	Yes	Yes*
Floodplain Administrator	No	No
GIS Coordinator (Through Assessor’s Office)	Yes	No
Planning Commission	No	No
Membership with BHCLG	Yes	Yes*

**Table 5.3.** Mitigation Capabilities Administration. Note:\*Covered under the County

<b>Mitigation Capabilities - Technical</b>		
<b>Technical</b>	<b>Bennett County</b>	<b>Martin</b>
Grant Writing	Yes	Yes
Hazard Data & Info	Yes	Yes
GIS Analysis	Yes	Yes
Mutual Aid Agreements	Yes	Yes

**Table 5.4.** Mitigation Capabilities Technical. Some services such as GIS analysis, hazard data and info, and some grant programs can be provided through the County’s membership with the Black Hills Council of Local Governments. The County’s membership also provides similar services to the City of Martin.

Mitigation Capabilities - Fundings		
Funding Resources	Bennett County	Martin
Capital Improvements Project Funding	Yes	Yes
Community Development Block Grant	Yes	No
Federal (Non-FEMA Funding)	Yes	No
Water Fees	No	Yes
Sewer Fees	No	Yes
Gas/Electric Fees	Yes	No
Impact Fees for New Development	No	No
State Funding Programs	Yes	No
Stormwater Utility Fee	No	No

**Table 5.5.** Mitigation Capabilities Funding.

Mitigation Capabilities – Education/Outreach		
Education and Outreach	Bennett County	Martin
Community Newsletters	No	No
Hazard Awareness Campaigns	Yes	No
Local News	Yes	No
Organization Rep. to Interact with Vulnerable Pop.	Yes	No
Social Media	Yes	No
Active 911 Alerting	Yes	No
Jurisdictional Website	No	Yes

**Table 5.6.** Mitigation Capabilities Outreach/Education.

## Dam Failure

### Goal 1: Reduce impact of dam failure in Bennett County

<b>Project 1:</b>	Continue to review inspection reports for High-Risk Dams
<b>Responsible Entity</b>	County Emergency Manager
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing –Inspections occur every five years
<b>Oversight</b>	County Emergency Manager
<b>Notes:</b>	The County Emergency Manager is provided a copy of the High-Risk Dam reports for federally owned dams.

<b>Project 2:</b>	Discourage development in downstream hazard of High-Risk Dams
<b>Responsible Entity</b>	County Emergency Manager/County Commission
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Bennett County Commission
<b>Notes</b>	It is acknowledged that Bennett County does not have zoning or the ability to regulate land uses, however should the county adopt zoning, this project should be taken into consideration at that time.

<b>Project 3:</b>	Provide education to the public about the risk dam failure
<b>Responsible Entity</b>	County Emergency Manager, City of Martin City Council, and Bennett County Commission
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager
<b>Notes:</b>	Dam breaches can impact not only homes but also public infrastructure such as major roadways. Many High-Risk dams are used for recreational purposes so anyone could be impacted, not just homeowners downstream.

**Drought**

**Goal 1: Reduce impact of drought in Bennett County**

<b>Project 1:</b>	Continue monitoring drought conditions throughout Bennett County
<b>Responsible Entity</b>	County Emergency Manager
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Monitoring conditions can keep County/City informed should they need to inform the public of water usage, as well as higher risk for wildfire. The City of Martin is the only jurisdiction with municipal water.

<b>Project 2:</b>	Prepare a public information packet or share information to increase awareness of drought hazards and measures that may be taken to reduce health and safety risks
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years and an ongoing update to information as needed
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	The County does not have a website but is considering creating a Facebook page that could be used to share information. The City has a webpage that could be used also. Printed materials should also be encouraged for those who may not have access to internet services.

<b>Project 3:</b>	Continue to institute watering restrictions during periods of drought
<b>Responsible Entity</b>	City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	The City of Martin is the only jurisdiction with municipal water. The rest of the County receives their water from individual wells.

## Extreme Temperatures

### Goal 1: Reduce impact of Extreme Temperatures in Bennett County

<b>Project 1:</b>	Provide public information and educational materials on personal safety during extreme temperatures.
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Special consideration should be given to vulnerable populations. Including different methods of providing information to these populations, such as churches, social media, senior centers, schools, etc.

