Marshall County
South Dakota

NATURAL HAZARD MITIGATION PLAN
EXPIRES:

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I. INTRODUCTION

CHANGES/REVISIONS TO INTRODUCTION: The 2014 Plan Update included the Introduction in the Planning Process Section. This update includes the Introduction as its own section. The 2014 Plan Update had a separate section for the description and background information on Marshall County whereas this plan update includes that information in the Introduction section.

INTRODUCTION

Marshall County is vulnerable to natural, technological, and man-made hazards that have the possibility of causing serious threat to the health, welfare, and security of our citizens. The cost of response and recovery, in terms of potential loss of life, property, and infrastructure from natural hazards can be reduced when attention is turned to mitigating the impacts of natural hazards before they occur.

Mitigation planning is a process which identifies areas of vulnerability and potential risk in relationship to known natural hazards that occur in the planning area, followed by the creation of a strategy to reduce the likelihood of loss of life, loss or damage to property and infrastructure caused by natural hazards. With increased attention to mitigating natural hazards, communities can reduce threats to existing developments and prevent new risks by limiting and/or regulating future development. Many mitigation actions can be implemented at minimal or no cost. Improved focus on land use planning and smart design is one of the most effective mitigation tools for City and County governments.

Section headings and subheadings follow the organization of the Local Mitigation Plan Review Tool. Several appendices accompany this plan. They contain technical data, meeting minutes, and other relevant information that compliments the content of this plan.

This plan is not an emergency response or emergency management plan. Certainly, the plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. However, the focus of this plan is to support better decision making directed toward avoidance of future risks and the implementation of activities or projects that will eliminate or reduce the risk for those that may already have exposure to a natural hazard threat.

PURPOSE OF THE PRE-DISASTER MITIGATION PLAN

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 that local governments, as a condition of receiving federal disaster mitigation funds, have a natural hazard mitigation plan in place. 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.

The purpose of this plan is to meet the natural hazard mitigation planning needs for Marshall County and participating entities. Consistent with the Federal Emergency Management

Agency's guidelines, this plan will review all possible activities related to disasters to reach efficient solutions, link hazard management policies to specific activities, educate and facilitate communication with the public, build public and political support for mitigation activities, and develop implementation and planning requirements for future hazard mitigation projects.

PURPOSE

The purpose of this plan is to fulfill federal, state, and local hazard mitigation planning responsibilities; to promote mitigation measures; implement short/long range strategies that minimize suffering, loss of life, and damage to property resulting from hazardous or potentially hazardous conditions to which citizens and institutions within the county are exposed; and to eliminate or minimize conditions which would have an undesirable impact on the citizens, economy, environment, and the well-being of the County. This plan will aid city, township, and county agencies and officials in enhancing public awareness to the threat hazards have on property and life, and what can be done to help prevent or reduce the vulnerability to risks of each Marshall County jurisdiction.

PLAN USE

First, the plan should be used to help local elected and appointed officials plan, design and implement programs and projects that will help reduce their community's vulnerability to natural hazards. Second, the plan should be used to facilitate inter-jurisdictional coordination and collaboration related to natural hazard mitigation planning and implementation. Finally, when adopted, the plan will bring communities in compliance with the Disaster Mitigation Act of 2000.

SCOPE

1. Provide opportunities for public input and encourage participation and involvement regarding the mitigation plan.
2. Identify hazards and vulnerabilities within the county and local jurisdictions.
3. Combine risk assessments with public and emergency management ideas.
4. Develop goals based on the identified hazards and risks.
5. Review existing mitigation measures for gaps and establish projects to sufficiently fulfill the goals.
6. Prioritize and evaluate each strategy/objective.
7. Review other plans for cohesion and incorporation with mitigation planning.
8. Establish guidelines for updating and monitoring the plan.
9. Present the plan to Marshall County and the participating communities within the county for adoption.

LOCAL GOALS

These ideas form the basis for the development of the mitigation plan and are shown from highest priority, at the top of the list, to those of lesser importance nearer the bottom.

- Protection of life before, during, and after the occurrence of a disaster;
- Protection of emergency response capabilities (critical infrastructure);
- Establish and maintain communication and warning systems;
- Protection of critical facilities and public infrastructure (built environment);
- Government continuity;

- Protection of developed property, homes and businesses, industry, education opportunities and the cultural fabric of a community, by combining hazard loss reduction with the community's environmental, social, and economic needs; and
- Protection of natural resources and the environment, when considering mitigation measures.

LONG-TERM GOALS

- 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 finding 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 or identified hazards;
- Accomplish mitigation strategies in such a way that negative environmental impacts are minimized;
- Provide a basis for funding of projects outlined as hazard mitigation strategies; and
- 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 has the effect of reducing, limiting, or preventing vulnerability of people, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures, which can be used to eliminate or minimize the risk to life and property, fall into three categories. First are those that keep the hazard away from people, property, and structures. Second are those that keep people, property, and structures away from the hazard. Third are those that do not address the hazard at all but rather reduce the impact of the hazard on the victims such as insurance. This mitigation plan has strategies that fall into all three categories.

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 improvements 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 of a community. Once a capital facility is in place, very few opportunities will present themselves over the useful life of the facility to correct any errors in location or construction with respect to hazard vulnerability. It is for these reasons that zoning and other ordinances, which manage development in high vulnerability areas, and building codes, which ensure that new buildings and infrastructure are built to avoid or withstand the damaging forces of hazards, are often the most useful mitigation approaches local governments can implement.

Previously, mitigation measures have been the most neglected programs within emergency management. 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, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management. Hazard mitigation is the key to eliminating long-term risk to people and property in South Dakota from hazards and their effects. Preparedness for all hazards includes: response and recovery plans, training, development, management of resources, and mitigation of each jurisdictional hazard.

This plan evaluates the impacts, risks and vulnerabilities of natural hazards within the jurisdictional area of the entire county. The plan supports, provides assistance, identifies and describes mitigation projects for each of the local jurisdictions who participated in the plan update. The suggested actions and plan implementation 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 coordinated partnership with emergency managers, political entities, public works officials, community planners and other dedicated individuals working to implement this program.

MARSHALL COUNTY PROFILE

GEOGRAPHIC BACKGROUND

The geographic area of Marshall County is 886 square miles with 838 square miles of land and 48 square miles of water. Its terrain consists of rolling hills, with numerous lakes and ponds in the SE portion. Its terrain slopes to the northeast, and its highest point is near its SE corner, at 2,034 feet. The county is drained by the Crow Creek, a tributary of the James River, and the Wild Rice River, a tributary of the Red River of the North. A portion of the Lake Traverse Indian Reservation is located in the eastern part of the county.

Marshall County is geographically different from east to west. The eastern part of the county is composed of the Coteau des Prairies (hills of the prairie) which traverse north and south dividing the county. The southeast part of the county contains numerous shallow depressions that trap water and is located in the “prairie pothole region” with numerous glacial lakes. These areas only drain if the water is consumed by evaporation and transpiration or seeps into the ground. The western portion of the county is predominantly flat land with farms and wetlands.

The Upper Crow Creek Drainage is located south of Britton that was constructed in the mid 1920s to tie into the Lower Creek Drainage in neighboring Brown County. Most of the county is in the James River basin. The very north part of the county drains into the Red River basin while the extreme northeast part of the county drains into the Upper Minnesota River basin.

Marshall County is located near the North end of “Tornado Alley”. While tornadoes don’t occur frequently, there is about a 70% chance of a tornado occurring somewhere in the county in any given year.

About 60% of the county is cropland with the rest being range, pastureland, lakes and marsh. Except for the extreme NE corner of the county, the eastern two thirds of the county is in the Coteau des Prairies, known locally as the “Sisseton Hills.” The extreme NE corner is part of the Minnesota River – Red River lowlands. The western part of the county is the Lake Dakota Plain.

The State of South Dakota owns the one railway in the county. It is operated by Dakota Missouri Valley and Western. That line runs from Aberdeen to Geneseo Jct, ND. There are train loading facilities in Amherst and Britton.

The Keystone Pipeline crosses through Marshall County and was constructed in 2007-2008. The entire pipeline is 2,687 miles long and carries crude oil from Alberta, Canada to Steele City, NE, here it splits — one arm ends in Illinois, the other goes through Oklahoma and into Houston and Port Arthur, Texas. There was a significant spill in November 2017 where 276,000 gallons of oil leaked. The area has since been cleaned up. An investigation revealed that the leak was likely caused by something that happened during construction in 2008 — most likely during the trenching, lowering-in, installation of concrete weights; backfilling or rough cleanup.

POPULATION DEMOGRAPHICS

According to the Census Bureau, in 2010 the County had a population of 4,656, an increase of 1% from the 2000 census. Population estimate for 2017 was 4,804, a density of 5.6 people per square mile. Within Marshall County lies six incorporated municipalities. Marshall County also has one census designated place – Kidder; and four unincorporated communities: Amherst, Hillhead, Newark, and Spain.

Table 1.1 Population in Marshall County Jurisdictions

City	2010 Population	Percent of County Population*	Percent Population over Age 65
Britton (county seat)	1,241	27%	
Veblen	531	11%	
Langford	313	6%	
Eden	89	1%	
Lake City	51	1%	
Kidder (CDP)	57	1%	
Unicorporated or rural areas	2,374	51%	
Marshall County	4,656	100%	20%

* Totals may not equal 100% because of rounding.

Besides the communities, Marshall County also has is comprised of 25 townships.

Table 1.2 Marshall County Township Populations

Marshall County Townships by Population			
Township	**Population**	**Township**	**Population**
Buffalo	114	Newport	68
Dayton	19	Nordland	19
Dumarce	44	Pleasant Valley	168
Eden	85	Red Iron Lake	201
Fort	38	Sisseton	67
Hamilton	27	Stena	192
Hickman	45	Veblen	196
La Belle	70	Victor	37
Lake	173	Waverly	58
Lowell	50	Weston	228
McKinley	46	White	122
Miller	219	Wismer	36
Newark	109		

According to the 2010 Census, the County is predominately white (87.5%) with 12.1% of the population Hispanic or Latino and 9.5% Native American.

Table 1.3 Marshall County Median Family Income

County	Median Family Income	Per Capita Income	% of People Below Poverty
Marshall	$ 67,668	$ 27,441	10.5%
South Dakota	$ 66,825	$ 27,516	14.0%
United States	$ 67,871	$ 29,829	15.1%

DP03 http://factfinder2.census.gov
ACS 2012-2016

ECONOMIC PROFILE
The Marshall County economy has historically been very reliant upon the agriculture industry. The major source of employment for the area is in agriculture and ag-related businesses. The number of farms and overall size of farms have held steady in Marshall County, which is not the case in many South Dakota counties.

CLIMATE
Marshall County is located in the James River Valley, known to have some of the largest temperature variances in the world, from a negative 50 degrees Fahrenheit in the winter to 120 degrees Fahrenheit above 0, in the summer. The annual precipitation average is 23 inches. The annual average snowfall is 40 inches. The months with the most precipitation are May, June, and July.

TRANSPORTATION
Transportation planning for streets and roads begins with understanding the relationship between land use and road network. Streets and roads balance functions of mobility and land access. On one side, such as interstate highways, mobility is the primary function of the network. On the other side, such as local roads, land access to farms and residences is the primary service. In between these two extremes, mobility and land access varies depending on the function of the road network.

Functional classification is the process of grouping streets and roads into classes according to the function they are intended to provide. Listed below is Marshall County's functional classification system. The classification is according to the rural systems classification as developed by the Federal Highway Administration.

1. Principal Arterials – serve longer strips of a statewide or interstate nature, carry the highest traffic volumes, connect larger urban areas, provide minimal land access, and include both interstate and non-interstate principal arterial highways.

2. Minor Arterials – interconnect the principal arterials, provide less mobility and slightly more land access, and distribute travel to smaller towns, and major resorts attracting longer trips.

3. Major Collectors – provide both land access and traffic circulation connecting county seats not served by arterials and connect intracounty traffic generators like schools, shipping points, county parks, and important mining and agricultural areas.

4. Minor Collectors – collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road.

5. Local Roads – provide direct access to adjacent land and to the highest classified roads and serve short trips.

A Major Street Plan includes a current and future hierarchy of street classifications for use in identifying and prioritizing transportation needs of Marshall County.

NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

Five jurisdictions located within Marshall County participate in the National Flood Insurance Program (NFIP): Marshall County, Britton, Langford and Veblen. The remaining towns currently do not participate in the NFIP: Eden and Lake City. Table 1.1 lists population, latitude and longitude, elevation, and NFIP status of communities within the county. Population statistics were taken from Census 2010 and location and elevation were taken from Google Earth. NFIP status was provided by the FEMA Community Status Book.

Table 1.4: Marshall County Municipalities Overview

Name	Pop. (2010)	Location	Elevation	NFIP
Cities/Towns				
Britton	1,241	44º 47’ 28.74” N 97º 45’ 03.47” W	1362 ft	Yes
Veblen	531	45º 51’ 47.69” N 97º 17’ 14.49” W	1278 ft	Yes
Langford	313	45º 36’ 09.15” N 97º 49’ 48.35” W	1372 ft	Yes
Eden	89	45º 36’ 58.03” N 97º 25’ 08.03” W	1838ft	No
Lake City	51	45º 43’ 28.08” N 97º 24’ 49.38 W	1866 ft	No

II. PREREQUISITES

CHANGES/REVISIONS TO PREREQUISITES:
The 2014 plan update included the prerequisite information in the Planning Process section whereas this plan update includes the information as its own section.

ADOPTION BY LOCAL GOVERNING BODY §201.6(c)(5)

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

MULTI-JURISDICTIONAL PLAN PARTICIPATION

This plan is a multi-jurisdictional plan which serves the entire geographical area located within the boundaries of Marshall County, South Dakota. Marshall County has five incorporated municipalities. Two of the municipalities located within Marshall County elected to participate in the planning process and the update of the existing Marshall County Natural Hazard Mitigation Plan. The participating local jurisdictions include the following municipalities:

Table 2.1: Plan Participants

New Participants	Continuing Participants	Not Participating
Veblen	Marshall County	Eden
	Britton	Lake City
	Langford	

Veblen is a new participant in 2019 from the last plan update in 2014. It appears that representatives from Lake City and Veblen attended meetings for the 2014 plan update; neither municipality formally adopted the plan. The non-participating municipalities both have extremely small populations: Eden (89), Lake City (51). The non-participating communities will be given the option to complete the requirements for the plan and to formally adopt the plan during the annual update of the plan

Veblen is located about 30 miles northeast of Britton and is located in the extreme northeast corner of the county. It has a population of 531. Eden and Lake City are both small communities located in the glacial lakes region of southeast Marshall County. Both are extremely small communities with populations of under 100. Neither have the resources or control needed to complete any type of mitigation activity or project.

The Marshall County Commission and each of the listed participating municipalities will pass resolutions to adopt the updated Plan.

The Marshall County Natural Hazard Mitigation Plan will be adopted by resolution by the participating incorporated municipalities and the Marshall County Commission. The dates of adoption by resolution for each of the jurisdictions are summarized in Table 2.2.

Table 2.2: Dates of Plan Adoption by Jurisdiction	
Jurisdiction	**Date of Adoption**
Marshall County Commission	
Britton	
Eden	Not participating
Lake City	Not participating
Langford	
Veblen	

All of the participating jurisdictions were involved in the plan update. Representatives from Britton and Langford along with the County attended the planning meetings and provided valuable perspective on the changes required for the plan. All representatives took part in the risk assessment by filling out the risk assessment worksheets. It was determined that not much information had changed as far as risk identification and assessment. They also provided additional details on the process for development at the local level regarding building permits, regulations, and oversight which is documented in further detail in Chapter IV of the plan.

Representatives also took information from the planning meetings back to their respective councils and presented the progress of the plan update on a monthly basis. The local jurisdictions will also presented the Resolution of Adoption to their councils and will pass the resolutions upon FEMA approval of the Plan update. The Resolutions are included as Appendix B at the end of this section.

Table 2.3 was derived to help define “participation” for the local jurisdictions who intend on adopting the plan. Out of ten categories, each jurisdiction must have at least seven of the participation requirements fulfilled.

