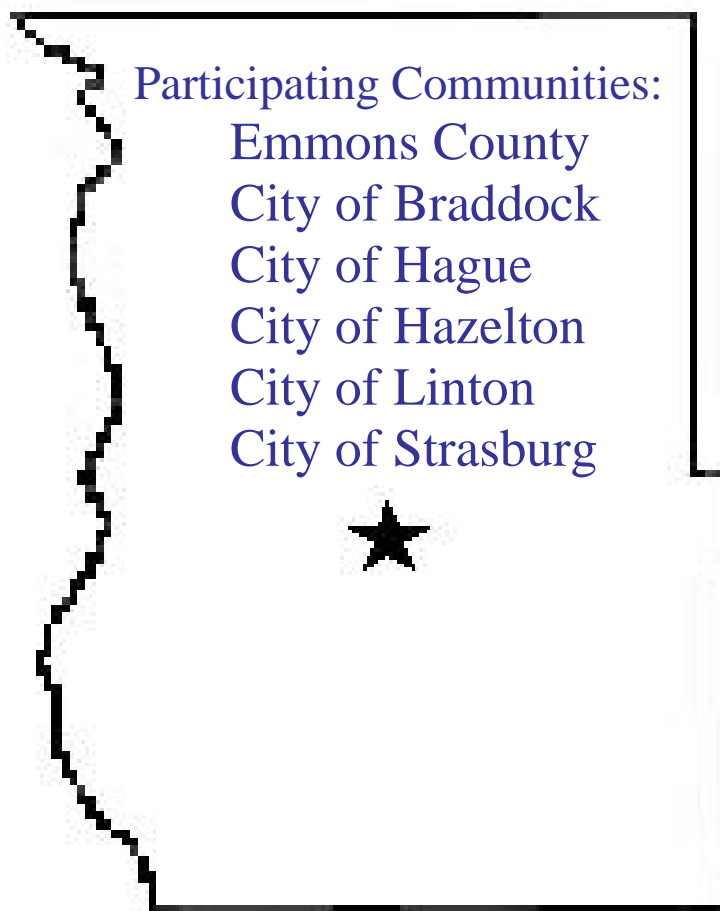


Emmons County Multi-Hazard Mitigation Plan



FEMA approved: _____

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Executive Summary

The Emmons County Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was originally developed and approved by the Federal Emergency Management Agency (FEMA) in 2003 and subsequently approved in 2010 for an additional five years (February 16, 2015) to address the needs of the community of Emmons County and the five incorporated cities: Braddock, Hague, Hazelton, Linton and Strasburg. The communities of Kintyre, Temvick, and Westfield are incorporated cities and fall under the jurisdiction of Emmons County.

The purpose of the plan is an effort to reduce loss of life and property by lessening the impact of disasters. The planning process involves multiple elements with the two main elements being:

- Hazard Identification and Risk Assessment
- Mitigation Strategies

The 14 hazards were ranked by the planning team and communities utilizing the Risk Analysis Worksheet:

	Highly Likely	C Wildland Fire	B <ul style="list-style-type: none"> • Communicable Disease • Drought • Hazardous Materials Release • Severe Summer Weather • Windstorm 	A Severe Winter Weather	A
	Likely	C Transportation Accident	C Flood	B	A
	Possible	D Urban Fire or Structure Collapse	C Homeland Security Incident	B Shortage or Outage of Critical Materials or Infrastructure	B
	Unlikely	D Geologic Hazards	D Dam Failure	C	C
		Negligible	Limited	Critical	Catastrophic
					

Associated with each hazard are mitigation strategies that can be done at a local level.

Emmons County completed step one of the Threat and Hazard Identification and Risk Assessment in 2013 with 9 responses. The survey responses closely correlated with the Risk Analysis.

The Emmons County Multi-Hazard Mitigation Plan meets the requirements and procedures for a local mitigation plan as found in the Code of Federal Regulations (CFR), Title 44, Chapter 1, Part 201 ([44 CFR Part 201](#)).

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Adoption

The jurisdictions in the Emmons County Multi-Hazard Mitigation Plan (MHMP): Emmons County and the incorporated cities of Braddock, Hague, Hazelton, Linton, and Strasburg adopt the plan as submitted to the ND Department of Emergency Services and the Federal Emergency Management Agency (FEMA).