## Flooding

### Goal 1: Reduce impact of flooding in Bennett County

<b>Project 1:</b>	Provide education to the public about the risk of flooding.
<b>Responsible Entity</b>	County Emergency Manager, City of Martin
<b>Priority</b>	Low
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	While neither the City nor the County participate in NFIP to help identify repetitive loss, areas of known issues can be addressed by reaching out to landowners in areas of concern. This could help to benefit homeowners who have experienced past damages, especially low-income individuals.

<b>Project 2:</b>	Create a map to help identify areas which have reoccurring flooding issues due to rapid snow melt in the county.
<b>Responsible Entity</b>	Bennett County Commission
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	Bennett County Commission
<b>Notes</b>	BHCLG could potentially assist in creation of map with assistance from the county.

<b>Project 3:</b>	Identify high traffic areas impacted by flooding issues due to rapid snow melt and determine alternate routes if necessary.
<b>Responsible Entity</b>	Bennett County Commission
<b>Priority</b>	Medium
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager
<b>Notes</b>	N/A



<b>Project 4:</b>	Conduct a study to determine the need for potential grade raise, additional culverts, or upsized culverts to help address flooding due to rapid snow melt.
<b>Responsible Entity</b>	Bennett County Commission
<b>Priority</b>	High
<b>Funding Source</b>	FEMA - HMGP
<b>Timeframe</b>	5 years
<b>Oversight</b>	Bennett County Commission, Bennett County Road Superintendent
<b>Notes</b>	Bennett County is extremely rural. Additionally, the study would most likely be very costly to the county and require funding with 100% grant to be feasible.

<b>Project 5:</b>	Maintain detailed records of road and property damage from flooding
<b>Responsible Entity</b>	Bennett County
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager
<b>Notes</b>	Include dates of occurrence, photos, and repair costs for future mitigation activities.

<b>Project 6:</b>	Conduct a drainage study to assess flooding areas in Martin
<b>Responsible Entity</b>	City of Martin
<b>Priority</b>	Medium
<b>Funding Source</b>	FEMA – BRIC, HMGP
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Reported drainage issues in the northwest corner of the city. A drainage study can help identify possible solutions to mitigate these issues. However, it is acknowledged that possible solutions would involve cooperation with private landowners and the City. It is acknowledged that a drainage study could be costly, and the City may be limited in funding this project. In order to fund this project, it would require funding with 100% grant.

**Geological**

**Goal 1: Reduce impact of Geological hazards in Bennett County**

<b>Project 1:</b>	Provide public information and education materials on the risk of various geological hazards, earthquakes, subsidence, landslides, and expansive soils.
<b>Responsible Entity</b>	Bennett County Commission and City of Martin
<b>Priority</b>	Med
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Check with the State OEM for materials that can be used for education. The County does not have a website but is considering creating a Facebook page that could be used to share information. The City has a webpage that could be used also. Printed materials should also be encouraged for those who may not have access to internet services. Also consider different locations where materials can be placed to reach vulnerable populations, such as churches.

## High/Severe Wind

### Goal 1: Reduce impact of High/Severe Wind in Bennet County

<b>Project 1:</b>	Adoption and enforcement of building codes
<b>Responsible Entity</b>	Bennett County Commission and Martin City Council
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time – potentially need for code enforcer
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Commission President and City of Martin Mayor

<b>Project 2:</b>	Adopting mobile home ordinance to ensure HUD wind standards on newly placed mobile homes.
<b>Responsible Entity</b>	Bennett County Commission
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Commission President
<b>Notes</b>	The City of Martin is already doing this but the county can adopt ordinances as well.

<b>Project 3:</b>	Provide public information and education materials on personal safety
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	Med
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager and Martin City Council
<b>Notes</b>	Check with the State OEM for materials that can be used for education. The County does not have a website but is considering creating a Facebook page that could be used to share information. The City has a webpage that could be used also. Printed materials should also be encouraged for those who may not have access to internet services. Also consider different locations where materials can be placed to reach vulnerable populations, such as churches.