Table 2.3. Record of Participation						
Nature of Participation	**Marshall Co**	**Britton**	**Eden**	**Lake City**	**Langford**	**Veblen**
Attended Meetings or work sessions (a minimum of 1 meetings will be considered satisfactory).	☒	☒	☐	☐	☒	☒
Submitted inventory and summary of reports and plans relevant to hazard mitigation.	☒	☒	☐	☐	☒	☒
Submitted Risk Assessment Worksheet.	☒	☒	☐	☐	☒	☒
Submitted description of what is at risk (including local critical facilities and infrastructure at risk from specific Hazards) Worksheet 3A	☒	☒	☐	☐	☒	☒
Submitted a description or map of local land-use patterns (current and proposed/expected).	☒	C	☐	☐	C	C
Developed mitigation actions with an analysis/explanation of why those actions were selected.	☒	☒	☐	☐	☒	☒
Prioritized actions emphasizing relative cost-effectiveness.	☒	☒	☐	☐	☒	☒
Reviewed and commented on draft Plan.	☒	☒	☐	☐	☒	☒
Hosted opportunities for public involvement (allowed time for public comment at a city council meetings after giving a status report on the progress of the Plan update)	☒	☒	☐	☐	☒	☒

III. PLANNING PROCESS

CHANGES/REVISIONS TO PLANNING PROCESS:
The 2014 plan update included information on the planning process and public involvement as two different sections. That information was combined into one section for this plan update.

DOCUMENTATION OF THE PLANNING PROCESS
An open and public involvement process is essential to the development of an effective plan. Requirement 201.6(b)

Stakeholder meetings were held at the Britton Event Center (where Britton City Hall is located) to inform the public about the required plan update. The Marshall County Emergency Manager worked with NECOG staff to organize resources. A planning committee was formed from those persons who attended the stakeholder meetings. A few planning committee members had participated in the 2014 plan update; buy many of them were new to the planning and mitigation process. After the informational meetings were held, the committee started working through the existing mitigation strategies for their jurisdictions and made corrections and updates

Participating jurisdictions were provided a copy of the mitigation strategy and were instructed to review all goals and projects and determine if changes were needed. Plan representatives were then asked to discuss the mitigation strategy at their city council or county commission meetings to determine if projects should be left in the plan, removed or if they have been completed. Plan participants were also asked to consider if recent development in their jurisdiction has created new risk or changed previously identified risks. The meeting minutes and agendas for each of the city council and county commission meetings were published in the local newspaper or paper of record.

The public was provided several opportunities at City Council meetings to comment on the plan 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 City Council 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.

SELECTION OF THE PLANNING TEAM [§201.6(c)(1)]
[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

The Marshall County Emergency Manager and staff from Northeast Council of Governments led the development of the plan update. Participating Municipalities were also instrumental in leading the discussions at the planning meetings. The local jurisdictions were represented by city council members and/or finance officers who attended the meetings. The council members then took the information from the work sessions back to their jurisdictions and discussed the progress of the plan at their council meetings. Those who attended the initial planning meeting for the plan update were asked to volunteer to serve on the planning committee. The planning committee was tasked with reviewing the drafts and providing comments after Northeast Council of Governments initiated changes to the existing plan. Each of the local jurisdictions had a member of their respective councils represent the municipalities in the plan. Those representatives are listed by jurisdiction:

Table 3.1: Plan Representatives for Local Jurisdictions	
Marshall County	Todd Landmark, Emergency Manager
Marshall County	Erin Collins-Miles, Marshall County, Planning and Zoning
Marshall County	Sandy Dinger, Marshall County Highway Department
Marshall County	Matthew Schuller, Marshall County Commission
Marshall County	Dale Elsen Marshall County Sheriff
Britton	Marie Marlow, Finance Officer
Britton	George Flanery, Britton Public Works Department
Eden	Did not participate
Lake City	Did not participate
Langford	Melody Swearingen, Finance Officer
Veblen	Betty Hilleson, Council Member
Glacial Lakes Area Development	Lindsey Kimber, Glacial Lakes Area Development

The representatives from the county and the municipalities were asked to share the progress of the plan at their monthly commission/council meetings and to ensure that those attending the meetings were aware that they are invited to make comments on and participate in the process of updating the new plan. Comments provided by local residents at the city council meetings would have been collected and incorporated into the plan. However, no comments were provided at the public meetings.

Table 3.2: Marshall County Commissioners Involved in the Plan	
Kevin Jones	Commissioner
Lynda Luttrell	Commissioner
Matthew Schuller	Commissioner
LeRon Knebel Sr.	Commissioner
Douglas Medhaug	Commissioner

Table 3.3: Britton City Council Members Involved in the Plan

Clyde Frederickson	Mayor
Brian Beck	Council Member
Lindsey Kimber	Council Member
Austin Sasker	Council Member
Ward Satterlee	Council Member
Cristy Davidson	Council Member
Shane Storley	Council Member

Table 3.4: Langford City Council Members Involved in the Plan	
Todd Sell	President
Jordan Hupke	Trustee
Orrie Jesz	Trustee

Table 3.5: Veblen City Council Members Involved in the Plan	
Chuck Baus	Mayor
Kerry Anderson	Council Member
Tom Henning	Council Member
Betty Hilleson	Council Member
Kristin Hofland	Council Member

NEIGHBORING JURISDICTION PARTICIPATION [201.6(b)(2)]
An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities…to be involved in the planning process.

After the plan was drafted it was emailed to all of the participants and to the emergency managers in the neighboring counties of: Roberts, Day and Brown; and Sargent County in North Dakota. Everyone who received an email copy of the plan draft was allowed 32 days to comment on the draft.

PUBLIC INVOLVEMENT [§201.6(b)(1)]
An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.

The public was provided several opportunities to comment on the plan during the drafting stages at City Council and County Commission meetings during the public forum portion of the meeting. At each City Council and County Commission meeting, there was a public forum, which gives the public an opportunity to comment on anything on the agenda; however, no one from the public showed up to comment on the plan or to help with the plan update. The county and municipalities put the plan update on the agenda at their meetings. Those who were most involved were the representatives from the county and the municipalities and those previously mentioned as being instrumental in leading discussions. Table 3.5 identifies the location and date of each opportunity that was provided for the public to comment and how it was advertised. After the plan was drafted, it was posted to the Marshall County website and posted on the Marshall County Emergency Management Facebook page and the City of Britton's Facebook Page and asked for comments. The City of Langford inserted a notice with their monthly water bills and asked the public to provide comments to NECOG. The City of Langford included information on the draft plan in their monthly utility billing and directed commenters to Marshall County's website. Everyone who received an email copy of the plan draft was allowed 32 days to comment on the draft.

Table 3.6 Opportunity for Public Comment					How Meeting Was Advertised
Location/Meeting	**Date**	**City Council**	**County Commission**	**Planning Meetings**	**Agenda**
Marshall County	1/21/20		X		X
	2/4/20		X		X
Britton	8/19/19	X			X
	1/13/20	X			X
	2/10/20				X
Langford	1/13/20	X			X
	2/12/20	X			X
Veblen	2/11/20	X			X
Stakeholder Meeting	1/9/20			X	
	1/16/20			X	
	1/30/20			X	
LEPC Meeting	1/15/20				

TECHNICAL REVIEW OF EXISTING DOCUMENTS [§201.6(b)(3)]
Review and incorporation…of existing plans, studies, reports, and technical information.

The review and incorporation of existing plans, studies, reports and technical information was completed by the local jurisdictions. Each of the communities were asked to provide a list of existing documents that they have available. Many of the smaller communities do not have such documents. Additionally, the 2014 Plan was used as a resource for the new plan because most of the natural hazard profile research had already been completed when it was drafted. In addition to the 2014 Plan, the plan author reviewed several other existing documents including but not limited to the South Dakota State Hazard Mitigation Plan (April 2019), Marshall County Hazmat Plan and Comprehensive Plan, the City of Britton Zoning Ordinances and Comprehensive Plan, County Zoning Ordinances, the flood damage prevention ordinance, and Flood Insurance Rate Maps for the local jurisdictions. In Marshall County, all of the municipalities except for Britton and Langford are covered under the County Zoning Ordinances and Comprehensive Plan therefore they do not have their own individual zoning or planning documents. Enforcement of the county zoning is also managed by the County Planning and Zoning Officer. Floodplain management is handled by the Marshall County Planning and Zoning Director. A summary of the technical review and incorporation of existing plans is included in Table 3.6.

Table 3.7 :Record of Review (Summary)						
Existing Program/Policy/	**Local Jurisdiction**					
Technical Documents	Marshall County	Britton	Eden	Lake City	Langford	Veblen
Comprehensive Plan	□	C	C	C	C	C
Growth Management Plan	NA	NA	NA	NA	NA	NA
Flood Damage Prevention Ordinance	□	□	NA	NA	O	O
Floodplain Management Plan	Same as Floodplain Ordinance	NA	NA	NA	NA	NA
Flood Insurance Studies or Engineering studies for streams	NA	NA	NA	NA	NA	NA
Hazard Vulnerability Analysis (by the local Emergency Management Agency)	C	C	C	C	NA	NA
Emergency Operations Plan	NA	□	NA	NA	□	NA
Zoning Ordinance	□	□	C	C	C	C
Building Code	C	IBC 2018	C	C	IBC 2018	C
Drainage Ordinance	□	NA	NA	NA	NA	NA
Critical Facilities maps	Zoning Maps	Zoning Maps	NA	NA	NA	NA
Existing Land Use maps	NA	NA	NA	NA	NA	NA
Elevation Certificates	NA	NA	NA	NA	NA	NA
State Hazard Mitigation Plan	□	□	□	□	□	□
HAZUS	NA	NA	NA	NA	NA	NA
Bridge Improvement Plan	□	NA	NA	NA	NA	NA
Capital Improvement Plan	NA	NA	NA	NA	NA	NA
NA	the jurisdiction does not have this program/policy/technical document					
O	the jurisdiction has the program/policy/technical document, but did not review/incorporate it in the mitigation plan					
C	the jurisdiction is regulated under the County's policy/program/technical document					
□	the jurisdiction reviewed the program/policy/technical document					

REVIEW OF THE 2014 PLAN

The planning committee reviewed and analyzed each section of the plan and each section was revised as part of the update process. As the 2014 Plan was written by a different plan author; the format of the current plan was revised extensively. When the planning committee reviewed the 2014 Plan, they found that the Plan would be more easily read and understood if it followed the outline of the planning tool. The outline was then used to create a new Table of Contents and the rest of the plan was developed from the Table of Contents. Information that could be incorporated from the 2014 Plan was incorporated. The 2014 Plan did not include all requirements listed in the Local Mitigation Plan Tool. The plan author also used the Local Mitigation Planning Handbook (dated March 2013) and the How-to Guides provided by FEMA to develop tables for the updated plan.

When the planning committee reviewed the 2014 Plan, some of the appendices were eliminated, and others were revised. Additional appendices were added. Every section of the plan was reconsidered by the planning committee and the group decided which sections were useful and which sections should be eliminated. The committee review of the plan took place over the course of work sessions that were held on the following dates:

August 19, 2019 – Britton City Council Meeting
January 9, 2020 – Stakeholder Planning Meeting
January 13, 2020 – Britton City Council Meeting
January 13, 2020 – Langford City Council Meeting
January 15, 2020 (LEPC Meeting)
January 16, 2020 – Stakeholder Planning Meeting
January 21, 2020 – Marshall County Commission Meeting
January 30, 2020 – Stakeholder Planning Meeting
February 4, 2020 – Marshall County Commission Meeting
February 10, 2020 – Britton City Council Meeting
February 11, 2020 – Veblen City Council Meeting
February 12, 2020 – Langford City Council Meeting
February 18, 2020 – Marshall County Commission Meeting

Additionally, new data from FEMA's Base Level Engineering (BLE) risk assessment had been anticipated to be completed in time to include in the plan, however, it is not finalized. Preliminary data has been made available. According to Marc Macy, State NFIP Coordinator, altogether Marshall County is getting four homes put into the floodplain on the draft maps.

IV. HAZARD IDENTIFICATION AND RISK ASSESSMENT

CHANGES/REVISIONS TO RISK ASSESSMENT:

- The Hazard Profile was reorganized; hazard event data was removed from the narrative and included as an appendix.
- Magnitude of Natural Disaster tables were removed as the information was confusing and difficult to understand.
- Information on manmade hazards/incidents was removed as the plan's focus is on natural hazards.

IDENTIFYING HAZARDS [§201.6(c)(2)(i)]

A description of the type, location, and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

The National Oceanic Atmosphere Administration (NOAA) website was used to research natural hazards and disasters that have occurred within the last 10 years within the geographic location covered under the Marshall County Plan. Information was also received from the State Fire Marshal's office. Looking at the data, it appears that data was inconsistently reported at times. There are gaps where during a period of several years, only one or two incidents may be reported. That doesn't seem to be consistent with what residents living in the area report. A summary of the findings for significant hazard occurrences from the past 10 years is provided in Table 4.1:

Table 4.1: Significant Hazard Occurrences 2010 – 2019				
Type of Hazard	**# of Occurrences Since 2000**	**# of Years**	**Probability of Future Events, as a %**	**Source**
Hail	62	10	100%	NOAA
Winter Weather (2) / Winter Storm (8) / Blizzard (30) / Ice Storm (1) / Heavy Snow (13)	54	10	100%	NOAA
Thunderstorm Wind	26	10	100%	NOAA
Extreme Cold/Wind Chill	24	10	100%	NOAA
High Wind	8	10	80%	NOAA
Drought	6	10	60%	NOAA and US Drought Monitor
Flood (9) / Flash Flood (3)	12	10	100%	NOAA
Tornado (6) / Funnel Cloud (1)	7	10	70%	NOAA
Heat () / Excessive Heat (2)	2	10	20%	NOAA
Wildfire / Other Fire*	211	11	100%	NOAA & State Fire Marshal

* Timeline for Wildfire/Other Fire dates from 1/1/2008 to 12/31/2018.

The probability of future events was calculated by taking the number of past occurrences divided by the number of years in the period and then converting that to a percentage. If the calculation yielded a number above one hundred percent, then a 100% probability (of annual occurrence) was used.

While researching the hazard occurrences in Marshall County, it became evident that information found on the NOAA website was incomplete. Therefore, other sources were contacted whenever possible. Specifically, NOAA had zero occurrence listed for wildfires in Marshall County. However, the State Fire Marshall's Office was contacted to verify that information. The State Fire Marshal's Office said their information is derived from the reports submitted by the local fire departments who respond to the fires. They also explained that since all of the fire departments in Marshall County are Volunteer Fire Departments many times wildfires are extinguished and reports are never filed with the State. Thus, the information provided by the State Fire Marshal's office is not entirely complete either.

For the purpose of this plan we have used the numbers provided by the State Fire Marshal's Office as a point of reference in determining the likelihood of fire hazard occurrence within the jurisdiction. The information provided identifies 55 structure fires,

33 vehicle fires, and 123 other fires reported between 2008 and 2018. The cause of the other fires is not listed, so it is not known for certain whether all or some of these fires resulted due to a natural hazard occurrence or as a result of human behavior. From 2008-2018 the total dollar loss accumulated was $2,569,950. Additionally, the State Fire Marshall provided information about the number of injuries and fatalities reported as a result of these fires. According to their records, 1 fire related civilian injury and 2 fire related civilian fatalities were reported and 2 firefighter injuries were reported since 2008.

NOAA data also shows that there were no periods of drought in the last 10 years. However, when looking at information from the US Drought Monitor, it shows several periods of abnormally dry or moderate drought. The plan author documented 5 periods in the last 10 years where Marshall County experienced significant periods (several months) where the drought monitor indicated the area was in a Moderate Drought (D1).

Lightning is also reported as zero occurrences in the NOAA database for weather events. Lightning is a common occurrence in Marshall County, with numerous storm events each year producing lighting. Lightning has been reported as the cause to numerous fires in this region and is especially dangerous during drought years. The County acknowledges that the information provided by NOAA for this particular hazard is inaccurate but does not have another source for more accurate information.

The NOAA database has numerous different categories for winter weather hazards to include: Blizzard, Extreme Cold, Heavy Snow, Winter Storm, Winter Weather, Cold/Wind Chill, Extreme Cold/Wind Chill. The number of days with events reported in Table 4.1 is the total reported for all of these categories. Due to the regular nature of winter weather events in Marshall County, local officials believe this number is underreported as well.

Table 4.2 was derived from the FEMA worksheets provided in the planning handbook for mitigation planning and from the past occurrences of hazards.