Emmons County**Emmons County Multi-Hazard Mitigation Plan**

Whereas, Emmons County recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

Whereas, Emmons County participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Emmons County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Emmons County Commission adopts the Emmons County Multi-Hazard Mitigation Plan.

Signed this 2nd day of December, 2014.

Attested:


Marlys Ohlhauser, Auditor

Signed:


Francis "Pork" Lawler, Chairperson
Emmons County Commission

City of Braddock**Emmons County Multi-Hazard Mitigation Plan**

Whereas, the City of Braddock recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

Whereas, the City of Braddock participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Emmons County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Braddock City Commission adopts the Emmons County Multi-Hazard Mitigation Plan.

Signed this 8 day of January, 2015

Attested: Marilyn Olthaus
Andy Schmidt, Auditor
County

Signed: [Signature]
Tim Reamann, Mayor
Braddock City Commission

City of Hague**Emmons County Multi-Hazard Mitigation Plan**

Whereas, the City of Hague recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and


Whereas, the City of Hague participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Emmons County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Hague City Commission adopts the Emmons County Multi-Hazard Mitigation Plan.

Signed this 20 day of Dec, 2014.

Attested: 
Joyce Pfeiffer, Auditor

Signed: 
Anton Volk, Mayor
Hague City Commission

City of Hazelton**Emmons County Multi-Hazard Mitigation Plan**

Whereas, the City of Hazelton recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

Whereas, the City of Hazelton participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Emmons County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

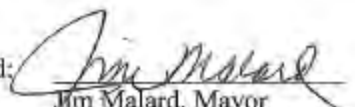
Now, therefore, be it resolved, that the Hazelton City Commission adopts the Emmons County Multi-Hazard Mitigation Plan.

Signed this 1st day of December, 2014.

Attested:


Angie Benz, Auditor

Signed:


Jim Malard, Mayor
Hazelton City Commission

City of Linton**Emmons County Multi-Hazard Mitigation Plan**

Whereas, the City of Linton recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and


Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and

Whereas, the City of Linton participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Emmons County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Linton City Council adopts the Emmons County Multi-Hazard Mitigation Plan.

Signed this 1st day of December, 2014.

Attested: 
Sharon Jangula, Administrator

Signed: 
Timothy Volk, Mayor
Linton City Council

City of Strasburg**Emmons County Multi-Hazard Mitigation Plan**

Whereas, the City of Strasburg recognizes the threat that natural, man-made or technological hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce and/or eliminate the potential for harm to people and property from future hazard occurrences; and

Whereas, an adopted Multi-Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs; and


Whereas, the City of Strasburg participated in the preparation of this plan in accordance with the Disaster Mitigation Act of 2000; and

Whereas, adoption of the Emmons County Multi-Hazard Mitigation Plan demonstrates the commitment to hazard mitigation; and

Now, therefore, be it resolved, that the Strasburg City Commission adopts the Emmons County Multi-Hazard Mitigation Plan.

Signed this 1st day of December, 2014.

Attested:


Judy Pfeiffer, Auditor

Signed:


Irvin Senger, Mayor
Strasburg City Commission

Introduction

Purpose: Reduce the vulnerability of the life and health of people, property, environment, and economy of Emmons County and its communities from the impacts of natural and technological hazards as well as adversarial threats.

Scope: The scope of the Emmons County Multi-Hazard Mitigation Plan is countywide. Due to Emmons County's limited resources, any incident or hazard that may occur or exist affects the entire jurisdiction. The Plan is not necessarily limited to Federal, State, or locally-declared disasters or emergencies. Any time situations or incidents occur that produce an opportunity for mitigation actions; they will be developed and incorporated into the Emmons County Multi-Hazard Mitigation Plan.

Authority: The Emmons County Multi-Hazard Mitigation Plan has been prepared pursuant to Section 322 of the [Disaster Mitigation Act of 2000](#) (Public Law 106-390) which requires local government to develop mitigation plans that shall:

- Describe actions to mitigate hazards, risks, and vulnerabilities identified under the plan; and
- Establish a strategy to implement those actions.