<b>Project 4:</b>	Continue to encourage the removal of dilapidated structures throughout town
<b>Responsible Entity</b>	City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Martin City Council
<b>Notes</b>	The City currently encourages the removal of dilapidated structures.

<b>Project 5:</b>	Continue to support the burial of powerlines throughout the county.
<b>Responsible Entity</b>	Lacreek Electric
<b>Priority</b>	High
<b>Funding Source</b>	FEMA – BRIC, FEMA - HMGP
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Lacreek Electric, County Emergency Manager

<b>Notes</b>	Power companies have continued to work to bury power lines throughout the county as funding becomes available. This is one of the more efficient ways to address power outage issues
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<b>Project 6:</b>	Equip critical facilities with generators
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	FEMA -BRIC, FEMA – HMGP
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Backup power to critical facilities can ensure services are still available to those that need them. While powerline burial is a more effective mitigation action, it can be very costly and is often an action taken by private companies. Also encourage the public to routinely turn on their personal generators.

<b>Project 7:</b>	Continue to implement the maintenance plan for City and County owned generators, ensuring it is followed
<b>Responsible Entity</b>	Bennett County and City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – no cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager, Bennett County, City of Martin
<b>Notes</b>	Also encourage the public to routinely turn on their personal generators.

**Summer Storm**

**Goal 1: Mitigate the effects of Summer Storm conditions upon people and property**

<b>Project 1:</b>	Continue to support the burial of powerlines throughout the county.
<b>Responsible Entity</b>	Lacreek Electric
<b>Priority</b>	High
<b>Funding Source</b>	FEMA – BRIC, FEMA - HMGP
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Lacreek Electric, County Emergency Manager
<b>Notes</b>	Power companies have continued to work to bury power lines throughout the county as funding becomes available. This is one of the more efficient ways to address power outage issues.

<b>Project 2:</b>	Equip critical facilities with generators
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	FEMA -BRIC, FEMA – HMGP
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Backup power to critical facilities can ensure services are still available to those that need them. While powerline burial is a more effective mitigation action, it can be very costly and is often an action taken by private companies. Also encourage the public to routinely turn on their personal generators.

<b>Project 3:</b>	Provide public information and education materials on personal safety
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	Med

<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager, City of Martin Mayor
<b>Notes</b>	Check with the State OEM for materials that can be used for education. The County does not have a website but is considering creating a Facebook page that could be used to share information. The City has a webpage that could be used also. Printed materials should also be encouraged for those who may not have access to internet services. Also consider different locations where materials can be placed to reach vulnerable populations, such as churches.

**Tornados**

**Goal 1: Reduce the impact of Tornados in Bennett County.**

<b>Project 1:</b>	Continue to monitor the need for emergency warning systems throughout the county, especially in areas of new development.
<b>Responsible Entity</b>	County Emergency Manager, City of Martin, Bennett County Commission
<b>Priority</b>	High
<b>Funding Source</b>	County, towns budgeting (FEMA no longer funds Sirens)
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager, City of Martin
<b>Notes</b>	Currently five sirens throughout Bennett County.

<b>Project 2:</b>	Continue to utilize other community warning system products, such as IPAWS
<b>Responsible Entity</b>	County Emergency Manager, City of Martin, Bennett County Commission
<b>Priority</b>	High
<b>Funding Source</b>	County, City
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager, City of Martin Mayor, Bennett County Commission President
<b>Notes</b>	N/A

<b>Project 3:</b>	Retrofit existing building or construct a saferoom to be used as shelter against tornados
<b>Responsible Entity</b>	Bennett County Commission
<b>Priority</b>	Med
<b>Funding Source</b>	South Dakota DANR, FEMA – BRIC, FEMA HGMP
<b>Timeframe</b>	5-10 years
<b>Oversight</b>	County Emergency Manager, City of Martin, County Commission
<b>Notes</b>	There is no designated tornado shelter in Bennett County. It was a concern brought up by residents, especially for vulnerable populations with no means of shelter. A project would currently not pass a BCA with the cost verse the small population. The community is encouraged to think of other ways to create a shelter such a building with a dual purpose or retrofitting an existing building.