Table 4.2: Natural Hazards Categorized by Likelihood of Occurrence

High Probability	**Low Probability**	**Unlikely to Occur**
Blizzard	Dam Failure	Avalanche
Extreme Cold	Drought	Coastal Storm
Flood/Flash Flood	Heat/Excessive Heat	Hurricane
Freezing Rain/Sleet/Ice	High Wind	Landslide
Hail	Ice Storm	Subsidence
Heavy Rain	Tornado/Funnel Cloud	Volcanic Ash
Heavy Snow	Earthquake***	Volcanic Explosion
Ice Jam		Tsunami
Lightning	***Earthquakes are marked with an asterisk because they occur but are so small that the effects are minimal. Thus, mitigation measures specifically for earthquakes are not a priority. ** Utility interruptions are not a natural hazard but often occur as a result of natural hazards such as ice storms and strong winds.	
Rapid Snow Melt		
Thunderstorm/Thunderstorm Wind		
Utility Interruption**		
Wild Fire/Other Fire		
Winter Weather/Winter Storm		

Every possible hazard or disaster was evaluated and then the disasters were placed in three separate columns depending on the likelihood of the disaster occurring in the planning jurisdiction. 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 or could occur in the future but do not occur on a yearly basis were placed in the low probability column; and hazards or disasters that have never occurred in the area before and are unlikely to occur in the planning jurisdiction any time in the future were placed in the Unlikely to Occur column.

Due to the topographical features of the County and the nature of the natural hazards that affect the geographical area covered by this plan, most areas of the county have similar likelihood of being affected by the natural hazards identified. Only the natural hazards from the High Probability 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 4.3 below identifies the hazards that will be addressed in the plan throughout the planning process. Similar to Table 4.2, hazards were identified for this plan in several ways, including: observing development patterns, interviews from towns and townships, public meetings, planning work sessions, previous disaster declarations, consulting the State Hazard Mitigation Plan and research of the history of hazard occurrences located within Marshall County.

Table 4.3: Overall Summary of Vulnerability by Jurisdiction						
Natural Hazards Identified						
	Marshall Co	Britton	Eden	Lake City	Langford	Veblen
Blizzard/Winter Weather/Winter Storm/Heavy Snow	H	H	H	H	H	H
Drought	M	M	M	M	M	M
Extreme Cold	H	H	H	H	H	H
Extreme Heat	M	M	M	M	M	M
Flood	H	M	H	H	H	H
Freezing Rain/Sleet	H	H	H	H	H	H
Hail	H	H	H	H	H	H
Heavy Rain	M	H	M	M	H	H
Ice Jam	M	M	M	M	H	M
Lightning	M	M	M	M	M	M
Strong Winds	H	H	H	H	H	H
Earthquakes	L	L	L	L	L	L
Tornadoes	M	M	M	M	M	M
Wildfire	M	M	M	M	M	M

NA Not applicable; not a hazard to the jurisdiction

L Low risk; little damage potential (minor damage to less than 5% of the jurisdiction)

M Medium risk; moderate damage potential (causing partial damage to 5-10% of the jurisdiction, and irregular occurrence

H High risk; significant risk/major damage potential (for example, destructive, damage to more than 10% of the jurisdiction and/or regular occurrence)

COMMUNITY VULNERABILITY [§201.6(c)(2)(ii)]

A description of the jurisdiction's vulnerability to the hazards described in section (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community. Plan…must also address NFIP insured structures have have been repetitively damaged by floods.

Marshall County Overall Vulnerability

The many prairie potholes and extremely wet spring of 2019 made Marshall County roads particularly vulnerable to flooding.

The main County Highway Shop north of Britton is vulnerable to flooding because it sits lower in elevation than the town itself. A large slough sits in between the City of Britton and the County Highway Shop. While the shop itself is not located in the floodplain, it is just on the edge of it.

The County has also experienced flooding the lakes region – around Roy Lake and Clear Lake. There has been substantial damage to property due to flooding.

There are other unincorporated areas in the County (around the lakes region) where many people bring their campers to the lakes for the summer. Many of these summer residents are particularly vulnerable to the risk of tornados, high winds or severe summer storms.

Britton Overall Vulnerability
The town of Britton has identified that they are particularly vulnerable to blizzards/winter weather/winter storms/heavy snow, extreme cold, freezing rain/sleet, hail, heavy rain, and strong winds. These hazards were given a rating of "H" for high risk in Table 4.3. Many of these hazards pose the risk of knocking down utility lines which results in loss of power. Due to the extreme weather conditions in Northeastern South Dakota, the threat of losing power for even a few days can be deadly. During the winter months, an event that causes disruption of utilities can take days, even weeks to repair. Sometimes ice storms take out several miles of power lines and it takes weeks to repair the line and get them up and running again.

Britton does participate in NFIP. However, the City Finance Officer mentioned that in her 28 years on the job, she's only received a few phone calls asking if Britton is in the floodplain. Overland flooding isn't a major concern in Britton but they do experience problems due to a high groundwater table. Most of the flooding in people's homes/basements is due to groundwater seeping in. More and more people are buying backup generators for their homes to keep sump pumps running in the event of a power outage. There are many anecdotal stories about water rising in homes because sump pumps weren't able to operate when the home lost power.

Langford Overall Vulnerability
The town of Langford has identified that they are particularly vulnerable to blizzards/winter weather/winter storms/heavy snow, extreme cold, flooding, freezing rain/sleet, hail, heavy rain, ice jams and strong winds. These hazards were given a rating of "H" for high risk in Table 4.3. Many of these hazards pose the risk of knocking down utility lines which results in loss of power. Due to the extreme weather conditions in Northeastern South Dakota, the threat of losing power for even a few days can be deadly. During the winter months, an event that causes disruption of utilities can take days, even weeks to repair. Sometimes ice storms take out several miles of power lines and it takes weeks to repair the line and get them up and running again. The last power outage in Langford lasted for 38 hours.

Electric service in Langford is provided by the City. However, they rely on Lake Region Electric (the rural electric coop) to service the power lines in the event they lose power. The last power outage was 38 hours long because Lake Region often prioritizes its own customers over the City of Langford.

Mud Creek runs just outside of the City limits. In the Spring of 2019, debris (trees, brush) in the creek prevented water from flowing fast enough downstream. The creek was still mostly frozen, but water did run above the ice and snow and created flooding problems in the City of Langford. The rapid thaw of snow exacberated the problem.

Veblen Overall Vulnerability

The town of Veblen has identified that they are particularly vulnerable to blizzards/winter weather/winter storms/heavy snow, extreme cold, freezing rain/sleet, hail, heavy rain, and strong winds. These hazards were given a rating of “H” for high risk in Table 4.3. Many of these hazards pose the risk of knocking down utility lines which results in loss of power. Due to the extreme weather conditions in Northeastern South Dakota, the threat of losing power for even a few days can be deadly. During the winter months, an event that causes disruption of utilities can take days, even weeks to repair. Sometimes ice storms take out several miles of power lines and it takes weeks to repair the line and get them up and running again.

According to the preliminary Base Level Engineering data from FEMA, Veblen does have parts of town that are proposed to be in BLE Zone A – Special Flood Hazard Area.

NATURAL HAZARDS IN THE PLAN JURISDICTION

Descriptions of the natural hazards likely to occur in the planning jurisdiction were taken directly from the 2014 Marshall County Mitigation Plan and from other mitigation plans the plan contractor has completed. Some of the descriptions were revised for better clarity. For the purpose of consistency throughout the plan, additional definitions were included to reflect all of the hazards that have a chance of occurring in the area and all of the hazards are alphabetized. For all of the hazards identified the probability of future occurrence is expected to be the same for all of the jurisdictions covered in the Plan.

Blizzards are a snow storm that lasts at least 3 hours with sustained wind speeds of 35 mph or greater, visibility of less than a quarter mile, temperatures lower than 20°F and white out conditions. Snow accumulations vary, but another contributing factor is loose snow existing on the ground which can get whipped up and aggravate the white out conditions. When such conditions arise, blizzard warnings or severe blizzard warnings are issued. Severe blizzard conditions exist when winds obtain speeds of at least 45 mph plus a great density of falling or blowing snow and a temperature of 10°F or lower.

Drought According to the National Weather Service, “Drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. It is a normal, recurrent feature of climate that occurs in virtually all climate zones, from very wet to very dry. Human factors, such as water demand and water management, can exacerbate the impact that drought has on a region.” Generally, this occurs when a region receives consistently below average precipitation. It can have a substantial impact on the ecosystem and agriculture of the affected region. Although droughts can persist for several years, even a short, intense drought can cause significant damage and harm the local economy.

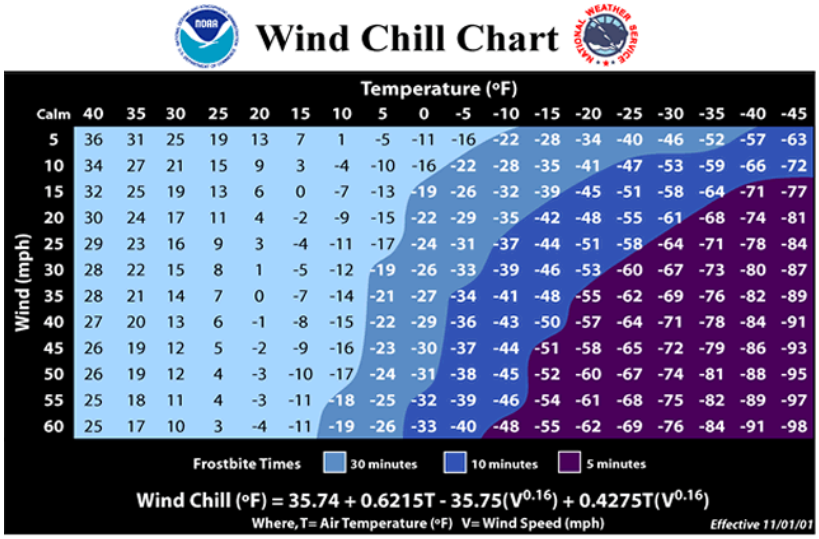
The U.S. Drought Monitor measures Drought Intensity on a scale:

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

Dam Failure Dams function to serve the needs of flood control, recreation, and water management. During a flood, a dam’s ability to serve as a control agent may be challenged. An excessive amount of water may result in a dam breach, simply an overflowing. Dams that are old or unstable, dams that receive extreme amounts of water, or dams that get debris pile-up behind their face may result in dam failure, a cracking and/or breaking. The County has 26 dams and all 26 have the potential to endanger lives and damage property.

Earthquakes are a sudden rapid shaking of the earth caused by the shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, avalanches, and tsunamis. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and are followed by vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter.

Extreme Cold What constitutes extreme cold and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold," however, Eastern South Dakota is prone to much more extreme temperatures than other areas in the country. Temperatures typically range between zero degrees Fahrenheit and 100 degrees Fahrenheit, so extreme cold could be defined in the Marshall County plan jurisdiction area as temperatures below zero.



Extreme Heat, also known as a Heat Wave, is a prolonged period of excessively hot weather, which may be accompanied by high humidity. There is no universal definition of a heat wave; the term is relative to the usual weather in the area. Temperatures in Marshall County have a very wide range typically between 0-100 degrees Fahrenheit, therefore anything outside those ranges could be considered extreme. The term is applied both to routine weather variations and to extraordinary spells of heat which may occur only once a century.

Flooding is an overflow of water that submerges land, producing measurable property damage or forcing evacuation of people and vital resources. Floods can develop slowly as rivers swell during an extended period of rain, or during a warming trend following a heavy snow. Even a very small stream or dry creek bed can overflow and create flooding. Two different types of flooding hazards are present within Marshall County.

1. **Inundation flooding** occurs most often in the spring. The greatest risks are realized typically during a rapid snowmelt, before ice is completely off all of the rivers. The watershed in Marshall County consist of small creeks and several prairie potholes and lakes. Creeks in Marshall County are part of three different watersheds (James River basin, Red River basin, Upper Minnesota River basin).

2. ***Flash Flooding*** is more typically realized during the summer months. This flooding is primarily localized, though enough rain can be produced to cause inundation flooding in areas along the James River. Heavy, slow moving thunderstorms often produce large amounts of rain.

Freezing Rain/Ice occurs when temperatures drop below 30 degrees Fahrenheit and rain starts to fall. Freezing rain covers objects with ice, creating dangerous conditions due to slippery

surfaces, platforms, sidewalks, roads, and highways. Sometimes ice is unnoticeable, and is then referred to as black ice. Black ice creates dangerous conditions, especially for traffic. Additionally, a quarter inch of frozen rain can significantly damage trees, electrical wires, weak structures, and other objects due to the additional weight bearing down on them.

Hail is formed through rising currents of air in a storm. These currents carry water droplets to a height at which they freeze and subsequently fall to earth as round ice particles. Hailstones usually consist mostly of water ice and measure between 5 and 150 millimeters in diameter, with the larger stones coming from severe and dangerous thunderstorms.

Heavy Rain is defined as precipitation falling with intensity in excess of 0.30 inches (0.762 cm) per hour. Short periods of intense rainfall can cause flash flooding while longer periods of widespread heavy rain can cause rivers to overflow.

Ice Jams occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of the river. The ice layer often breaks into large chunks, which float downstream and often pile up near narrow passages other obstructions, such as bridges and dams.

Landslide is a geological phenomenon which includes a wide range of ground movement, such as rock falls, deep failure of slopes and shallow debris flows, which can occur in offshore, coastal and onshore environments. Although the action of gravity is the primary driving force for a landslide to occur, there are other contributing factors build up specific sub-surface conditions that make the area/slope prone to failure, whereas the actual landslide often requires a trigger before being released.

Lightning results from a buildup of electrical charges that happens during the formation of a thunderstorm. The rapidly rising air within the cloud, combined with precipitation movement within the cloud, results in these charges. Giant sparks of electricity occur between the positive and negative charges both within the atmosphere and between the cloud and the ground. When the potential between the positive and negative charges becomes too great, there is a discharge of electricity, known as lightning. Lightning bolts reach temperatures near 50,000˚ F in a split second. The rapid heating and expansion, and cooling of air near the lightning bolt causes thunder.

Severe Winter Storms deposit four or more inches of snow in a 12-hour period or six inches of snow during a 24-hour period. Such storms are generally classified into four categories with some taking the characteristics of several categories during distinct phases of the storm. These categories include: freezing rain, sleet, snow, and blizzard. Generally winter storms can range from moderate snow to blizzard conditions and can occur between October and April. The months of May, June, July, August, and September could possibly see snow, though the chances of a storm is very minimal. Like summer storms, winter storms are considered a weather event not a natural hazard, and thus will not be evaluated as a natural hazard throughout this plan.

Sleet does not generally cling to objects like freezing rain, but it does make the ground very slippery. This also increases the number of traffic accidents and personal injuries due to falls. Sleet can severely slow down operations within a community. Not only is there a danger of slipping, but with wind, sleet pellets become powerful projectiles that may damage structures, vehicles, or other objects.

Snow is a common occurrence throughout the County during the months from October to April. Accumulations in dry years can be as little as 5-10 inches, while wet years can see yearly totals between 110-120 inches. Snow is a major contributing factor to flooding, primarily during the spring months of melting.

Strong winds are usually defined as winds over 40 m/h, are not uncommon in the area. Winds over 50 m/h can be expected twice each summer. Strong winds can cause destruction of property and create a safety hazards resulting from flying debris. Strong winds also include severe localized wind blasting down from thunderstorms. These downward blasts of air are categorized as either microbursts or macrobursts depending on the amount geographical area they cover. Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area greater than 2.5 miles in diameter.

Subsidence is defined as the motion of a surface as it shifts downward relative to a datum. The opposite of subsidence is uplift, which results in an increase in elevation. There are several types of subsidence such as dissolution of limestone, mining-induced, faulting induced, isostatic rebound, extraction of natural gas, ground-water related, and seasonal effects.

Summer Storms are generally defined as atmospheric hazards resulting from changes in temperature and air pressure which cause thunderstorms that may cause hail, lightning, strong winds, and tornados. Summer storms are considered a weather event rather than a natural hazard, therefore summer storms are not evaluated as a natural hazard throughout this plan.

Thunderstorms are formed when moisture, rapidly rising warm air, and a lifting mechanism such as clashing warm and cold air masses combine. The three most dangerous items associated with thunderstorms are hail, lightning, and strong winds.