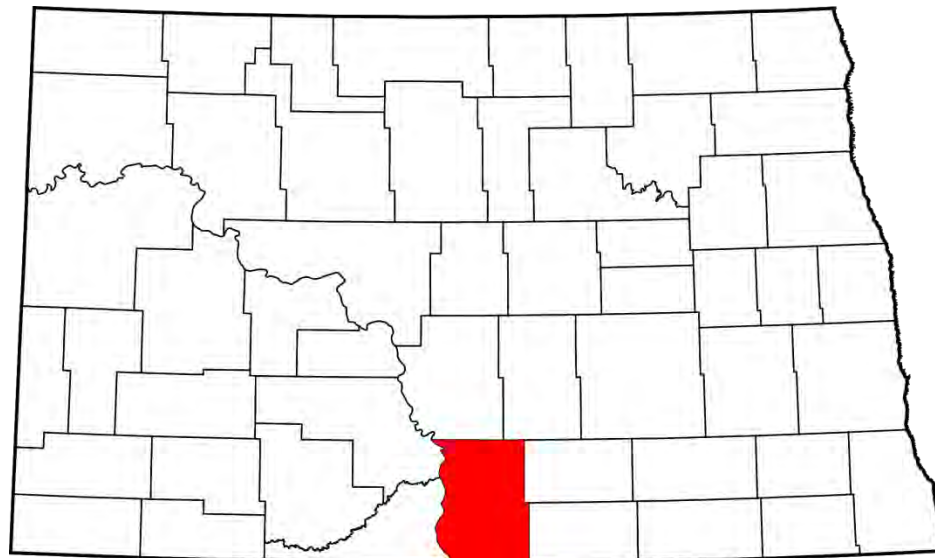
The Disaster Mitigation Act of 2000 became law on October 30, 2000 and amends the [Robert T. Stafford Disaster Relief and Emergency Assistance Act, as Amended \(The Stafford Act\)](#) (P.L. 93-288, as amended). Regulations for this activity can be found in [44 CFR, Part 201](#).

The [North Dakota Century Code 37-17.1-07](#) (Local or regional emergency management organizations.) states that "Each local or regional emergency management organization shall prepare and keep current a local disaster or emergency operational plan for its area." Emmons County and incorporated cities consider the Mitigation Plan an integral part of the Emmons County Emergency Management Program.

Local governments play an essential role in implementing effective mitigation, both before and after disaster events. Each local government will review all damages, losses, and related impacts to determine the need or requirement for mitigation action and planning whenever seriously affected by a disaster, or when applying for state or federal recovery assistance. In Emmons County the executive body responsible for carrying out plans and policies is the Board of County Commissioners. Each jurisdiction develops an annual budget based which may or may not include monies for mitigation projects; however, budgets do include monies for continued agency services.

Community Profile

Emmons County is located in south-central North Dakota with the Missouri River as the western boundary. The County seat is Linton.



It has the 14th largest land area of the 53 counties in the State, encompassing 1,510 square miles (48 miles from north to south and 35 miles from east to west).

Borders

North:	Burleigh and Kidder Counties
West:	Morton and Sioux Counties
South:	South Dakota
East:	Logan and McIntosh Counties

Most of the county is nearly level to undulating, but some areas are rolling to steep. Native vegetation consists of a wide variety of grasses, forbs and shrubs. Approximately 4,712 acres are native woodland, mostly located along the Missouri River.

Principle drainage system: Missouri River. The natural drainage is mainly to the southwest to the Missouri River and north to Long Lake. Streams, coulees, dams and drainage ditches are abundant throughout the area. The county is a land of prairies, croplands, river valleys, and rolling hills.

Rivers

Missouri River, Beaver Creek, and Spring Creek

Emmons County serves as a drainage basin for water flowing from McIntosh, Logan and Emmons Counties to the Missouri River. The Beaver Creek Watershed, 483,000 acres of land, and Spring Creek drain through Linton, located in the center of Emmons County.

Planning Process

Multi-hazard mitigation planning is a continuous process whereby risk analyses, updating the situation assessment, research, coordinating, disaster response or other activities are occurring simultaneously.