<b>Project 4:</b>	Provide public information and education materials on personal safety
<b>Responsible Entity</b>	County Emergency Manager, City of Martin
<b>Priority</b>	Med

<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager, City of Martin Mayor
<b>Notes</b>	Check with the State OEM for materials that can be used for education The County does not have a website but is considering creating a Facebook page that could be used to share information. The City has a webpage that could be used also. Printed materials should also be encouraged for those who may not have access to internet services. Also consider different locations where materials can be placed to reach vulnerable populations, such as churches.

**Wildfire**

**Goal 1: Reduce the impact of Wildfire in Bennett County.**

<b>Project 1:</b>	Provide public information on FireWise practices
<b>Responsible Entity</b>	County Emergency Manager, City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	BLM Community Wildfire Assistance, USFS Community Wildfire Defense Program,
<b>Timeframe</b>	Ongoing – Updated every 5 years
<b>Oversight</b>	County Emergency Manager, Fire Chiefs
<b>Notes</b>	Firewise materials can be obtained from the State OEM or BLM. Work to get FireWise information to homeowners. Special consideration to vulnerable populations should be given, such as utilizing various ways and places to reach out to.

<b>Project 2:</b>	Continue to encourage the removal of dilapidated structures throughout town
<b>Responsible Entity</b>	City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Martin City Council
<b>Notes</b>	The City of Martin currently encourages the removal of dilapidated structures,

<b>Project 3:</b>	Continue to encourage volunteer participation in emergency first responder programs
<b>Responsible Entity</b>	County Emergency Manager, Local Fire Departments, City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	NA – no cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager, Martin City Mayor
<b>Notes</b>	Retention of volunteers and recruitment has continued to decline. The County and City should continue to encourage citizens to volunteer.

<b>Project 4:</b>	Evaluate areas that would benefit from wildland fire mitigation activities
<b>Responsible Entity</b>	Bennett County, Local Fire Departments
<b>Priority</b>	High
<b>Funding Source</b>	NA – no cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	County Emergency Manager, Bennett County
<b>Notes</b>	Examples: building material replacements and fuel reduction activities

<b>Project 5:</b>	Continue communications between departments and agencies with SD OEM, BLM, USFS, Local Fire Departments, SD Wildland Fire, SD Forestry and Conservation District.
<b>Responsible Entity</b>	Bennett County Emergency Manager, State, BLM, USFS, VFD's
<b>Priority</b>	High
<b>Funding Source</b>	NA – no cost aside from staff time
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Bennett County Emergency Manager, Local VFD's
<b>Notes:</b>	Share information on equipment, frequencies, mutual aid, etc...

<b>Project 6:</b>	Continue collaboration efforts between departments and agencies with SD OEM, BLM, USFS, Local Fire Departments, SD Wildland Fire, SD Forestry and Conservation District, and private landowners for fuels reduction.
<b>Responsible Entity</b>	Bennett County Emergency Manager, State, BLM, USFS, Local VFDs
<b>Priority</b>	High
<b>Funding Source</b>	USFS – PODS program, USFS fuels reduction, BLM fuels reduction
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager
<b>Notes</b>	

### Winter Storm

#### Goal 1: Reduce the impact of Winter Storms throughout Bennett County

<b>Project 1:</b>	Continue to support the burial of powerlines throughout the county.
<b>Responsible Entity</b>	Lacreek Electric
<b>Priority</b>	High
<b>Funding Source</b>	FEMA – BRIC, FEMA - HMGP
<b>Timeframe</b>	Ongoing
<b>Oversight</b>	Lacreek Electric and County Emergency Manager
<b>Notes</b>	Power companies have continued to work to bury power lines throughout the county as funding becomes available. This is one of the more efficient ways to address power outage issues

<b>Project 2:</b>	Equip critical facilities with generators
<b>Responsible Entity</b>	County Emergency Manager and City of Martin
<b>Priority</b>	High
<b>Funding Source</b>	FEMA -BRIC, FEMA – HMGP
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager and City of Martin
<b>Notes</b>	Backup power to critical facilities can ensure services are still available to those that need them. While powerline burial is a more effective mitigation action, it can be very costly and is often an action taken by private companies. Also encourage the public to routinely turn on their personal generators.