Tornados are violent windstorms that may occur singularly or in multiples as a result of severe thunderstorms. They develop when cool air overrides warm air, causing the warm air to rapidly rise. Many of these resulting vortices stay in the atmosphere, though touchdown can occur. The Fujita Tornado Damage Scale categorizes tornadoes based on their wind speed:

F0=winds less than 73 m/h
F1=winds 73-112 m/h
F2=winds 113-157 m/h
F3=winds 158-206 m/h
F4=winds 207-260 m/h
F5=winds 261-318 m/h
F6=winds greater than 318 m/h

Wildland Fires are uncontrolled conflagrations that spread freely through the environment. Other names such as brush fire, bushfire, forest fire, grass fire, hill fire, peat fire, vegetation fire, and wildland fire may be used to describe the same phenomenon. A wildfire differs from the other fires by its extensive size; the speed at which it can spread out from its original source; its ability to change direction unexpectedly; and to jump gaps, such as roads, rivers and fire breaks.

Fires start when an ignition source is brought into contact with a combustible material that is subjected to sufficient heat and has an adequate supply of oxygen from the ambient air. Ignition

may be triggered by natural sources such as a lightning strike, or may be attributed to a human source such as “discarded cigarettes, sparks from equipment, and arched power lines.

HAZARD PROFILE [§201.6(c)(2)(ii)]

Requirement §201.6 (c)(2)(i): [The risk assessment shall include a] description of the type of the… location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Geographic location of each natural hazard is addressed in the updated plan. Most of the hazards identified have the potential of occurring anywhere in the County. Previous occurrences are listed individually by the type of hazard and by location in the following tables. Table 4.4 identifies the Latitude and Longitude of the local jurisdictions along with the population, elevation, and number occupied homes according to the 2010 US Census.

Table 4.4: Latitude/Longitude of Communities within the County

City	Population	Location	Elevation	Occupied Units
Britton	1,241	44º 47’ 28.74” N 97º 45’ 03.47” W	1362 ft	574
Veblen	531	45º 51’ 47.69” N 97º 17’ 14.49” W	1278 ft	151
Langford	313	45º 36’ 09.15” N 97º 49’ 48.35” W	1372 ft	146
Eden	89	45º 36’ 58.03” N 97º 25’ 08.03” W	1838ft	48
Lake City	51	45º 43’ 28.08” N 97º 24’ 49.38 W	1866 ft	Not Available
Population and Occupied Units information was collected from US Census Bureau website: http://factfinder2.census.gov				

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 in the following tables. While the planning committee reviewed all hazard occurrences that have been reported in the last 69 years, the list for some of the hazards was extremely long. The information provided in the tables is not a complete history, but rather an overview of the hazard events which have occurred over the last ten years. The planning committee felt the hazard trend for the last 10 years could be summarized in this section and decided to include any new occurrence that have taken place since the previous plan was drafted. The complete history can be found in Appendix C.

DAM FAILURE

Dam breach or failure is of lesser concern for the citizens of Marshall County than flooding due to the location of the dams in the County. Dam Failure is usually associated with intense rainfall or a prolonged flood condition (rainy day), or it can occur anytime (clear day). Dam failure can be caused by a variety of sources, to include: faulty design, construction and operational

inadequacies, intentional breaches, or a flood event larger than the design. The greatest threat from dam failure is to people and property in areas immediately below the dam since flood discharges decrease as the flood wave moves downstream.

The degree and extent of damage depend on the size of the dam and circumstances of the failure. A large dam failure might bring about considerable loss of property, destruction of cropland, roads and utilities and even loss of life; as well as similar consequences to a small dam failure: loss of irrigation water for a season and extreme financial hardship to many farmers. More severe consequences of dam failure can include loss of income, disruption of services and environmental devastation.

Marshall County Dam Data

Marshall County has three significant-risk dams identified by the National Inventory of Dams: White Lake Dam, Person #1 Dam, and Fryer Dam. The White Lake Dam is owned by South Dakota Game, Fish and Parks. It has a height of 30 feet and capacity of 3,340 acre feet.

The locations of the dams are found in Table 4.5:

4.5 Dam Locations in Marshall County

ID	Name	Owner	Hazard	Height	Storage
SD00032	White Lake Dam	GF&P	Significant	30	3,340
SD02155	Wild Rice Creek Watershed WR-2	Wild Rice Creek Watershed District	Low	40	1588
SD02604	Parrow Dam	Private	Low	27	111
SD02260	Wild Rice Creek Watershed WR-7	Wild Rice Creek Watershed District	Low	30	464
SD02259	Wild Rice Creek Watershed WR-5	Wild Rice Creek Watershed District	Low	33	560
SD02163	Wild Rice Creek Watershed WR-3	Wild Rice Creek Watershed District	Low	67	1668
SD02347	Bremmon Dam #1	Private	Low	23	198
SD02342	Penrhos Farms #1	Private	Low	24	270
SD02343	Penrhos Farms #2	Private	Low	22	300
SD02344	Penrhos Farms #5	Private	Low	14	160
SD02240	Person #1	Private	Significant	21	400
SD02605	Peters Dam	Private	Low	23	64
SD00324	Hickman Dam	South Dakota School and Public Lands	Low	28	450
SD02606	Mikkelson Dam	Private	Low	23	104
SD02370	Ogren Dam	Private	Low	24	192

SD02595	Ogren Dam #2	Private	Low	22	133
SD02239	Fryer Dam	Private	Significant	28	520
SD02592	Anderson Dam	Private	Low	21	83
SD02594	Remele Dam	Private	Low	23	62
SD02384	Samuel Berger Memorial Dam	Private	Low	7	368
SD02547	Bien Dam	Private	Low	17	68
SD0	Bien Dam No 2	Private	Low	9	277
SD02346	Ringer WPA	US F&WS	Low	10	150
SD02345	Medenwald WPA	US F&WS	Low	13	160
SD02364	Anderson East Dam	Private	Low	24	100
SD02372	Schultz-Ringer WPA	GF&P	Low	9	325

DROUGHT AND WILDFIRE

South Dakota's climate is characterized by cold winters and warm to hot summers. There is usually light moisture in the winter and marginal to adequate moisture for the growing season for crops in the eastern portion of the state. Semi-arid conditions prevail in the western portion. This combination of hot summers and limited precipitation in a semi-arid climatic region places South Dakota present a potential position of suffering a drought in any given year. The climatic conditions are such that a small departure in the normal precipitation during the hot peak growing period of July and August could produce a partial or total crop failure.

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. According to the NOAA data, Marshall County has experienced droughts in 2002 and 2006; but none in the last ten years. The US Drought Monitor indicates that the area experienced at least 6 periods of Abnormally Dry or Moderate Drought periods in the last 10 years. No instances of Severe, Extreme or Exceptional Drought were documented.

Table 4.6 Marshall County 10-Year Drought History

Location	Date	Intensity
Marshall County	June 2012 – May 2013	D0-D1
Marshall County	August 2013 – October 2013	D0-D1
Marshall County	October 2014 – May 2015	D0-D1
Marshall County	October 2015 – August 2016	D0-D1
Marshall County	May 2017 – September 2017	D0-D1
Marshall County	December 2017 – July 2018	D0-D1

Periods of Abnormally Dry weather or Moderate Drought can last anywhere from a few months to a year. The Spring of the year (March – May) tend to be wetter months and less susceptible to drought. When droughts or dry periods occur in the Fall and Winter (October – February), they tend to have less of an impact on crops because the growing season is typically over during the Fall and Winter.

A strong possibility exists for simultaneous emergencies during droughts. Wildfires are the most common. As mentioned on page 19 of this plan, the accuracy of the fire history is questionable, because the State Fire Marshal's Office collects information from the County, thus the accuracy of the information reported relies on the local fire departments, some of which are volunteer fire departments that are responsible for filing the reports. There are no urban interface areas in McPherson County so the likelihood of occurrence is not more prevalent in any part of the County. Property at risk includes all public and private land and structures in the fire's path.

FLASH FLOOD

Since 2010 there have been 5 occurrences of flash floods in Marshall County. Another 4 events occurred between 2003 and 2010. The NOAA storm database does not have documentation of occurrences prior to 2003. This is likely due to lack of reporting that occurred prior to that time. A detailed flash flood history can be found in Appendix C.

All reports of flash flooding occurred between May and August. Damage included flooding over roads, washing out of roads and culverts, water in basements and standing water in fields. One report in 2005 stated that flash flooding from heavy rains northwest of Britton swept a car off the road. The car flipped over and the occupant escaped without injury.

July 2011 – Damaging winds, large hail, flash flooding, along with a few tornadoes all occurred with this system. Heavy rain flooded several roads and washed out a culvert.

June 2013 – Heavy rain of three to four inches brought many flooded roads in and around Veblen. The road west of Veblen had water flowing over it with one section covered up to 100 ft.

August 2014 – Very heavy rains caused flash flooding which washed out a culvert resulting in a road closure. Nearly 6 inches of rain resulted in water in the basement along with a large amount of standing water in the fields.

FLOOD

Flooding is a temporary overflow of water onto lands not normally covered by water producing measurable property damage or forcing 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 a road. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible. A detailed flood event history can be found in Appendix C.

Numerous flood events have occurred in Marshall County over the course of the past two decades. The NOAA Storm Database reports 9 occurrences of flooding in Marshall County over 10 years, from 2010 to 2019. The NOAA database does not report any flooding events prior to 1997 While this information is valuable in showing the likelihood of future flood events, the information collected from the NOAA website appears to be incomplete as it does not show values in the property and crop damage column for each event. It would be reasonable to assume that damage was caused in each event listed but for whatever reason was not reported in dollars lost or damaged. For the purpose of mitigation planning future damage was estimated based on the historical evidence that flooding will occur in Marshall County on a regular basis. One should note that the type of flooding is not always a result of an overflowing body of water but usually a result of high ground water table which leaves the ground saturated and unable to absorb any additional water from rainfall or snowmelt.

March 2010 - Snowmelt runoff from an expansive snow cover flooded many creeks, roads, along with thousands of acres of pasture and cropland throughout northeast South Dakota. There were numerous road closures. The flooding lasted through the end of the month and for many locations into April. The counties mainly affected were Brown, Marshall, Day, Spink, and Roberts. Numerous communities were affected including Aberdeen, Claremont, Waubay, Amherst, Kidder, and the Richmond Lake area. The Claremont, Amherst, and Britton areas were the hardest hit with flooded land and roads. Several farms were surrounded by water with some people stranded. Between Aberdeen and Britton, sixty percent of the land was under water. Thousands of acres of cropland will not be planted due to too much water with estimates that 20 to 25 percent of Brown county cropland would not be planted. Many people in northeast South Dakota have had too much water for many years. The road damage was extensive and repairs will be in the millions of dollars. Many roads across the area will also have to be raised. Many people had extra long commutes due to flooded roads with some people having to move out of their homes. Across Day and Marshall counties, rising lakes threatened many homes and cabins with sandbagging taking place. Most lakes and rivers across northeast South Dakota were at or near record levels.

March 2011 - A deep and expansive snow pack across the area began to melt bringing many areas of flooding to central and northeast South Dakota from mid through late March. The flooding continued into April. Many roads along with countless acres of crop and pastureland were flooded. Roads, culverts, and bridges were damaged across the region. Several roads were washed out with many closed. Many homes were threatened with some surrounded by water. A Presidential Disaster was declared for all of the counties do to the flooding damage. The damage estimates were from 4.5 to 5 million dollars for the area. Snow melt brought flooding across much of Marshall county. Many roads along with crop and pastureland were flooded. The lake levels also rose across the county. In the early morning hours of March 18th, the creek northeast of Langford became blocked by snow and ice, causing water to run into Langford streets and the house basements. Some people had a couple of feet of water in their basements. The basements of at least two homes in Langford had collapsed. The water receded during the late afternoon.

March 2019 - Much above normal winter snowfall and melt water/ice jams along with heavy rains in the middle of March brought flooding across parts of central and northeast South Dakota for late March. Rivers and creeks flooded across much of the area along with many fields and roads. The flooding damaged many of the roads and culverts across the region. Some structures were also flooded. Many counties issued emergency declarations for the flooding to include the mid-March snowstorm. South Dakota's governor also declared a state of emergency. Much of this flooding continued into early April as the snowmelt continued with the high water delaying planting. Several county and township roads were flooded and closed. Three homes in Langford ended up with water in their basements due to a fast rising creek.

April 2019 - All counties declared emergencies/disasters in March and April due to the widespread flooding and March blizzard. South Dakota's governor declared a disaster for the state in March. This declaration was followed by a disaster declaration by the President of the United States. As a result, 24 of the 26 counties across central and northeast South Dakota were able to have access to public property damage assistance. Overall, damage estimates from the blizzards and floods for the state were at 43 million dollars.

NFIP: [§201.6(c)(2)(ii)]
Currently 3 properties in Marshall County have NFIP policies in force. Veblen is the only town that has been mapped. Marshall County, Britton and Langford all participate in the National Flood Insurance Program (NFIP) as a No Special Flood Hazard Area.

CRS Program:
None of the communities in Marshall County participate in the Community Rating System program at this time.

CURRENT FLOODING CONDITIONS:
Flooding in Marshall County continues to be a challenge to the residents and property owners who are affected each year. Mitigation for flooding is always a priority. The current situation is severe, due to numerous roads being flooded out during the 2019 Spring, Summer, and Fall. Numerous roads are damaged, some entirely under water, throughout the year.

Over the last 15 years, Marshall County has received several Public Assistance grants for flooded roads. The county Highway Shop itself if susceptible to flooding because it sits lower than the town of Britton and is located next to a slough.

Marshall County had flooding issues from 1997 – 2012 so most of the problem roads have had a grade raise done already. County 13G does have grade raise issues but it only serves one farmer who has an alternative route and no one really lives on this road. The County's road on 120th has many grade raise issues and really is not a cost effective road to spend the dollars necessary to do the numerous grade raises required. This road has been flooded by the ever expanding Stink Lake which is for the most part a land locked body of water so instead of draining expands. The County has completed grade raises on a county road near Newport Colony because the road has been flooded.

According to an article in *The Britton Journal* and the *Langford Bugle* on April 3, 2019; in late March 2019, Langford experienced flooding when water came over the banks of the creek just east of town. Local residents came together to fill sandbags, dig out a ditch. The problem developed due to ice at the bottom of the creek. The Langford Utilities Manager, Blair Healy, said that the water itself was only three to four feet deep but it was running over the top of the ice. Sandbags were placed along the east bridge and on the northeast side of town. They also used an excavator to cut through the ice at the bottom of the creek to deepen the ditch. Healy also estimated there were at least a dozen places where water was over the road within a mile of Langford, and he said several culverts were washed out.

The same article also mentioned that 10-15 roads had water running over them and that several roads were barricaded closed. Todd Landmark, Marshall County Emergency Manager said the water was pooling rather than flowing due to blocked culverts.

In an April 10, 2019 article, the *Langford Bugle* noted that Highway Superintendent Dustin Hofland informed the County Commission that about 40 sites on roads in the county have sustained significant damage due to flooding and he expected more locations to be added in the future.

A October 30, 2019 *Langford Bugle* noted that County Road 4 had water flowing over it. The Highway Department said a dam built years ago is holding back water which is flowing about 2 ½ miles to the east and then over to County Road 4. The Highway Superintendent proposed to County Commissioners to take off the top part of the dam to allow water to flow faster.

Downstream culverts were not at full capacity. Upper Crow Creek Drainage Board officials said they have plans for removing the dam and cleaning that section of Crow Creek ditch in the future. The drainage board also recommended removing part of the dam holding water in Section 22 of Dayton Township.

HAIL

Hail occurrences are common in Marshall County and a full history by location throughout the county can be found in Appendix C. The NOAA Storm Database reports 62 occurrences for hail in Marshall County over the last 10 years. Obviously, with such a high number of occurrences it is reasonable to expect that 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 that such damage was not reported because it was believed to be insignificant at the time, or because those responsible for reporting such information did not report to the proper agencies. Unfortunately the total damages for each event are not available but hopefully in the near future a method for collecting this data will evolve so that it can be made available to local governments for mitigation planning.

HIGH/SEVERE WIND

Severe wind events are common in eastern South Dakota. Several times a year the residents of Marshall County can expect to experience strong winds in excess of 40 mph. Gusts of wind in excess of 100 mph have also been recorded for the area. The NOAA Storm Database reports 8 occurrences of high/strong wind in Marshall County in the last 10 years. The database also reports 26 occurrences of thunderstorm wind. Of all 26 occurrences, only one reported property damage, which was $80,000 worth of damage when 80 mph winds damaged a home and equipment on a farm. Local officials and participation jurisdictions believe this number is understated. High and severe wind history for Marshall County can be found in Appendix C. Thunderstorm wind occurrences can be found in Appendix C.