The goal is to have the Emmons County Hazard Mitigation Plan is updated every five years. The original plan was developed in 2003 and subsequently updated in 2009. The current plan update process began in 2014 with the Emergency Manager collecting background information and soliciting technical advice and guidance from the ND Department of Emergency Services' Mitigation Division prior to the beginning of the official update plan process. In addition, throughout 2014, the Emergency Manager hosted and/or attended public meetings to revisit the current Multi-Hazard Mitigation Plan and incorporate information where applicable.

The plan update process officially began in January, 2014 when the Emergency Manager presented the current plan to the public for review on the Emmons County website and publicized through the Emmons County Emergency Management Facebook Page. (Attachments, Appendix B: Public Information)

A Multi-Hazard Mitigation Plan Public Meeting was held on February 18, 2014 in coordination with a functional exercise. The planning process was reviewed, mitigation actions sought, and it was reiterated that the approved plan will always be available on the County website. The functional exercise involved communications and a hazardous materials incident and reiterated the need to continue with public awareness. The Shelter-in Place brochure that was developed, printed, and distributed in December 2013 and included in the community tax statements. It remains available at the courthouse and fire department and electronically via the County website. (Attachments, Appendix B: Public Information)

Ensuring months involved a lot of research, data gathering and outreach to regulatory agencies and other governmental entities (US Army Corps of Engineers, ND State Water Commission, Emmons County Water Resource Board, ND Forest Service, ND Fire Marshal's Office, US National Weather Service). Additionally, a vast amount of phone calls and emails were utilized to elicit feedback from the participating jurisdictions.

In November, 2014, an electronic survey was developed to gather input from the public. The questions included in the survey were selected to make the experience brief while soliciting hazard vulnerability as well as public's view of the most likely community hazards. Open-ended responses were also included to collect anything responses the community felt relative to the survey and hazards. The survey was posted on the Emmons County website and promoted through Facebook and The Emmons County Record. Further, all Emmons County employees and contiguous counties received an email to complete the survey. The survey results and the information captured were compared to the risks analysis and were closely aligned. Additionally, information received was factored into the mitigation projects. (Attachments, Appendix C: Public Survey)

The Emergency Manager discussed the current Mitigation Plan and update process with the County Commission at their November 4, 2014 regular, publicized meeting. While no members of the public were in attendance, the County Commission, States Attorney, and Auditor were updated regarding the purpose of the plan, ongoing process, future meetings, and electronic survey. Potential mitigation projects were discussed; however, deemed more as safety measures than true mitigation projects. Commissioners will submit any mitigation projects to the Emergency Manager upon their review of the current plan. (Attachments, Appendix B: Public Information)

A Planning Committee Meeting was held on November 10th to review the draft plan, perform a hazard risk analysis and ranking, and discuss mitigation strategies. The Emergency Manager met with Sharon Jangula (City of Linton Administrator and the Linton Industrial Development Corporation) to review the same information. Bob Job (Linton Public Works) was contacted via phone to discuss mitigation projects such as pumps and clearing lines. Phone calls were also made to the Cities of Braddock, Hague, Hazelton, and Strasburg to review and discuss the information. No new mitigation projects were reflected, except for the Strasburg Slough. (Attachments, Appendix B: Public Information)

The Local Emergency Planning Committee met on November 24, 2014 to review the updated draft of the Emmons County Multi-Hazard Mitigation Plan and discuss possible mitigation strategies. Members present also reviewed the mitigation projects and priorities. Members were also made aware that the current plan will always be available on the County website.

Information was obtained from regulatory agencies: ND Water Commission, US Army Corps of Engineers, and the local Water Resource Board through meetings and/or emails.

Outreach to contiguous counties was accomplished through meeting invites and online survey participation. Logan County attended the preliminary planning meeting and McIntosh completed the online survey. Outreach was also made with Kidder County and Burleigh County. Burleigh County previously provided a copy of their 2012 HazMat Traffic Flow Study.