<b>Project 3:</b>	Adopt and enforcement of building codes
<b>Responsible Entity</b>	Bennett County Commission and Martin City Council
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time – potential need for code enforcer
<b>Timeframe</b>	1-5 years



<b>Oversight</b>	County Commission President and City of Martin Mayor
<b>Notes</b>	The City of Martin has building codes. Bennett County does not have building codes and currently does not have the capability for the enforcement of building codes.

<b>Project 4:</b>	Continue to coordinate emergency snow routes with the Oglala Sioux Tribe, State, County, City, and VFD's to ensure that all emergency personnel can report to the EOC in the event of a winter storm.
<b>Responsible Entity</b>	County Emergency Manager and Bennett County
<b>Priority</b>	High
<b>Funding Source</b>	NA – No cost aside from staff time – potential need for code enforcer
<b>Timeframe</b>	1-5 years
<b>Oversight</b>	County Emergency Manager
<b>Notes</b>	The City of Martin has building codes. Bennett County does not have building codes and currently does not have the capability for the enforcement of building codes.

### PRIORITIZATION OF MITIGATION ACTIVITIES

*Requirement 201.6(c)(3)(iii)... Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by each jurisdiction?*

**C5-a.** *The plan must describe the criteria used for prioritizing the implementation of the actions.*

The County and the jurisdictions had specific goals in mind which they were trying to achieve to mitigate risks. Those communities prioritized projects based on the number of people who would benefit from the project, future weather patterns, underserved and vulnerable populations, and the estimated or approximate total project cost. Some projects may be too large of an undertaking and therefore those projects were moved down the priority list. The Plan participants discussed projects in regard to benefit-cost analysis that would be required at the time of application and the Plan author advised specific details of each project that could be analyzed in closer detail during the application period. Consideration was also given to projects that could either impact or provide benefit to vulnerable or underserved populations.

### NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

*Requirement 201.6(d)(3)(ii) ... Does the plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate?*

**C2-a.** *The plan must describe participation in the NFIP for each participant, as applicable, in accordance with NFIP regulatory requirements.*

Neither Bennett County or the City of Martin participate in the National Flood Insurance Program.

Bennett County NFIP Participation	
Non-participants	
Bennett County	
City of Martin	

**Table 5.1** NFIP non-participants for the County and Jurisdictions.

### IMPLEMENTATION OF MITIGATION ACTIONS

*Requirement 201.6(c)(3)(iii)... Does the plan contain an action plan that describes how the actions identified will be prioritized, implemented, and administered by each jurisdiction?*

- C5-a.** *The plan must identify who is responsible for administering each action, along with the action's potential funding sources and expected time frames for completion.*
- C5-b.** *The action plan must identify who is responsible for administering each action, along with the action's potential funding source and expected time frames for completion.*

Upon adoption of the updated Plan, each jurisdiction will become responsible for implementing its own mitigation actions. Those who do not participate or adopt the Plan will be required to coordinate all mitigation actions with the County. The planning required for implementation is the sole responsibility of the local jurisdiction that has participated in the Plan update. The County and city have limited staff availability. The County has an emergency manager but does not have planning staff or planning commission. The City of Martin also has limited staff capacity, with only a full-time finance officer and city foreman. It is anticipated someone from the town board would volunteer or be appointed to implement mitigation actions. Bennett County is a member of the regional planning district, Black Hills Council of Local Governments. This entity can assist the County and city within by providing planning assistance such as drafting ordinances, zoning, and comprehensive plan updates. This organization can also assist with applications for potential funding and grant programs which can be used to help complete some mitigation actions presented. Some municipalities indicated that they do not have the financial capability to move forward with projects identified in the Plan at this time, however, they will consider applying for funds through the State and federal agencies once such funds become available. If and when the municipalities are able to secure funding for the mitigation projects, they will move forward with the projects identified.