LIGHTNING

The extent or severity of lightening 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. People who leave shelter during thunderstorms to watch or follow lightening also have the possibility of being struck by lightning. The lightning history for the past 10 years shows zero occurrences listed on the NOAA website. Since lightning is common in this region of the United States and in Marshall County it is evident that the information reported in the NOAA website is inaccurate and incomplete. Since no information was provided a table showing location, date, time, and magnitude was not included in the plan. It is reasonable to believe that lightning can occur anywhere in the County and has 100% chance of occurrence in any given year.

TORNADOS

The annual risk for intense summer storms is very high. All of Marshall County is susceptible to summer storms. Warning time for summer storms is normally several hours, sufficient for relocation and evacuation if necessary. However, tornadoes may occur with little or no warning. The NOAA Storm Database reports 6 occurrences of tornados in Marshall County in the last ten years. A detailed tornado event history can be found in Appendix C.

June 2014 - Storms in a broken line brought some large hail up to golf ball size along with a tornado to parts of Marshall county. A tornado touched down about 9 miles northeast of Langford with a large metal garage sustaining roof damage with a large section of the southern roof blown

off. A separate smaller and older wooden garage was almost completely destroyed with debris blown up to 100 yards to the east and southeast. A few trees also sustained broken limbs.

July 2015 - A surface low pressure area moving across South Dakota combined with a warm front lifting north and a cold front moving east brought many severe thunderstorms to northeast South Dakota. Large hail up to the size of baseballs, damaging winds up to 100 mph, along with a few tornadoes affected much of northeast South Dakota. A tornado touched down east northeast of Langford. The tornado damaged a cornfield and moved many hay bales.

June 2017 - Widespread wind damage occurred across northeast South Dakota as the storms formed a line and moved northeast. Many tornadoes occurred across the region, causing EF-0 and EF-1 damage. A brief tornado touched down and caused the collapse of the entire roof of a barn. Debris was lofted 500 feet to the northeast. Minor roof damage also occurred to a second outbuilding along with minor tree damage and damage to the siding of a house.

August 2019 - A tornado developed over Roy Lake and came onshore on the southeast side of the lake. The tornado flipped over a pontoon, broke several tree branches, and split a couple trees. It then caused minor damage to an outbuilding before producing extensive tree damage on the south side of a golf course. One piece of lawn furniture was found in a tree over 150 yards away from the original location. Large tree branches were also tossed over 60 yards across fairways on the golf course. In addition to the tornado damage, straight line winds tipped over a camper and caused tree damage in other locations in and around the golf course.

EXTREME TEMPERATURES

Extreme temperatures in Marshall County are common occurrences. It is expected that at least two times each year there will be extreme heat or extreme cold in the area. The following information was found on the NOAA website. It is possible that people in the area have adapted to this type of extreme temperatures and thus such weather events are not reported as often as they occur. It is also possible that the information has only in recent years been tracked or reported. The NOAA Storm Database reports 22 occurrences of extreme cold / wind chill, 1 occurrence of cold/wind chill, and two days of excessive heat in Marshall County since 2010. It is likely that extreme temperatures have only been documented in recent years. The location for extreme temperatures is not specifically identified by jurisdiction due to the vast area across the State of South Dakota affected by extreme temperatures. A detailed listing of all occurrences is included in Appendix C.

Extreme Cold

January 2014 - The combination of sub-zero temperatures and north winds of 15 to 25 mph produced bitter cold wind chills of 35 below to 45 below zero across the region. Several area activities were cancelled, as well as some schools on the 27th. Some of the coldest wind chills include; 45 below near Hillhead; 44 below near Webster; 42 below near Long Lake and 40 below in Watertown.

December 2013 - Arctic air combined with northwest winds to 5 to 15 mph brought extreme wind chills to north central and northeast South Dakota. Wind chills of 35 degrees below to almost 50 degrees below zero occurred across the region. 39 degrees below zero at Mobridge, Eureka, and Britton.

December 2013 - Arctic air combined with northwest winds of 20 to 35 mph brought bitter cold wind chills to much of northeast South Dakota. Some of the wind chills include; 43 degrees below zero at Hillhead in Marshall county.

January 2014 - The coldest air in recent history moved into the region during the early morning hours of the 5th and continued into the afternoon hours of the 6th. The combination of sub-zero temperatures with north winds produced dangerously cold wind chills from 40 below to around 55 degrees below zero. Winds gusted to over 40 mph at times. Several area activities were cancelled, as well as many schools on Monday the 6th. Some of the coldest wind chills include; 55 below near Hillhead.

March 2014 - Arctic air combined with strong northwest winds to bring bitter cold wind chills to central and northeast South Dakota east of the Missouri River. Bitter wind chills of 35 below to around 40 below occurred. Some of the coldest wind chills include, 41 degrees below zero near Roy Lake.

January 2019 - Following in behind a high wind/blizzard event, bitter cold arctic air along with northwest winds brought extreme wind chills to north central and northeast South Dakota. The extreme wind chills began during the morning hours of the 29th and continued through the morning hours of the 31st. Many record lows and record low maximums were set mainly on the 30th. Highs were in the teens below zero on the 30th across the east. Some of the record low temperatures were, 40 degrees below zero at Britton. Most schools along with college campuses and businesses across the region had late starts or cancelled classes for two days. Mail service was also cancelled. Extreme wind chills from 35 degrees below to near 60 degrees below zero occurred.

March 2019 - Extremely cold arctic air dominated the weather across central and northeast South Dakota from the late evening of the 2nd through the morning of the 3rd. Record lows in the teens below and 20s below zero were set across the region. Most of the record lows shattered the previous record lows by 5 to 10 degrees. In fact, Britton in northeast South Dakota fell to 29 degrees below zero breaking the old record of 19 degrees below zero.
The arctic cold along with north winds brought dangerously cold wind chills ranging from 35 below zero to near 55 below zero across the region. Some of the extreme wind chills included, 49 degrees below zero at Britton and Eureka.

Extreme Heat

The counterpart to extreme cold is extreme heat which also has dangerous implications to humans, livestock, and critical structures and facilities if certain conditions are present.

July 2011 – A large upper level high pressure area built over the region bringing very hot and humid conditions. This was the worst heat wave to hit the region since July 2006. Beginning on Friday July 15th and persisting through Wednesday July 20th, many locations experienced high temperatures in the 90s to lower 100s, with low temperatures in the 70s at night. In addition, humidity levels rose to extreme levels at times. Surface dew point temperatures in the 70s and lower 80s brought extreme heat index values of up to 110 to 125 degrees. The prolonged heat took its toll on livestock with fifteen hundred cattle perishing during the heat. Numerous sports and outdoor activities were cancelled. Some of the highest heat index values included; 118 degrees at Sisseton; and 121 degrees at Aberdeen. The highest heat index value occurred at Leola with a temperature of 98 degrees and a dewpoint of 82 degrees, the heat index hit 125 degrees.

July 2016 - A very warm and abnormally large upper level high pressure area along with high dew points brought high heat indices to central and northeast South Dakota. High temperatures

were in the upper 80s to the 100s with overnight lows in the upper 60s to the mid 70s. A few of the highest heat index values include: 105 degrees at Britton.

WINTER STORMS

Winter storms are common in Marshall County. 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 to the County and are routine procedures in Marshall 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 storms identified in Appendix C, were considered to have occurred countywide.

Winter Weather (2) / Winter Storm (8) / Blizzard (30) / Ice Storm (1) / Heavy Snow (13)	54

The NOAA Storm Database reports a total of 54 occurrences of some type of winter weather:

- Winter Weather – 2 occurrences
- Winter Storm – 8 occurrences
- Blizzard – 30 occurrences
- Ice Storm – 1 occurrence
- Heavy Snow – 13 occurrences

Documentation of winter storm activity in Marshall County can be found in Appendix C.

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 track weather and climate patterns.Significant events include:

January 2010 - A powerful mid season winter storm moved northeast out of the four corners region of the United States and into the Northern Plains. Ahead of this system, warm and moist air streamed northward creating widespread fog and freezing fog conditions during the days leading up to the event. Heavy riming frost began to accumulate on power lines and tower guide wires, placing heavy strain on them by the time the freezing rain arrived in the late morning and afternoon hours on Friday, January 22nd. Along with the freezing rain, southeast winds gusting over 30 mph also created a strain on sagging power lines. Scattered power outages were reported as early as Tuesday, January 19th due to the frost covered lines, but the majority of power line and power pole damage occurred during the evening of the 22nd and the morning of the 23rd. By the time the rain, freezing rain, and snow ended Saturday morning, January 23rd, nearly every power cooperative across central and northeast South Dakota suffered extensive power pole and power line damage. Also, several radio and television towers were downed by the icing and strong winds.

The heavy icing and strong winds downed over 5000 power poles along with 21,000 miles of power lines across South Dakota leaving thousands of households without power. Several homes sustained substantial damage caused by broken water pipes. Power was still not restored for many customers until several weeks after the event. Power line crews from Minnesota, Kansas, and Oklahoma were called upon to help restore power. Several counties, along with the state emergency operations center, opened emergency shelters for people to stay. Forty-one National Guard members were on active duty across the state helping to restore

power. Many flights were delayed or cancelled at several airports. The ice and the wind also helped topple a canopy at a truck stop at the intersection of Highway 20 and 212. On January 23rd, a radio and television signal transmission tower northwest of South Shore was downed along with a tower north of Reliance and a radio tower southwest of Marvin.

The hardest hit area with this storm was the Cheyenne River and Standing Rock Sioux reservations in central and north central South Dakota. With no electricity, residents were dependent on donations of food, bottled water, blankets, heat and light sources, toiletries, and cots. The rural water system serving the Cheyenne River Sioux Tribe was shut down resulting in the state EOC shipping water to the reservation.

The Governor asked for a presidential disaster declaration for most of the counties and three reservations. The request was for both public and individual assistance for total damages estimated over 20 million dollars for the state.

December 3, 2010 - A large area of snowfall occurred across northeast South Dakota with an embedded heavier band of snow occurring along the North Dakota border. Snowfall amounts of 1 to 8 inches occurred across the area with the heaviest snow falling across northern Marshall and northern Roberts counties. The heaviest snowfall amounts included 6 inches at Roy Lake and Victor, 7 inches 9NW of Britton, and 8 inches 7NW of Veblen.

December 31, 2010 - A second stronger surface low pressure area moved across the region on New Year's Eve bringing widespread heavy snowfall along with blizzard conditions. Bitter cold northwest winds of 25 to 40 mph combined with additional snowfall of 6 to 10 inches brought visibilities to near zero across much of the region. This was the second blizzard in two days across the region. The blizzard conditions continued into early New Year's Day. Both Interstates 29 and 90 were closed from the 31st until Sunday, January 2nd. The total snowfall amounts from the two storms ranged from 6 to 15 inches across the region. The two day snowfall amounts included 15 inches at Britton, Webster, and Redfield. The snowfall began between 6 am and noon CST on the 31st and ended between 4 am and 11 am CST on the January 1st.

February 2011 - An intense upper level low pressure area moved across the region Sunday into Monday morning bringing very heavy snowfall to all of the region. Snowfall amounts of 10 to over 20 inches along with north winds of 25 to 40 mph brought widespread blizzard conditions and heavy drifting across the region. The heavy snow and low visibilities resulted in road closures Sunday into Monday. Interstate-29 and Interstate-90 were both closed on Sunday and not opened until Monday. Interstate-29 was closed from Sioux Falls to the North Dakota border while Interstate-90 was closed from Wall to Chamberlain. Businesses, flights, schools, and many events were closed or cancelled Sunday and Monday. At several locations, this snowstorm set all-time record snowiest calender days in February along with top five all-time snowiest calender days for the season. Finally, the February snowfall totals were in the top five all-time for most locations. The snowfall began in the early morning hours of the 20th and ended around noon on the 21st.

March 2011 - An upper level low pressure area moving across the region brought 6 to 14 inches of snowfall across northeast South Dakota. Some snowfall amounts include, 6 inches at Groton, Clark, Clear Lake, and Stratford; 7 inches at Victor and Roy Lake; 8 inches at Sisseton and Webster; 9 inches at Britton; 10 inches at Waubay and Big Stone City; 11 inches at Summit and Milbank; and 14 inches at Wilmot. Travel became difficult across the affected area with many schools and events cancelled.

April 2011 - This early spring storm brought 6 to 14 inches of heavy snow to the area. The heavy wet snow caused a lot of travel problems along with a few accidents. Some snowfall amounts included, 9 inches at 9 NW Britton;

February 2012 - An intense area of low pressure moved across the region bringing blizzard conditions to much of central and northeast South Dakota. Snowfall amounts of 4 to 14 inches along with northwest winds gusting over 40 mph brought widespread low visibilities to less than a quarter of a mile at times. Most schools were closed on both the 28th and 29th. Interstates 29 and 90 were also closed for awhile during the storm. There were several cars and semis stranded along with a few accidents. The power was out for a time for several hundred customers. Some snowfall amounts included, 9 inches at Roy Lake.

December 2012 - A strong area of low pressure moving across the region brought a one-two punch of heavy snow on Saturday followed by blizzard conditions on Sunday. Snowfall amounts of 6 to 10 inches along with strong north winds brought widespread blizzard conditions and heavy drifting across the region for mainly Sunday. The heavy snow and low visibilities resulted in road closures Saturday night into Monday morning. Due to the road closures, a number of events were cancelled or postponed and many people became stranded. Some area schools started late or were closed on Monday.

February 2013 - A very strong low pressure area moving across the region brought widespread heavy snow of 6 to as much as 19 inches. Along with the heavy snow came very strong winds of 30 to 50 mph causing widespread blowing and drifting snow. Roads, highways, along with Interstates 29 and 90 were closed for a time. Schools started late or were closed on Monday the 11th. A man died from exposure when he left his vehicle after he became stranded about three miles west of Redfield. The snow began between 8 pm and Midnight on the 9th and ended in the late afternon of the 10th across central South Dakota and around noon on the 11th across the northeast.

February 2013 - An Arctic front dropping in behind an exiting low pressure area brought some scattered light snow showers, very strong winds of 30 to 50 mph, along with widespread blowing snow. With the deep existing snow cover along with the new snowfall, ground blizzard conditions occurred from the late morning to the evening across much of northeast South Dakota. Additional amounts from a trace up to an inch occurred. Frequent whiteout conditions brought extremely hazardous travel, with travel not advised along with several roads closed. Many mortorists were stranded and had to be rescued. Several schools were closed early and opened late on Tuesday the 19th. The highest wind gust was 47 mph at Hayti and Summit. In part due to the low visibility and blowing snow, a van and a semi collided on U.S. Highway 281 two miles south of Warner around 11 am on the 18th. A women and her 2 children were taken to the hospital with non life threatening injuries.

April 2013 - A large slow moving upper level low pressure area moving across the region brought several rounds of heavy snow to much of central and northeast South Dakota. Snowfall amounts from 6 to as much as 22 inches occurred over the several day period. Travel became difficult if not impossible with some roads closed for a time. Interstate-90 was closed the evening of the 9th. Many schools were also closed across the region. Additionally, a 66 year old male suffered a heart attack and passed away while shoveling the snow in front of his house in Aberdeen. Snowfall amounts included; 7 inches at Kidder.

December 2016 - An intense surface low pressure area moved from northeast Colorado to South Dakota from the 24th through the 26th. Ice accumulations were significant across central

and northeastern South Dakota with over an inch accumulation for some locations. High winds during this event increased the amount of power pole, line, and tree damage. Those who did not see freezing rain accumulations had to deal with ice as well. The ponding of the heavy rain froze overnight once much colder air moved in. Roads and walkways became treacherous ice rinks and remained as such for many days. There were numerous injuries from slips on the ice, as well as several vehicular accidents and flight cancellations. Livestock was also affected, though most made it through the storm. Dairy operations dealt with frozen drinking water tanks. Twenty-one counties encompassing 30 communities and 3 Indian reservations were impacted. Entire communities, thousands of homes and businesses, and ultimately over 12,000 people went without power. For some, power was not restored for 10 days despite tireless efforts. All power was restored by January 4th, 2017. Water and sewer systems shut down for several days for some communities and emergency shelters were necessary. Deuel, Day, Marshall, Roberts and Grant counties were the hardest hit. County and city governments were overwhelmed by ice accumulations and blizzard conditions and struggled with maintaining accessibility even for emergency traffic. Road conditions deteriorated to the point where it took up to several hours for emergency officials to respond to 911 calls. Due to widespread significant impacts, the Governor of South Dakota declared a State of Emergency on the 26th which helped facilitate the movement of out-of-state crews to aid with power restoration. There was also a Presidential Disaster Declaration for damage to public property. The total estimated damage was near 8 million dollars for central and northeast South Dakota.