Monitoring, Evaluating, and Updating the Plan: The plan will be evaluated annually by the Emmons County Emergency Manager with input from the planning committee members. As a means of monitoring the plan and progress made on the projects, the Emmons County Emergency Manager will continually collaborate with planning committee members and representatives identified as “lead agencies” to discuss progress of the projects, existing and potential grant opportunities, and changes in regulations. It will be the responsibility of the Emergency Manager to update the hazard history sections on an annual basis as events occur.

All disaster or emergency incidents will be evaluated for general/specific mitigation recommendations to be added to the plan as they occur. A comprehensive plan review by the planning committee will occur every five years unless the need arises earlier through aforementioned reviews and actions.

The approved plan will always remain on the Emmons County website for review by stakeholders and the general public along with the opportunity to submit mitigation ideas at any time.

Participating Jurisdictions in the Plan Review

Jurisdictions Located within Emmons County	Jurisdictions Asked to Participate in the Plan	Jurisdictions Represented in the Plan	Participation Status
Emmons County	Emmons County	Emmons County	Continuing Participation (2003, 2009, 2014)
City of Braddock	City of Braddock	City of Braddock	Continuing Participation (2003, 2009, 2014)
City of Hague	City of Hague	City of Hague	Continuing Participation (2003, 2009, 2014)
City of Hazelton	City of Hazelton	City of Hazelton	Continuing Participation (2003, 2009, 2014)
City of Linton	City of Linton	City of Linton	Continuing Participation (2003, 2009, 2014)
City of Strasburg	City of Strasburg	City of Strasburg	Continuing Participation (2003, 2009, 2014)

All jurisdictions were invited to participate in the update process. If they were unable to attend, the Emergency Manager did outreach to obtain input on the overall plan and mitigation opportunities.

Review and Incorporation of Existing Plans, Studies, Reports, and Technical Information:

The Emmons County Multi-Hazard Mitigation Plan was developed in coordination with other local, state, and federal agencies, non-profit organizations, and local businesses and schools.

Agency	Plans and Programs
American Red Cross (West Dakota)	<ul style="list-style-type: none"> • Shelter • Mass Care • Windshield Damage Assessment • Disaster Recovery
Braddock City Commission	<ul style="list-style-type: none"> • Disaster/Emergency Declarations • Budget Allocations
Emmons County Emergency Management	<ul style="list-style-type: none"> • Local Emergency Operations Plan • Multi-Hazard Mitigation Plan • Evacuation Annex • Shelter Annex • Mass Care Annex • Public Information Officer • Social Media Coordination • Disaster Recovery • Audit Lead • Local Emergency Planning Committee • Grants Coordination • Emergency Notification
Emmons County Auditor	<ul style="list-style-type: none"> • Alternate Emergency Manager • Fiscal Management
Emmons County Board of Health	<ul style="list-style-type: none"> • Public Health Programs
Emmons County Commission	<ul style="list-style-type: none"> • Disaster/Emergency Declarations • Budget Allocations
Emmons County Extension Service	<ul style="list-style-type: none"> • Animal Health • Plant Health • Community Education
Emmons County GIS	<ul style="list-style-type: none"> • Hazard Mapping • Tier II Project (underway)
Emmons County Ministerial Association	<ul style="list-style-type: none"> • Mental Health • Disaster Recovery
Emmons County Planning Commission	<ul style="list-style-type: none"> • Revive meetings and review recommendations from SRF Consulting
Emmons County Public Health	<ul style="list-style-type: none"> • Shelters • Community Education • Vulnerable Populations