## **VI. PLAN MAINTENANCE PROCESS**

### **MONITORING, EVALUATING, AND UPDATING THE PLAN**

**Requirement 201.6(c)(4)(i)...** *Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a five-year cycle)?*

- D2-a.** *The plan must identify how, when and by whom the plan will be tracked for implementation over its five-year cycle*
- D2-b.** *The plan must identify how, when and by whom the plan will be assessed for effectiveness at achieving its stated purpose and goals*
- D2-c.** *The plan must identify how, when and by whom the plan will be reviewed and revised at least once every five years.*

Bennett County and the participating local jurisdiction thereof will incorporate the findings and projects of the Plan in all planning areas as appropriate. Periodic monitoring and reporting of the Plan are required to ensure the goals and objectives for the *Bennett County Natural Hazard Mitigation Plan* are kept current and local mitigation efforts are being carried out.

During the process of implementing mitigation strategies, Bennett County, or communities within, may experience lack of funding, budget cuts, staff turnover, and/or a general failure to implement projects. These scenarios are not in themselves a reason to discontinue and fail to update the Natural Hazard Mitigation Plan. A good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for appropriate changes to be made.

## Annual Reporting Procedures

The Plan shall be reviewed annually, as required by the County's Emergency Manager, or as the situation dictates, such as following a disaster declaration. The Bennett County Emergency Manager will review the Plan annually in July and ensure the following:

1. The County elected body will receive an annual report and/or presentation on the implementation status of the Plan;
2. The report will include an evaluation of the effectiveness and appropriateness of the mitigation actions proposed in the Plan; and
3. The report will recommend, as appropriate, any required changes or amendments to the Plan.
4. The report will include budget needs for any upcoming projects that require local match.

## Five Year Plan Review

Every five years the Plan will be reviewed, and a complete update will be initiated. All information in the Plan will be evaluated for completeness and accuracy based on new information or data sources. New property development activities will be added to the Plan and evaluated for impacts. New or improved sources of hazard related data will also be included.

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

The goals, objectives, and mitigation strategies will be readdressed and amended as necessary based on new information, additional experience, and the implementation progress of the Plan. The approach to this Plan update effort will be essentially the same as the one used for the original Plan development.

The Bennett County Emergency Manager will meet with the Bennett County Commission and Plan participants for review and approval prior to final submission of the updated Plan.

## Plan Amendments

Plan amendments will be considered by the Bennett County Emergency Manager, during the Plan's annual review, to take place in July. All affected local jurisdictions (town and county) will be required to hold a public hearing and adopt the recommended amendment by resolution prior to considerations by the steering committee.

## INCORPORATION INTO EXISTING PLANNING MECHANISMS

**Requirement 201.6(c)(4)(ii).** *Does the plan describe a process by which each community will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvements plans, when appropriate?*

- D3-a.** *The plan must describe the community's process to integrate the plan's data, information, and hazard mitigation goals and actions into other planning mechanisms.*
- D3-b.** *The plan must identify the local planning mechanisms where hazard mitigation information/actions may be integrated. The identified list of*

*planning mechanisms must be applicable to the plan participant(s) and not contradict the identified capabilities.*

**D3-c.** *A multi-jurisdictional plan must describe each participant's individual process for integrating information from the mitigation strategy into their identified planning mechanisms.*

The County and the City will consider the mitigation requirements, goals, actions, and projects in the event that either jurisdiction adopts planning documents such as comprehensive plans or zoning ordinances. However, neither Bennett County nor the City of Martin have planning capabilities to do so. Mitigation projects will be considered and prioritized in conjunction with non-mitigation projects, such as water and wastewater infrastructure improvements, and new constructions of schools, libraries, parks, roads, etc. Additionally, municipalities are required by State law to prepare budgets for the upcoming year and typically consider any expenditure for the upcoming year during that time. South Dakota Codified Law 9-21-2 provides that:

The governing body of each municipality shall, no later than its first regular meeting in September of each year or within ten days thereafter, introduce the annual appropriation ordinance for the ensuing fiscal year, in which it shall appropriate the sums of money necessary to meet all lawful expenses and liabilities of the municipality....an annual budget for these funds shall be developed and published no later than December thirty-first of each year.

### **Potential Funding Sources**

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. The Potential Funding Sources section was included so the local jurisdictions can work towards securing funding for the projects. Inevitably, due to the small tax base and small population for some of the participating jurisdictions, they may not have the ability to generate enough revenue to support anything beyond the basic needs of the community. This is why many of the mitigation actions are focused on planning mechanisms, such as enforcing ordinances, that do not cost anything.