March 2018 - An intense surface low pressure area brought scattered showers and thunderstorms along with heavy snow to much of north central and northeast South Dakota from the 5th to the 6th. There were several reports of thundersnow across the region. Snowfall amounts ranged from 6 to as much as 18 inches before it ended on the 6th. The very heavy snow resulted in closed businesses, schools, government offices, difficult travel conditions with several accidents reported, along with closed highways and Insterstate-29. Many activities and events were also postponed or cancelled. Some snowfall amounts from across the region include, 7 inches at Britton. Due to the track of the surface low pressure area, the western part of our region experienced heavy snow and very strong northwest winds bringing blizzard conditions. Therefore, refer to the blizzard entry for March 5th and 6th for more information.

December 2018 - A large upper level low pressure trough from the southwest United States brought a couple rounds of snow to the region. The snow began in the morning hours of the 26th from midnight to noon and ended in the morning hours of the 28th. There was also mixed precipitation including freezing drizzle with the first wave. Heavy snowfall amounts ranged from 6 to 13 inches. Northwest winds increased to 25 to 40 mph in the morning and afternoon with gusts to over 50 mph on the 27th resulting in widespread blizzard conditions across much of the region, ending in the morning hours of the 28th. Travel was greatly affected or completely halted with no travel advised across much of the region. Many reports of vehicles becoming stuck or ending up in the ditch occurred. There were also many activities and events postponed or cancelled along with many businesses closed. Some snowfall amounts include; 11 inches at Britton.

March 9, 2019 - A strong surface low pressure area moving across the central plains brought widespread heavy snow to north central and northeast South Dakota. Snowfall amounts across the region ranged from 6 to 12 inches which significantly disrupted travel. Some snowfall amounts included, 9 inches at Britton, Mobridge, and Aberdeen.

March 14, 2019 - A record breaking surface low pressure area moved across the central plains and brought rain, freezing rain, sleet, heavy snow and blizzard conditions to most all of central

and northeast South Dakota. Heavy rain of 1 to over 2 inches occurred across the east and southeast part of the region in the Webster, Clark, Milbank, Clear Lake, and Watertown areas before the precipitation changed over to snow. In between the rain and snow, a band of freezing rain and sleet occurred. Ice accumulation up to quarter to a half inch combined with high winds brought down some power lines and poles bringing many power outages along with bringing treacherous travel. Nearly 1,500 people were without power for a few days mainly for Hand, Spink, Brown, Day, Marshall, and Roberts counties.

The heavy snow and strong winds also brought some cattle losses across the region along with some damage to buildings. Interstate 90 was closed along with many other roads across the region. Nearly all schools were closed. The State B Basketball Tournament in Aberdeen was also affected by the storm with a delay in the start time. Emergency declarations were issued for many counties for the hazardous travel conditions and impassable roads along with livestock losses and structure damage. The declarations included subsequent flooding at the end of March. Agricultural producers were eligible for loans from the USDA who incurred losses from the blizzard. The heavy rainfall amounts east and southeast in the region include, 1.50 inches at Webster; 1.54 inches at Milbank and Clark, 1.91 inches at Watertown, and 2.43 inches at Clear Lake. This rain added water to an already deep and high water content snow pack across the region which would turn into flooding by the end of March. The high winds and heavy snow created 5 to 10 foot drifts.

According to *The Britton Journal*, an estimated 2,000 people served by Lake Region Electric were without power due to weather related issues. One report indicated that people in the Amherst area were without power for all of Thursday and most of Friday. Otter Tail Power customers in Britton were also without power for about 8 hours on Friday afternoon and night.

April 2019 - A historic blizzard affected all of central and northeast South Dakota from April 11th into the 12th. The storm came in two waves. The first wave brought a band of moderate to heavy snow and thunder as it lifted from south to north across the region during the early morning hours of the 10th. The thunder snow with this first wave brought snowfall rates of 2 inches or more an hour with initial snowfall accumulations of 2 to 10 inches. There were some areas of light freezing rain from Pierre to Watertown in the early morning hours of the 10th.

The second wave of heavy snow and strong north winds were with the main surface low pressure area moving across the central plains. The heavy snow in combination with winds gusting to 35 to 50 mph brought widespread blizzard conditions along with heavy drifting. At the storm's end, most locations received anywhere from 4 to 15 inches of snowfall with some locations reporting extraordinary snowfall amounts of 16 to 30 inches.

The blizzard had wide ranging impacts across the region, mainly to cattle producers and roadways. Countless roads were blocked or impassable. Thousands of ranchers were affected. There were stranded herds of cows with countless calves buried in the snow (many lost). There were also some spotty power outages. Interstates 29 and 90 were closed, and most other area roads were designated by the DOT as no travel advised. Many vehicles became stuck across the region with several rescues taking place. There were also several accidents reported. Schools were closed for two days along with state offices throughout central and northeast South Dakota. With the ongoing flooding across the region from the expansive snowmelt from the winter, the additional snowmelt water from this blizzard would only exacerbate the widespread flooding across the region. Many counties declared disasters in March with several more counties declaring disasters in April for the flooding and the March blizzard. Snowfall

amounts includes 14 inches at Aberdeen, Presho, Britton and Selby. The 25 inches at Watertown broke their three day record for snowfall set in March 1937.

October 2019 - A strong and rare winter storm brought heavy wet snow along with an initial period of heavy sleet to central and northeast South Dakota. Snowfall amounts ranged from 6 to 13 inches with sleet amounts of 1 to 2 inches. Strong northwest winds of 25 to 35 mph with gusts to 40 to 50 mph did bring some blowing snow creating lower visibility along with drifting snow. Travel was significantly disrupted or halted with a few accidents occurring. Many schools were closed and events were delayed or cancelled. The early heavy snow greatly affected harvest along with damaging some of the crops. Snowfall amounts include, 6 inches at Mobridge, Summit, and Britton;; 8 inches near Claremont, Artas, north of Pierre, east of Pierpont, and Murdo; 9 inches at Lake City.

THUNDERSTORMS

Thunderstorms and high wind occurrences in the County are also very common. The County continues to educate residents of the dangers of such storms through public service announcements and other printed media. The NOAA Storm Database reports 26 occurrences of thunderstorm wind in Marshall County over 10 years, from 2010 to 2019. History of thunderstorm winds in Marshall County can be found in Appendix C.

ASSESSING VULNERABILITY: OVERVIEW

Requirement §201.6(c)(2)(ii): [The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

The following paragraphs summarize the description of the jurisdiction's vulnerability to each hazard and the impact of each hazard on the jurisdiction**.**

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. Marshall 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 Marshall 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 conditions to rescue them.

Drought can be defined as a period of prolonged lack of moisture. High temperatures, high winds, and low relative humidity all result from droughts and are caused by droughts. A decrease in the amount of precipitation can adversely affect stream flows and reservoirs, lakes, and groundwater levels. Crops and other vegetation are harmed when moisture is not present within the soil.

South Dakota's climate is characterized by cold winters and warm to hot summers. There is usually light moisture in the winter and marginal to adequate moisture for the growing season for crops in the eastern portion of the state. Semi-arid conditions prevail in the western portion. This combination of hot summers and limited precipitation in a semi-arid climatic region present a potential position of suffering a drought in any given year. The climatic conditions are such that a small departure in the normal precipitation during the hot peak growing period of July and August could produce a partial or total crop failure. In fact South Dakota's economy is closely tied to agriculture only magnifies the potential loss which could be suffered by the state's economy during drought conditions. Roughly every 50 years a significant drought is experienced within the county, while less severe droughts have occurred as often as every three years.

Earthquakes occur in the area, but have not had a great enough magnitude or intensity in the past 10 years to be reported. The magnitude and intensity of an earthquake is measured by the Richter scale and the Mercalli scale. An earthquake of noteworthy magnitude has not occurred in the County for decades, but it would be reasonable to expect that a large earthquake would have comparative impact on Marshall County as it would anywhere else. Marshall County does not have skyscrapers or very many tall buildings other than grain elevators, but it also does not have building codes in place that require homes or buildings to be retrofitted. If earthquakes were a regular occurrence in Marshall County, the County would be extremely vulnerable because of the lack of building requirements but since the likelihood of an earthquake is minimal, the risk is also considered low.

Extreme Cold temperatures often accompany a winter storm, so you may have to cope with power failures and icy roads. Whenever temperatures drop decidedly below normal and as 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 in 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 in masses.

Extreme Heat Severe heat waves have caused 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 extreme heat. Both have an effect on quality of life, however, neither are detrimental to the existence of the population of Marshall County.

Flooding 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 a road. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible.

The flooding of township and county roads is a concern for the entire county. Concern areas are addressed in the Mitigation Section of this plan.

Freezing Rain causes adverse conditions such as slippery surfaces and extra weight 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. Marshall County and the local jurisdictions within are susceptible to these conditions due to the types of structures and surfaces that exist in the county that can not 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 have to go out on rescue missions in the adverse conditions.

Hail causes damage to property such as crops, vehicles, windows, roofs, and structures. Marshall County and its local jurisdictions are vulnerable to hail, like most other areas in the State due to the nature of the hazard. Mitigating for hail is difficult and is usually found in the form of insurance policies for structures, vehicles, and crops.

Heavy Rain causes damage to property such as homes and roads. Often when heavy rains occur in Marshall County it causes sewers to backup in homes due to excess water entering the wastewater collection lines. The excess water sometimes has no place to go and thus basements fill up with water which results in damage to water heaters, furnaces, and damage to living quarters for people who live in basement apartments. Roads and bridges can be washed out, thus causing traffic hazards for travelers and commuters. Many times the roads have to be closed causing rural traffic to have to take alternate routes which can sometimes be an additional 5-10 miles out of the way. All areas of the County are vulnerable when heavy rains occur. Storm sewers are built for the typical storm and therefore do not accommodate for excessive or heavy rains.

Ice Jams cause damage to bridges, roads, and culverts due to water currents pushing large chunks of ice under or through small openings. There are four locations in the County which are at risk of ice jams: at the intersections of Turtle Creek and Highways 24 and 26, and at the intersections of Snake Creek and Highways 19 and 14. There are also many other unspecified areas throughout the county that are vulnerable to ice jams.

Landslides have a low chance of occurring in Marshall County due to the relatively flat topography.

Lightning often strikes the tallest objects within the area. 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. 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. Since the entire county is vulnerable to lightning strikes and subsequent fires, these fires will be treated under the fire section of this plan.

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, concluding lightning strikes catch them off guard.

Severe Winter Storms have a high risk of occurrence. Approximately five snowstorms each resulting in 5-10 inches of snow occur in the Marshall County area annually. Heavy snow can immobilize transportation, down power lines and trees and cause the collapsing of weaker structures. 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.

Additionally, winter storms often result in some forms of utility mishaps. High voltage electric transmission/distribution lines run the length of Marshall County. These lines are susceptible to breaking under freezing rain and icy conditions and severing during high blizzard winds. Any electrical complications bring associated risk of food spoilage, appliance burnout, loss of water, and potential harm for in-house life support users. Limited loss of power is not uncommon on an annual basis. A typical power interruption lasts from 1 to 3 hours. Most residents are prepared to deal with this type of inconvenience.

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.

Snow Drifts are caused by wind blowing snow and cold temperatures. These drifts can be small finger drifts on roadways causing cautionary driving, or 20-40 foot high drifts that block entire highways, roads, and farmyards for several days.

Populations at highest vulnerability for this type of hazard are rural homeowners, which account for approximately 57 percent of the county, and the elderly. As with any weather event, those dependent upon healthcare supplies and other essentials will also bear the brunt of highway closures and slowed transportation due to snow and ice. Emergency services will also be delayed during winter storms.

Snow removal policies and emergency response is at excellent performance and no projects will be considered in this area. Generators provide back-up power to many critical facilities within the county. However, some of the critical facilities that could be utilized in disaster situations do not have backup generators. Also, some facilities have generators that only power a portion of operations.

Strong Winds can be detrimental to the area. Trees, poles, power lines, and weak structures are all susceptible and vulnerable to strong winds. When strong winds knock down trees, poles, power lines, and structures it creates additional traffic hazards for travelers and commuters. Strong winds are a common occurrence in all parts of Marshall County. The farming community tends to be vulnerable because many old farm sites have weak, dilapidated, or crumbling structures or structures such as grain bins which can easily be blown over. Another area of particular vulnerability would be those areas with dense tree growth where dead or decaying trees lose their stability and can be blown over or knocked down easily.

Subsidence is a hazard that has a very low probability of occurring in the area. Therefore the jurisdictions do not consider themselves particularly vulnerable to such a hazard.

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”.

Tornadoes 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 percent of occurrence) is from 11 am to midnight. Within this time frame, most tornadoes occur between 4 pm and 6 pm. The annual risk for intense summer storms is very high. Often associated with summer storms are utility problems. High voltage electrical transmission lines run the length of Marshall County. These lines are susceptible to breaking during high winds and hail. Tall trees located near electrical lines can be broken in wind or by lightning strikes and land on electrical lines, severing connections. Any electrical complications bring associated risk of food spoilage, appliance burnout, loss of water, and potential harm to in-house life support dependents. Limited loss of power is common on an annual basis. Typical power interruptions last around 1 to 3 hours. Most residents are prepared to deal with this.

Wildfires occur primarily during drought conditions. Wildfires can cause extensive damage, both to property and human life, and can occur anywhere in the county. 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 frequent wildfires may cause other negative ecological effects. Current techniques may permit and even encourage fires in some regions as a means of minimizing or removing sources of fuel from any wildfire that might develop.

Since there are no remote forested regions in Marshall County, wildfires can be easily spotted and are capable of being maintained. Marshall County does not have any areas that are considered Wildland-urban interface because property outside city limits is primarily agricultural land, thus, there are no urban interface areas at risk in Marshall County. In addition, fire interference with traffic on highways is not a major concern. The most important factor in mitigating against wildfires continues to be common sense and adherence to burning regulations and suggestions disseminated by the County.

Moisture amounts have the biggest impact on fire situations. During wet years, fire danger is low. More controlled burns are conducted and less mishaps occur. During dry years, severe restrictions are placed on any types of burns. For information on dealing with open/controlled burning within the county, see SDCL 34-29B and 34-35.

Hunting season brings thousands of hunters to the area. Shots have the potential to ignite dry grassland, hay bales, or storage areas. This is a risk that is addressed in hunting education and safety.

ADDRESSING VULNERABILTY: REPETITIVE LOSS PROPERTIES
Requirement §201.6(c)(2)(ii): [The risk assessment] must also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

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. Marshall County does not keep an official record of repetitive loss properties however; the State NFIP Coordinator, Marc Macy, provided a listing of two properties that qualify as repetitive loss properties, with $23,766 in payouts. FEMA's new database does not provide specific addresses anymore, but none of the properties have been mitigated at this time.

ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES
Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area.

Requirement §201.6(c)(2)(ii)(B): The plan should include an estimate of the potential dollar losses to vulnerable structures identified in this section and a description of the methodology used to prepare the estimate.

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 as a result of severe summer or winter storms, Marshall County and participating entities want to ensure they have the ability to prevent further loss of life by generator powered critical facilities and shelters. The City of Britton has many structures that are vital to emergency operations including the County's only hospital, a nursing home, and the Marshall County Courthouse. Table 4.7 is a list of critical facilities that would cause the greatest distress in the county if destruction occurred. The table is organized alphabetically by location (column 1) and then by owner type (column 3). Even though Eden and Lake City did not participate in the planning process; the planning committee and the County Emergency Manager identified the critical structures in those communities.