Emmons County Road Department	<ul style="list-style-type: none"> • Primary Routes • Bridges • Debris Removal
Emmons County School Superintendent	<ul style="list-style-type: none"> • Curriculum Standards (safety drills)
Emmons County Schools	<ul style="list-style-type: none"> • Curriculum Standards (safety drills)
Emmons County Sheriff's Department	<ul style="list-style-type: none"> • Traffic Control and Safety • Evacuation Routes • Emergency Notification
Emmons County State's Attorney	<ul style="list-style-type: none"> • Legal Review
Emmons County Zoning Ordinance	<ul style="list-style-type: none"> • Permitted Uses • Planning Commission
Emmons County Water Resource Board	<ul style="list-style-type: none"> • Floodplain Management • Voices for Lake Oahe/Beaver Bay Project • South Central Regional Water Project • Missouri River Joint Water Resource • ND Flood Risk Management Study • Beaver Creek Impediments
Hague City Commission	<ul style="list-style-type: none"> • Disaster/Emergency Declarations • Budget Allocations
Hazelton City Commission	<ul style="list-style-type: none"> • Disaster/Emergency Declarations • Budget Allocations
Lewis and Clark Regional Development Council	<ul style="list-style-type: none"> • Comprehensive Economic Development Strategy
Linton City Attorney	<ul style="list-style-type: none"> • Legal Review
Linton City Commission	<ul style="list-style-type: none"> • Disaster/Emergency Declarations • Budget Allocations
SRF Consulting Group, Inc	<ul style="list-style-type: none"> • Planning and Zoning Assessment (underway)
Salvation Army	<ul style="list-style-type: none"> • Shelter • Mass Care • Windshield Damage Assessment • Disaster Recovery
Southwest Central Emergency Preparedness	<ul style="list-style-type: none"> • Points of Distribution • Mass Inoculation • SWC Regional Strategic National Stockpile • SWC Regional EOP Mental Health • SWC Regional EOP Pandemic Influenza • SWC Regional EOP Mass Fatality
Strasburg City Commission	<ul style="list-style-type: none"> • Disaster/Emergency Declarations • Budget Allocations

ND State Water Commission	<ul style="list-style-type: none">• Strasburg Slough Preliminary Findings Report
US Army Corps of Engineers	<ul style="list-style-type: none">• Planning Assistance (Section 22)• Beaver Creek Study (underway)
US Geological Survey	<ul style="list-style-type: none">• Creek/River Gages
US National Weather Service	<ul style="list-style-type: none">• Weather Advisories• Hazard Advisories

Changes in Development

Demographics

Emmons County	
2010 population estimate	3,550
2010 persons per square mile	2.4

According to the [US Census Bureau](#), the 2013 population estimate is 3,486 (-1.8% decrease from 2010). The County population continues to decline despite an increase in 2010 as evidenced by the following:

2013 estimate	3,486
2010	3,550
2008	3,377
2000	4,331
1990	4,380

Emmons County has five incorporated cities including the county seat, Linton, Braddock, Hague, Hazelton and Strasburg.

City	Population
Braddock	21
Hague	71
Hazelton	235
Linton	1,097
Strasburg	409



Linton is the County seat.

Climate

The County's geographic location results in a sub-humid continental climate characterized principally by marked fluctuations in daily and seasonal maximum and minimum temperatures, and light to moderate precipitation. The precipitation tends to be irregular in occurrence, amount, and area of coverage. Summers are usually hot and dry, with periods of prolonged high temperatures occurring from May through September. Winters are cold and dry, but the region is subject to severe blizzards. July is the warmest month, and January is the coldest month.

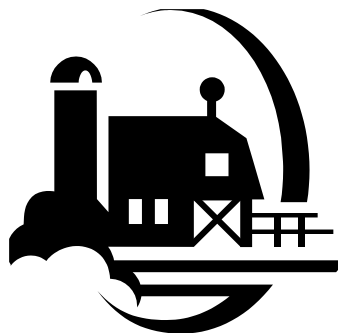
Normally the temperature is moderate until the beginning of July, after which short, hot periods are experienced until the end of August. The freeze-free period is the number of days between the average last occurrence of freezing temperatures in the spring and the average first occurrence of 32 degrees F or lower in the fall. The length of the freeze-free period approximates the length of the growing season which ranges from 110 days to 119 days between May 16th and September 20th. Topography and local weather conditions can produce subfreezing temperatures at the ground surface while the air temperature a few feet above the ground remains above 32 degrees F. The warmest month is July. The coldest month is January.

Annual precipitation is 15-17" with 75% of the precipitation in the summer. Winter snowfall is generally not too heavy, and it is blown into drifts, so that much of the ground is free of snow. Average seasonal snow fall is 30 to 35 inches.

Economy

According to the [US Census Bureau 2008-2012 American Community Survey](#), the largest percentage of the population (25.5%) is employed in the category of "Educations services, and health care and social assistance", followed by 20.9% in the category of "Agriculture".