Bennett County and its jurisdictions will continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. Primary Federal and State grant programs have been identified and briefly discussed, along with local and non-governmental funding sources, as a resource for the local jurisdiction

#### **Federal**

The following federal grant programs have been identified as funding sources which specifically target hazard mitigation projects:

<b>Title: Building Resilient Infrastructure and Communities Agency: Federal Emergency Management Agency</b>
Through the Disaster Mitigation Act of 2000, Congress approved the creation of a national program to provide a funding mechanism that is not dependent on a Presidential Disaster Declaration. The Building Resilient Infrastructure and Communities (BRIC) Program provides funding to states and communities for cost-effective hazard mitigation activities that complement a comprehensive mitigation program and reduce injuries, loss of life, and damage and destruction of property.

The funding is based upon a 75% Federal share and 25% non-Federal share. The non-Federal match can be fully in-kind or cash, or a combination thereof. Special accommodations will be made for “small and impoverished communities”, who will be eligible for 90% Federal share/10% non-Federal.

FEMA provides BRIC grants to states that, in turn, can provide sub-grants to local governments for accomplishing the following eligible mitigation activities: State and local hazard mitigation planning, technical assistance (e.g. risk assessments, project development), mitigation projects, acquisition or relocation of vulnerable properties, Hazard retrofits, Minor structural hazard control or protection projects, and community outreach and education (up to 10% of State allocation).

**Title: Flood Mitigation Assistance Program**  
**Agency: Federal Emergency Management Agency**

FEMA’s Flood Mitigation Assistance program (FMA) provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 USC 4101) with the goal of reducing or eliminating claims under the NFIP.

FMA is a Natural Hazard grant program and is available to states on an annual basis. This funding is available for mitigation planning and implementation of mitigation measures only and is based upon a 75% Federal share/25% non-Federal share. States administer the FMA program and are responsible for selecting projects for funding from the applications submitted by all communities within the state. The state then forwards selected applications to FEMA for an eligibility determination. Although individuals cannot apply directly for FMA funds, their local government may submit an application on their behalf.

**Title: Hazard Mitigation Grant Program**  
**Agency: Federal Emergency Management Agency**

The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The HMGP assists states and local communities in implementing long-term mitigation measures following a Presidential disaster declaration.

To meet these objectives, FEMA can fund up to 75% of the eligible costs of each project. The state or local cost-share match does not need to be cash; in-kind services or materials may also be used. With the passage of the Hazard Mitigation and Relocation Assistance Act of 1993, federal funding under the HMGP is now based on 15% of the federal funds spent on the Public and Individual Assistance programs (minus administrative expenses) for each disaster.

The HMGP can be used to fund projects to protect either public or private property, so long as the projects in question fit within the state and local government’s overall mitigation strategy for the disaster area and comply with program guidelines. Examples of projects that may be funded include the acquisition or relocation of structures from hazard-prone areas, the retrofitting of existing structures to protect them from future damages, and the development of state or local standards designed to protect buildings from future damages.

Eligibility for funding under the HMGP is limited to state and local governments, certain private non-profit organizations or institutions that serve a public function, Native-American tribes, and authorized tribal organizations. These organizations must apply for HMPG project funding on

behalf of their citizens. In turn, applicants must work through their state since the state is responsible for setting priorities for funding and administering the program.

**Title: Public Assistance (Infrastructure) Program, Section 406**  
**Agency: Federal Emergency Management Agency**

FEMA's Public Assistance Program, through Section 406 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, provides funding to local governments following a Presidential Disaster Declaration for mitigation measures in conjunction with the repair of damaged public facilities and infrastructure. The mitigation measures must be related to eligible disaster related damages and must directly reduce the potential for future, similar disaster damages to the eligible facility. These opportunities usually present themselves during the repair or replacement efforts.

Proposed projects must be approved by FEMA prior to funding. They will be evaluated for cost effectiveness, technical feasibility, and compliance with statutory, regulatory, and executive order requirements. In addition, the evaluation must ensure that the mitigation measures do not negatively impact a facility's operation or risk from another hazard.