Table 4.7: Critical Structures in Marshall County

Location	Structure Name	Owner Type	Value	Size
Britton	County Courthouse	County	NA	NA
Britton	County Highway Shop (N of Britton)	County	NA	NA
Britton	County Highway Shop (Church St)	County	NA	NA
Britton	Ambulance Garage	County	NA	NA
Britton	County Community Building	County	NA	NA
Britton	Britton Events Center/City Hall	City	NA	7,200
Britton	City Shop	City	NA	NA
Britton	Water Tower	City		150,000 gal
Britton	Ground Storage Tank	City		250,000 gal

Britton	Booster Pump House	City		
Britton	Municipal Airport	City		1 section
Britton	Britton-Hecla Public School	School District	NA	50,000
Britton	North Marshall Fire Department (shelter)	Private Non Profit	NA	21,000
Britton	Marshall County Healthcare Center Avera	Private	NA	19,229
Britton	Senior Center	Private	NA	5,000
Britton	Nursing Home	Private	NA	89,050
Britton	Horton Inc	Private	NA	90,000
Britton	Truss Pro	Private	NA	75,000
Britton	Precision Walls	Private	NA	15,000
Britton	Venture Communications	Private	NA	5,000
Britton	Full Circle Ag	Private	NA	10,000
Britton	Full Circle Ag Agronomy	Private	NA	15,000
Britton	Agtegra	Private	NA	
Britton	Cliff's 1-Stop	Private	NA	5,000
Britton	Norstar Federal Credit Union	Private	NA	4,860
Britton	Holland Bros Oil Co	Private	NA	5,000
Britton	First Savings Bank	Private	NA	16,000
Britton	Main Sewer Lift	City	NA	
Britton	10th Ave Sewer Lift	City	NA	
Britton	Lagoon Sewer Lift	City	NA	
Britton	Industrial Sewer Lift	City	NA	
Britton	County View Sewer Lift	City	NA	
Britton	1st Street Sewer Lift	City	NA	
Britton	Kadoun Sub Sewer Lift	City	NA	
Britton	Hicks Sewer Lift	City	NA	
Britton	Emergency Warning Siren	City	NA	
Britton	Britton Public Library	City	NA	5,060
Britton	SCADA Tower for Sewer System	City	NA	
Britton	Cell Phone Tower	Private	NA	
Location	**Structure Name**	**Owner Type**	**Value**	**Size**
Eden	Eden Fire Department	City	NA	4,000
Eden	Sewer Lagoon	City	NA	3 ponds
Eden	Water Storage System	City	NA	25,000
Eden	City Park	City	NA	NA
Eden	Marshall County Highway Shop	County	NA	2,500
Eden	Sacred Heart Church (shelter)	Private	NA	NA
Eden	Dan's Grocery and Gas	Private	NA	2,500
Eden	Eden Oil	Private	NA	NA
Location	**Structure Name**	**Owner Type**	**Value**	**Size**
Lake City	Lake City Community Center		NA	NA
Lake City	Municipal Building	City	NA	NA

Lake City	City Shop	City	NA	1,600
Lake City	Lutheran Church	Private	NA	1,300
Lake City	Catholic Church	Private	NA	2,000
Location	**Structure Name**	**Owner Type**	**Value**	**Size**
Langford	Langford Fire Department (Fire Hall)	City	NA	4,200
Langford	City Maintenance Office	City	NA	1,176/1,356
Langford	Langford City Hall (Library/Finance Office)	City	NA	1,920
Langford	Lagoons	City	NA	3 ponds / 10 M gallons
Langford	Langford Substation	City	NA	1,200
Langford	Pump Station / Water Tower	City	NA	160 / 32,000 Gal
Langford	City Well	City	NA	144
Langford	Marshall County Highway Shop	County	NA	NA
Langford	Langford Area Public School	School District	NA	58,855
Langford	Henry Osness Post (Legion Hall)	Legion	NA	3,200
Langford	Agtegra (Anhydrous Storage)	Private	NA	29,000 gall
Langford	Agtegra (Chemical Storage)	Private	NA	4,800
Langford	Agtegra (Office / Cold Storage)	Private	NA	8,720
Langford	Anderson Grain Facility	Private	NA	1,200
Langford	County Line Seed	Private	NA	6,500
Langford	DaMar Farmer's Elevator (Convenience Store/Fuel Storage)	Private	NA	3,400 / 3,500 gal
Langford	DaMar Farmer's Elevator (Propane Storage	Private	NA	95,000 gal / 30,000 gal
Langford	First State Bank	Private	NA	4,080
Langford	Front Porch Bar & Grill	Private	NA	5,000
Langford	Good Friends Day Care	Private	NA	1,200
Langford	Hardy Apartments	Private	NA	2,940
Langford	Hardy Apartments	Private	NA	2,940
Langford	Hewitt Insurance Agency	Private	NA	1,800
Langford	Hoines Apartments	Private	NA	1,800
Langford	Jensen Auto Service	Private	NA	1,600
Langford	Langford Development Apartments	Private	NA	1,600
Langford	Langford Development Apartments	Private	NA	1,600
Langford	Langford Lumber Co.	Private	NA	12,000
Langford	Langford Lutheran Church	Private	NA	8,000

Langford	Larson Shop (equipment storage for city)	Private	NA	2,400
Langford	Swede's Corner	Private	NA	2,800
Langford	United States Post Office	Private	NA	2,800
Langford	Venture Communications	Private	NA	800
Location	**Structure Name**	**Owner Type**	**Value**	**Size**
Veblen	Veblen Fire Department	City	NA	3,120
Veblen	Veblen City Hall (also Schoolhouse Daycare, Fitness Center, Senior Center at same location)	City	NA	NA
Veblen	City Shop	City	NA	1,224
Veblen	Post Office	City	NA	2,700
Veblen	Water Tower	City	NA	50,000 gal
Veblen	Waste Water Lagoons	City	NA	3 ponds
Veblen	County Highway Shop	County	NA	1,920
Veblen	Veblen Legion (shelter)	Private	NA	4,752
Veblen	Grobe's Grocery and Hardware	Private	NA	NA
Veblen	Laundrymat	Private	NA	NA
Veblen	First Savings Bank	Private	NA	NA
Veblen	Cantina Bar & Grill	Private	NA	NA
Veblen	Border States Propane and Shop	Private	NA	NA
Veblen	Lien's Shop	Private	NA	NA
Veblen	Ottertail Substation	Private	NA	NA
Veblen	RC Communication	Private	NA	NA
Veblen	Baus Oil and Gas Pumps	Private	NA	NA
Veblen	Veblen 8 Plex Apartments	Private	NA	NA
Veblen	Rosewood 4 Plex Apartments	Private	NA	NA
Veblen	Oakwood 6 Plex Apartments	Private	NA	NA
Veblen	Greenwood 4 Plex Apartments	Private	NA	NA
Veblen	Rein Construction	Private	NA	NA
Veblen	Hair on Mane	Private	NA	NA
Veblen	Joes Ag Supply	Private	NA	NA
Veblen	Shortfoot Calf Ranch Apartments	Private	NA	NA
Veblen	Pub 605	Private	NA	NA

The information provided in Table 4.7 was originally taken from the Inventory Assets Worksheet #3B that was given to all of the plan participants to fill out and return in the planning sessions that took place in the last plan revision. Plan participants also reviewed the information included in the current mitigation plan and updates as necessary.

In the process of updating the mitigation plan, the participants were instructed 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 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 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.

While the information may not be comprehensive it does give FEMA, SDOEM, and any other readers of the Plan an idea of how communities in rural South Dakota feel about certain structures. For example, FEMA may not view a bar and grill as a “critical structure” in larger cities; in small towns, that is sometimes the only gathering place in the community and one of the few (or only) businesses generating sales tax for the municipality. So it may be the case that without these “landmarks” the communities’ existence would be at stake.

ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

Requirement §210.6(c)(2)ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate…

The information provided in the following tables was collected from the local jurisdictions by the representatives from each community. The Marshall County Emergency Manager and other county departments provided the information for Marshall County and representatives from the local jurisdictions provided information regarding their vulnerabilities. Inconsistencies and missing information result from lack of existing mechanisms, plans, and technical documents available to the communities and also a result of people who are serving their communities on a volunteer basis as opposed to many other areas in the nation which have larger communities who pay salaried professionals to represent them during the mitigation planning process. Each of the communities provided the best available data considering the lack of resources in which to access the information.

The assessor’s office provided the assessed valuation of properties within the municipalities. All properties with structures, whether owner occupied or not were included in the valuations provided in Tables 4.8 through 4.13. The reports provided by the assessor’s office did not include the number of people in each structure; thus, many of the tables are missing this information. The commercial and industrial structures are lumped together as the system used by the director of equalization does not break the two categories apart. They also were not able to provide the number of ag buildings but do have the total values available.

4.8 Marshall County (Rural)Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in County	# in HA	% in HA	$ in County	$ in HA	% in HA	# in County	# in HA	% in HA
Residential	1,392	1,392	100%	$84,002,511	$84,002,511	100%	2,431	2,431	100%
Commercial	23	23	100%	$2,371,025	$2,371,025	100%			
Industrial									
Agricultural				$11,353,825	$11,353,825				

Religious									
Government									
Education									
Utilities									
Total	**1,415**	**1,415**	**100%**	**$97,727,361**	**$97,727,361**	**100%**	**2,431**	**2,431**	**100%**

4.9 Britton Estimated Potential Dollar Losses to Vulnerable Structures									
Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in County	# in HA	% in HA
Residential	513	513	100%	$47,187,155	$47,187,155	100%	1,241	1,241	100%
Commercial	109	109	100%	$13,500,525	$13,500,525	100%			
Industrial				0	0				
Agricultural				0	0				
Religious				0	0				
Government									
Mobile Homes									
Utilities									
Total	**622**	**622**	**100%**	**$60,687,680**	**$60,687,680**	**100%**	**1,241**	**1,241**	**100%**

4.10 Eden Estimated Potential Dollar Losses to Vulnerable Structures									
Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	61	61	100%	$4,657,506	$4,657,506	100%	89	89	100%
Commercial	18	18	100%	$728,093	$728,093	100%			
Industrial									
Agricultural				$206,536					
Religious									
Government									
Education									
Utilities									
Total	**79**	**79**	**100%**	**$5,592,135**	**$2,070,000**	**100%**	**77**	**77**	**100%**

4.11 Lake City Estimated Potential Dollar Losses to Vulnerable Structures									
Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	33	33	100%	$1,956,604	$1,956,604	100%	51	51	100%
Commercial									
Industrial									
Agricultural				$8,657					
Religious									
Government									

Education									
Utilities									
Total	**33**	**33**	**100%**	**$1,965,261**	**$1,965,261**	**100%**	**51**	**51**	**100%**

4.12 Langford Estimated Potential Dollar Losses to Vulnerable Structures									
Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	132	132	100%	$10,181,856	$10,181,856	100%	313	313	100%
Commercial	26	26	100%	$2,030,062	$2,030,62	100%			
Industrial									
Agricultural				$52,285					
Religious									
Government									
Education									
Utilities									
Total	**158**	**158**	**100%**	**$12,264,203**	**$12,264,203**	**100%**	**313**	**313**	**100%**

4.13 Veblen Estimated Potential Dollar Losses to Vulnerable Structures									
Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	114	114	100%	$3,021,050	$3,021,050	100%	531	531	100%
Commercial	24	24	100%	$1,008,458	$1,008,458	100%			
Industrial									
Agricultural				$59,327	$59,327	100%			
Religious									
Government									
Education									
Utilities									
Total	**138**	**138**	**100%**	**$4,088,835**	**$4,088,835**	**100%**	**531**	**531**	**100%**

ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS *§201.6(d)(3)*
Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The land use and development trends for each jurisdiction were identified by the representatives from each of the jurisdictions. Langford and Veblen increased in population from the 2000 Census to the 2010 Census. None of the other communities in Marshall County (Britton, Eden, Lake City) are experiencing any growth at this time and are focused on maintaining the population they have. Due to the declining populations the smaller jurisdictions do not maintain plans for growth and development. The County approves all building permits located outside of any municipality boundaries. All other communities have their own processes in place. The County Planning and Zoning Director is the also the floodplain administrator.

Marshall County
Marshall County has recently hired a full time Planning and Zoning Director, who also serves as the floodplain administrator. Previously, the Director of Equalization also served as the Planning and Zoning Director. With having a full-time position, the county can now dedicate more time and resources to planning, zoning, and ordinance issues.

Any construction with a value of over $3,000 requires a building permit. The Planning and Zoning Director checks the floodplain map to determine if the location of the proposed construction site is located in a flood zone. If the work to be completed is located in a Lakefront Residential District and is not for a new building, the Planning and Zoning Director will do a physical inspection of the property to make sure it meets the required 50' setback from the normal high water mark. She looks at natural vegetation and other evidence of the high water mark. If the building permit is for construction of a new building in a Lakefront Residential District, an engineers survey is required to locate property pins and determine the high water mark.

If a property meets all required setbacks, the Planning and Zoning Director issues a building permit.

For building permits located in all other Zoning Districts, a building permit is also required for work over $3,000. In those cases, the Planning and Zoning Director checks the maps (using the preliminary data available through FEMA's Risk MAP project) to determine if the area is in the 100 year floodplain. Prior to the preliminary data becoming available, the County had no data or maps on floodprone areas. If not, a site plan is required to determine appropriate setbacks and other information. Again, if it meets all requirements, a building permit is issued by the Planning and Zoning Director.

The Marshall County Commissioners also act as the Planning Commission and the Drainage Board. The Drainage Board is responsible for the permitting process for drain tiling or other drainage activities. A drainage permit is required along with information on the location of the outlet, where the water will flow to, if the area includes a certified wetland – in which case a determination from an engineer would be required. NRCS is consulted during the process on an as-needed basis. Adjacent landowners to the land to be tiled are also required to sign off and agree to the proposed drainage project.

The County has also done some preliminary work to change and adopt their zoning ordinances. They anticipating adopting a revised zoning ordinance sometime in 2020.

Britton
A new Community Event Center was built and opened in 2019. Britton City Hall is located in the new event center. The Event Center, now owned by the City of Britton, also has an indoor gym, a multi-purpose room, a theatre and indoor track. The Event Center is situated adjacent to, and overlooks, the high school football field. This is a major accomplishment for the City of Britton.

The City of Britton has secured funding for improvements to their storm sewer system. Construction will start in 2020. They are also submitting an HMGP application to purchase and install four generators at four separate lift stations with automatic transfer switches to prevent sewage from backing up in home basements.

Over the last several years Britton has also worked to create as-builts of their existing infrastructure, including water and sewer lines. Having accurate documentation of existing lines will be extremely helpful in the future for new developments and mitigation planning.

Langford
Langford has completed drinking water and sanitary sewer projects in the last several years. They have also been able to identify areas of town that are more prone to flooding than others. As mentioned on page 34 of this plan, Langford experienced flooding from a nearby creek in the Spring of 2019. They now actively monitor the creek for flooding and have secured permission from the landowner to clean debris, trees, brush, etc. from the creek to allow for better water flow.

Any new construction in Langford also requires a building permit along with a site plan. The primary requirement for new construction is setback requirements. If the applicant meets those requirements, a building permit is issued.

Veblen
The City Council oversees development in town but often relies on the Glacial Lakes Area Development (GLAD) for assistance. GLAD is a countywide economic development organization. While Veblen does participate in NFIP, they are unsure who their floodplain administrator is at this time. The current city staff has no training on the NFIP program and therefore lacks understanding of the program.

Eden and Lake City did not participate in the plan and so information from those jurisdictions on their development trends was not available.

UNIQUE OR VARIED RISK ASSESSMENT
Requirement §201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

After conducting the risk assessment for each jurisdiction, the group decided that all areas of the county have an equal chance of a natural hazard occurrence in their area. While the extent to which each jurisdiction is affected by such hazards varies slightly between the local jurisdictions, the implications are the same. Flood risk is managed primarily by the process described on page 55. The Planning and Zoning Director who is also the floodplain manager is responsible for floodplain management in all areas of the county.

Marshall County
There are several lakes in Marshall County that have residential housing development (and areas that are zoned for lakefront residential district). Homes that are built near bodies of water always pose a higher risk of flooding, though the county does require all new construction to be set back 50 ft from the normal high water mark. The lakes also have campgrounds and other area where campers are parked nearly all summer long. Some of these areas don't have designated storm shelters to protect the campers from tornados, sever thunderstorms or other high wind events.

City of Britton
The City of Britton is the largest community in the county and also the county seat. Therefore, they have a larger population at risk (over 1,200 people live in Britton). Every other community in Marshall County has a population of under 600. The only hospital/healthcare center in the County is located in Britton. The community does not have any major concerns regarding overland flooding. They do have concerns with a high groundwater table where water sometimes seeps into basements.

City of Langford
The City of Langford has a creek that runs just outside of town. In the Spring of 2019 Langford experienced flooding when water came over the banks of the creek just east of town. The Langford Utilities Manager, Blair Healy, said that the water itself was only three to four feet deep but it was running over the top of the ice. Sandbags were placed along the east bridge and on the northeast side of town. They also used an excavator to cut through the ice at the bottom of the creek to deepen the ditch. City officials are being more proactive in Winter/Early Spring of 2020 to monitor the creek more closely and work with the landowner to remove trees and debris in the creek to allow water to flow better downstream and minimize the risk of flooding.