Public facilities are operated by state and local governments, Native-American tribes or authorized tribal organizations and include:

Roads, Bridges & Culverts	Water, Power & Sanitary
Draining & Irrigation Channels	Airports & Parks
Schools, City Halls & Other Buildings	

Private nonprofit organizations are groups that own or operate facilities that provide services otherwise performed by a government agency and include, but are not limited to the following:

Universities and Other Schools	Power Cooperatives & Utilities
Custodial Care & Retirement Facilities	Hospitals & Clinics
Volunteer Fire & Ambulance	Museums & Community Centers

**Title: SBA Disaster Assistance Program**  
**Agency: US Small Business Administration**

The SBA Disaster Assistance Program provides low-interest loans to businesses following a Presidential disaster declaration. The loans target businesses to repair or replace uninsured disaster damages to property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Businesses of any size are eligible, along with non-profit organizations' loans which can be utilized by their recipients to incorporate mitigation techniques into the repair and restoration of their business.

**Title: Community Development Block Grants**  
**Agency: US Department of Housing and Urban Development**

The Community Development Block Grant (CDBG) program provides grants to local governments for community and economic development projects that primarily benefit low- and moderate-income people. The CDBG program also provides grants for post-disaster hazard mitigation and recovery following a Presidential Disaster Declaration. Funds can be used for activities such as acquisition, rehabilitation or reconstruction of damaged properties and facilities and for the redevelopment of disaster areas.

**State:**

**Title: Consolidated Water Facilities Construction Program**



**Agency: Department of Agriculture and Natural Resources (DANR)**

The CWFCP program provides grants to local governments for drinking water and wastewater infrastructure projects that provide safe drinking water and sanitary sewer service to residents. Grants up to \$2,000,000 are awarded to eligible applicants. Cities, Counties, Water Districts, Sanitary Districts, and Rural Water Districts are eligible to apply. CWFCP funds are typically awarded at a percentage of total project cost and are often paired with loans from DANR's SRF Loan program.

**Title: State Revolving Loan Fund (DWSRF and CWSRF)  
Agency: Department of Agriculture and Natural Resources (DANR)**

The SRF program provides low interest loans with extended terms to local governments for drinking water and wastewater infrastructure projects that include rehabilitation or replacement of existing infrastructure. Loans are awarded on ability to debt service and are sometimes given in the form of principle forgiveness. Cities, Counties, Water Districts, Sanitary Districts, and Rural Water Districts are eligible to apply. SRF funds are awarded quarterly.

**Local**

Local governments depend upon local property taxes as their primary source of revenue. These taxes are typically used to finance services that must be available and delivered on a routine and regular basis to the general public. If local budgets allow, these funds are used to match Federal or State grant programs when required for large-scale projects.

**Non-Governmental**

Another potential source of revenue for implementing local mitigation projects are monetary contributions from non-governmental organizations, such as private sector companies, churches, charities, community relief funds, the Red Cross, hospitals, Land Trusts, and other non-profit organizations.

**CONTINUED PUBLIC PARTICIPATION/INVOLVEMENT**

*Requirement 201.6(c)(4)(iii)... Is there discussion of how each community will continue public participation in the plan maintenance process?*

**D1-a.** *The plan must describe how the participant(s) will continue to seek public participation after the plan has been approved and during the plan's implementation, monitoring, and evaluation.*

During interim periods between the five-year update, efforts will be continued to encourage and facilitate public involvement and input. The Plan will be available for public view and comment at the Bennett County Courthouse and the Black Hills Council of Local Governments office. Comments will be received in writing, by letter or by e-mail.

All ongoing workshops and training courses will be open to the public and appropriately advertised. Ongoing press releases and interviews will help disseminate information to the general public and encourage participation.

As implementation of the mitigation strategies continues in each local jurisdiction, the primary means of public involvement will be the jurisdiction's own public comment and hearing process. State law, as it applies to municipalities and counties, requires this as a minimum for many of the proposed implementation measures. Effort will be made to encourage cities, towns, and counties to go beyond the minimum required to receive public input and engage stakeholders.

## SOURCES