City of Veblen
There are no storm shelters (either for summer or winter storms) in Veblen. The City does have a portable generator that can be used in the event of power outages but has no permanent stationary generators at critical facilities. They do not have a secondary water source if the water tower is out. They recently had to drain the water tower to fix a pipe and the city was without water during the repair for a few hours.

Eden and Lake City did not participate in the plan update.

V. MITIGATION STRATEGY

CHANGES/REVISIONS TO THE MITIGATION SECTION:
The mitigation strategy section was changed from the 2014 plan update to include strategies organized by jurisdiction rather than by hazard. Some projects were determined not to be mitigation projects and other projects were updated because they were completed or because they were no longer a priority. The language on goals and projects was tweaked slightly to make them more clear and relevant.

MITIGATION REQUIREMENTS
Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard with particular emphasis on new and existing buildings and infrastructure.

MITIGATION OVERVIEW
The State Hazard Mitigation Plan addresses several mitigation categories including warning and forecasting, community planning, and infrastructure reinforcement. Marshall County and participating entity's greatest needs are mitigating flood hazards, backup generators for critical infrastructure and storm shelters, and public awareness.

After meetings with the local jurisdictions and opportunities for public input, a series of mitigation goals were devised to best aid the County in reducing the effects 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 meet the hazard mitigation needs of the County. These projects were evaluated based on a cost/benefit ratio and priority. A *high* priority classification means that the project should be implemented as soon as possible and would minimize losses at a very efficient rate. A *moderate* classification means that the project should be carefully considered and completed after the high priority projects have been completed. A *low* priority means that 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 in light of 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. Often, these projects will not encounter any resistance from environmental agencies, legal authorities, and political entities. Where these are a concern, address is made.

MARSHALL COUNTY MITIGATION ACTIVITIES FOR HIGH WINDS

Goal #1: Reduce the impact of high wind events on the citizens of Marshall County

Project #1: Protect the public from high wind events through information and education. With existing and newly developed education materials, the public can be warned of the dangers of high winds, especially in regards to tree thinning and cleanup procedures. News releases and emergency checklists are also other options.

Discussion: This project is not mitigation, while it is good measure to ensure people are educated and informed this activity falls under the category of preparedness.

MARSHALL COUTNY MITIGATION ACTIVITIES FOR SEVERE WEATHER

Goal #1: Reduce the impact of severe winter storms on the citizens of Marshall County

Project #1: Removed due to project not being mitigation. The project falls under the category of preparedness.

Project #2: Removed due to project not being mitigation. The project falls under the category of preparedness.

Project #3: Plant living windbreaks/snow fences in areas surrounding and in town

Project #4: Removed due to project not being mitigation. The project falls under the category of preparedness.

Project #5: Removed due to project not being mitigation and project no longer being a priority for the county.

Project #6: Removed due to project not being mitigation. The project falls under the category of preparedness.

Project #7: Removed due to project not being mitigation. The project falls under the category of preparedness.

Goal #2: Removed as this goal related to implementing the mitigation plan. This information is included in Plan Maintenance section.

Project #1: Removed as implementation strategies are included in the Plan Maintenance section.

Project #2: Removed as implementation strategies are included in the Plan Maintenance section.

Project #3: Removed as implementation strategies are included in the Plan Maintenance section.

MARSHALL COUNTY MITIGATION ACTIVITIES FOR FLOODING HAZARDS

Goal #1: Reduce the impact of flooding in Marshall County

Project #1: Continue to participate in the National Flood Insurance Program and work with non-participating jurisdictions to determine feasibility of them participating. Additionally, pursue better understanding of NFIP, receive additional training and continue to stay in compliance.

Priority:	High
Funding sources:	County, State, Federal
Timeframe:	Ongoing
Oversight:	County
Cost/Benefit:	Low Cost

Project #2: Deleted as this project was combined with Project #1 above.

Project #3: Removed due to site #50 going farther under water and the County ended up having to give up on this site.

Project #4: Project removed due to completion.

Project #5: Construct storm shelters wherever needed throughout the county and place signage along major thoroughfares where travelers can see the locations of the nearest shelters. Additionally, evaluate existing shelters and other structures, such as schools, to determine usefulness (and accessibility) as community shelters. Retrofitting these facilities should be considered. Although it is uncertain if any currently existing buildings, particularly in the smaller communities, are sufficient to serve as shelters. Retrofitting old schools and other like buildings should be considered if sufficient cost savings justifies the project over building new.

Priority:	Moderate
Funding sources:	County, State, FEMA
Timeframe:	3 – 5 years, but could be Ongoing
Oversight:	County
Cost/Benefit:	TBD

Project #6: Identify roads that need grade raises and complete the work as needed.

Priority: High
Funding sources: County, State, FEMA
Timeframe: Ongoing
Oversight: County
Cost/Benefit: TBD

Project #7: Address flooding and drainage issues throughout the county by conducting a hydrology study and/or a culvert replacement plan to determine if culvert resizing is necessary

Priority: High
Funding sources: County, State, FEMA
Timeframe: Ongoing
Oversight: County
Cost/Benefit: TBD

CITY OF BRITTON MITIGATION GOALS AND ACTIONS

Goal #1: Reduce the impact of flooding within the City of Britton

Project #1: Storm Sewer Improvements

Priority: High
Funding Sources: USDA Rural Development
Timeframe: Construction on this project to start in 2020
Oversight: City of Britton
Cost: $1,055,145 cost estimate

Project #2: Project removed due to completion.

Project #3: Project removed due to completion.

Project #4: Project removed due to completion.

Project #5: Upgrading existing lagoons for City of Britton. Lagoon located ¾ mile north of SD 10 on frontage road.

Priority: Medium
Funding Sources: City, State, Federal
Timeframe: 4-6 years
Oversight: City of Britton
Cost: TBD

Project #6: Install generators at sewer lift stations to provide vital services during power outages. Loss of power at the lift stations ultimately results in sewage backing up in homes.

Priority: High
Funding Sources: HMGP
Timeframe: 2020-2021
Oversight: City of Britton
Cost: $87,881 cost estimate

Goal #2: Goal removed as no projects were identified under this goal.

CITY OF LANGFORD MITIGATION GOALS AND ACTIONS

Goal #1: Reduce the impact of flooding on the City of Langford

Project #1: Project removed because the City has no authority on the creek and doesn't own the land surrounding the creek.

Project #2: This project was not a mitigation project but was completed in 2014.

Project #3: Engineering study to be completed. Protect city property due to local creek potentially flooding parts of Langford.

Priority: Medium
Funding Sources:
Timeframe: TBD
Oversight: City of Langford
Cost/Benefit: TBD

Goal #2: Reduce the impact of severe weather on the City of Langford

Project #1: Procure generator for city office buildings in Langford

Priority: Low
Funding Sources: HMGP, State, Local
Timeframe: TBD
Oversight: City of Langford
Cost: TBD

TOWN OF EDEN MITIGATION GOALS AND ACTIONS
(Did not participate in 2019 PDM Plan Update)

The Town of Eden elected not to participate in the 2019 Plan Update.

TOWN OF LAKE CITY MITIGATION GOALS AND ACTIONS
(Did not participate in 2019 PDM Plan Update)

The Town of Lake City elected not to participate in the 2019 Plan Update. They did participate in the 2014 Plan Update. These were their goals at the time. They are being left in the plan as a point of reference.

Goal #1: Reduce the impact of flooding within Lake City

New lagoon and sewer system

Project #1: Feasibility study and construction of sewer lines and lagoon system as septic systems are unreliable and not meeting standards

Oversight: City of Lake City
Cost: Estimate cost in previous plan was $300,000 and completion will be 3 years from date of funds.
Status: Costs estimated to complete this were too high to continue. City tried to have the homeowners of both Clear Lake and Roy Lake form an association. They would then share one lagoon between the three areas but that failed on two separate votes. Project has been tabled.

TOWN OF VEBLEN MITIGATION GOALS AND ACTIONS

Goal #1: Reduce the impact of severe winter storms on the citizens of Veblen

Project #1: Identify winter storm shelter and provide backup generator for power. It is possible an existing building within the city could be retrofitted to serve as a storm shelter.

Priority:	Moderate
Funding sources:	City, State, FEMA
Timeframe:	3 – 5 years
Oversight:	City
Cost/Benefit:	TBD

Goal #2: Reduce the impact of severe summer storms in Veblen

Project #2: Evaluate existing shelters and other structures to determine usefulness (and accessibility) as community shelters. Retrofitting these facilities should be considered.

OTHER COUNTY MITIGATION PROJECTS

BDM Rural Water System elected not to participate in the 2019 Plan Update. They did participate in the 2014 Plan Update. These were their goals at the time. They are being left in the plan as a point of reference.

Goal #1: Reduce the impact of flooding within BDM Rural Water System

Installation of Rip Rap fabric over waterline and install 75kw generator

> Discussion: Completion was projected 1 year from date of funds at a proposed cost of $25,000 - $50,000

Projects #1 and 2: Lay filter fabric, clay and rock over water lines to reduce/eliminate scouring during floods.

Oversight: BDM Rural Water

Project #3: Install 75 kw generator at pump station serving industries and residences in eastern Marshall County

> Oversight: BDM Rural Water

Goal #2: Mitigate existing power lines with updated or overhead or underground lines

Project #1: Removed because Lake Region Electric participates in the State Hazard Mitigation planning efforts and rural electrics are covered under that plan.

Objective #3: Removed due to project not being mitigation. The project falls under the category of preparedness.

Goal #4: Removed because goal addressed terrorism and man-made hazards which do not fall under the scope of the natural hazard mitigation plan.

Goal #5: Removed because goal falls outside of the scope of a natural hazard mitigation plan.

PRIORITIZATION OF MITIGATION ACTIVITIES §201.6(d)(3)

Requirement 201.6(c)(3)(iv) For multi-jurisdictional plans, there must be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Requirement 201.6(c)(3)(iii). [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

The strategy for prioritization has always been to work with the projects that will have the greater impact and benefit for the public. These projects are currently prioritized based on a number of factors, include: 1) Feasibility, 2) Impact to the public, 3) Improvements to the systems that will provide the greatest operational flexibility, 4) Perceived Benefit to Cost ratio. As with any strategy, possibility of change exists due to the fact that some of these factors may change as newer and better information becomes available. Final cost estimates and further analysis of total benefits would need to be completed in order to do a true benefit cost analysis. After that information is completed, some of the priorities may change. Many of the projects are identified as "ongoing" and have little to no cost. These are mitigation measures that are part of typical, day to day, activities of the counties or cities and due to their ongoing nature are obviously not prioritized in the same manner as projects that will require actual construction and case in order to be realized. The plan participants were instructed that a complete Benefit Cost Analysis would be required at the time of application and the plan author advised that specific details of each project could be analyzed in closer detail during the application period.

NATIONAL FLOOD INSURANCE PROGRAM PARTICIPATION

Requirement: §201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.

Marshall County participates in the National Flood Insurance Program along with Britton, Langford and Veblen. There are two communities located in Marshall County that do not participate in NFIP. Those communities are: Eden and Lake City. However, Veblen is the only community that has been mapped. And the map was created in 1975.

5.1 MARSHALL COUNTY NFIP PARTICPATION

Participants	Non-participants
Marshall County	Eden
Britton	Lake City
Langford	
Veblen	

The Marshall County Director of Equalization maintains the flood zone maps. As of early 2020, they are using preliminary information from FEMA's Risk MAP process. Once the Effective Maps become available, the County plans on utilizing those for all planning mechanisms occurring in the county. Prior to the preliminary information becoming available, the county did not have any mapping data regarding floodprone areas.

IMPLEMENTATION OF MITIGATION ACTIONS

Requirement: §201.6(c)(3)(iii): [The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Upon adoption of the updated plan, each jurisdiction will become responsible for implementing its own mitigation actions. Those who did 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 jurisdictions that have participated in the plan update. All of the municipalities have indicated that they do not have the financial capability to move forward with projects identified in the plan at this time, however, all 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. Jurisdictions that had several mitigation projects, will prioritize those projects in a manner that will ensure benefit is maximized to the greatest extent possible. A benefit cost analysis will be conducted on an individual basis after the decision is made to move forward with a project.

VI. PLAN MAINTENANCE

CHANGES/REVISIONS TO PLAN MAINTENANCE:
Programs were updated to reflect suggestions from FEMA.

MONITORING, EVALUATING, AND UPDATING THE PLAN

Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Requirement §201.6(d)(3). A local jurisdiction must review and revise its plan to reflect changes in development, progress in local mitigation efforts, and changes in priorities, and resubmit for approval within 5 years.

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

During the process of implementing mitigation strategies, the county or communities within the county may experience lack of funding, budget cuts, staff turnover, and/or a general failure of projects. These scenarios are not in themselves a reason to discontinue and fail to update the Pre-Disaster 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 Emergency Manager, or as the situation dictates such as following a disaster declaration. The Marshall County Emergency Manager will review the plan annually in November 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.

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 the 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 Emergency Manager will meet with the 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 Marshall County Emergency Manager, during the plan's annual review to take place the end of each county fiscal year. All affected local jurisdictions (cities, towns, and counties) 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): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

Marshall County is the only jurisdictions located in Marshall County that has a comprehensive or capital improvements plan. All of the other jurisdictions do not have the resources, staff, funding, or need for such planning mechanisms. The Marshall County Comprehensive plan includes all of the municipalities in the county. Marshall County will consider the mitigation requirements, goals, actions, and projects when it considers and reviews the other existing planning documents. Mitigation projects for the other jurisdictions will be considered and prioritized in conjunction with non-mitigation projects, such as water and wastewater infrastructure improvements, new construction of schools, libraries, parks, etc.

The rest of the local jurisdictions cannot incorporate the requirements of the mitigation plan into other planning mechanisms because they do not have any other planning mechanisms that currently exist. The risk assessment which was conducted for the purpose of this plan is specific to mitigation actions and projects included in the Plan and thus is not tied into any other mechanisms that would initiate conversations or actions by the city councils to move forward with actions or projects outlined in the Plan. Absence of such mechanisms creates a problem for the local jurisdictions because ideas, projects, and actions identified as a result of the Plan update process often never move forward because they are forgotten about and no mechanism exists to initiate the process of completing such projects. Thus, the local jurisdictions identified one unrelated mechanism that could be used to remedy the problem of mitigation projects getting lost in a bookshelf. Municipalities are required by State law to prepare budgets for the upcoming year and typically consider any expenditure for the upcoming year at 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.

Since all of the local jurisdictions lack planning mechanisms in which to incorporate the mitigation actions identified in this plan, it was determined that each year when the budget is prepared the municipalities will also consider the mitigation actions at that time. The local jurisdictions will post a permanent memo to their files as a reminder for them to incorporate their annual review of the mitigation actions identified into the budget preparation process. This does not require the projects be included in the budget, it merely serves as a reminder to the City officials that they have identified mitigation projects in the plan that should be considered if the budget allows for it.

POTENTIAL FUNDING SOURCES

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. None of the local jurisdictions have the funds available to more forward with mitigation projects at this time, thus, the Potential Funding Sources section was included so that the local jurisdictions can work towards securing funding for the projects. Inevitably, due to the small tax base and small population most of the local jurisdictions do not have the ability to generate enough revenue to support anything beyond the basic needs of the community. Thus mitigation projects will not be completed without a large amount of funding support from State or Federal programs.

The Marshall County 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 jurisdictions

Federal

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

Title: Pre-Disaster Mitigation Program Agency: Federal Emergency Management Agency
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 Pre-Disaster Mitigation (PDM) 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. Special accommodations will be made for “small and impoverished communities”, who will be eligible for 90% Federal share/10% non-Federal. FEMA provides PDM 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 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 pre-disaster 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 Assistant 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 governments 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 nonprofit organizations or institutions that serve a public function, Indian 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/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, Indian tribes or authorized tribal organizations and include:

*Roads, bridges & culverts
*Water, power & sanitary systems
*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 & other utilities
*Hospitals & clinics
*Custodial care & retirement facilities
*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.SBA loans 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.

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): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.

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 Marshall County Emergency Management Office located in the Marshall County Courthouse and the NECOG office. Comments will always be received whether orally, written or by e-mail.

All ongoing workshops and trainings 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.