A total of 61.2% of the workers are "private wage and salary workers", 14.4% are government workers, and 22.6% are self-employed in their own, not-incorporated businesses. The median household income was \$37,304. The poverty status was 9.1% of the families below the poverty level, 14.7% of the individuals below the poverty level with the 24.2% of 65 and older individuals below the poverty level.



Land Use Concerns

Agriculture remains the primary land use in Emmons County. Census data shows indicated that Emmons County has 609 farms in 2012 (down from 694 in 2007) that average 1,222 acres per farm for a total acreage of 743.925 acres. (Source: [USDA Census of Agriculture](#))

Soil erosion due to wind and water remains a problem. On steep gradients, rain washes out gullies in cultivated fields, and fields cultivated in the fall suffer extensive damage from wind. The county has 20,438 acres enrolled in the Conservation Reserve Program (CRP) which has helped mitigate the erosion problem; however, the acreage enrollment is steadily decreasing.

Conservation Reserve Program Cumulative Enrollment by Fiscal Years (Acres)

Year	Acres
2013	20,438
2012	36,045
2011	43,885
2010	45,488
2009	50,336
2008	57,288
2007	73,004

Source: [US Department of Agriculture, Farm Service Agency](#)

Emmons County continues to study a variety of mitigation activities. Soil erosion, water supply, and water quality are major land use concerns of the county.

Land use concerns regarding fish and wildlife include draining of wetlands, construction of dams and levees, bank stabilization along the Missouri River, loss of habitat through the clearing for construction (encroachment), the management of major industry, the transportation of hazardous materials over bridges, pesticides, and overgrazing.

Development

The Linton Industrial Development Corporation leads economic development in the Linton area. The nonprofit corporation was formed in 1984 and is focused on assisting new business development and moving or expanding businesses into the community.

Many of the local jurisdictions have economic development committees to attempt to bring industry to their jurisdiction. Emmons County has many miles of lake and river shore, respectively, along the Oahe Dam and Missouri River, which are being developed for recreational purposes.

The City of Linton currently has floodplain ordinance is looking at updating the ordinance. Emmons County has no floodplain ordinance and has hired a consultant to assist with zoning and planning policies to include development of a floodplain ordinance. The overall goal is to decrease the vulnerability of development in the hazard-prone areas.

In the aftermath of the 2009 flood disaster, 5 acquisitions were finalized in 2014 (2 in Emmons County and 3 in the City of Linton).

Building Permits				
Year	Type	Buildings	Unit	Construction Cost
2013	Single Family	3	3	\$715,000
	Two Family	1	2	\$170,000
2012	Single Family	3	3	\$590,000
2011	Single Family	5	5	\$750,000
2010	Single Family	6	6	\$854,000
2009	Single Family	2	2	\$328,000

(Source: [US Census Bureau](#))

Emmons County is experiencing a decrease in population due to outmigration and aged population. The 2013 census data identifies persons 65+ as 14.2% and Emmons County is at 27.7%. (Source: US Census State and County QuickFacts [website](#))

Outreach to the Linton Industrial Development Corporation provided information on lack of housing ability coupled with outside investors buying the properties as secondary homes and/or renting them.

Risk Assessment and Hazard Profile

Emmons County and the five incorporated cities (Braddock, Hague, Hazelton, Linton, and Strasburg) contributed to the risk assessment for the Emmons County Multi-Hazard Mitigation Plan.

The 14 hazards identified by the ND Department of Emergency Services were utilized for the risk assessment. (Source: State of North Dakota Multi-Hazard Mitigation Plan, February 2014)

Risk Assessment by Jurisdiction						
	Emmons County	Braddock	Hague	Hazelton	Linton	Strasburg
Communicable Disease	X	X	X	X	X	X
Dam Failure	X					
Drought	X	X	X	X	X	X
Flood	X	X	X	X	X	X
Geologic Hazards	X					
Hazardous Materials Incident	X	X	X	X	X	X
Homeland Security Incident	X	X	X	X	X	X
Shortage or Outage of Critical Materials or Infrastructure	X	X	X	X	X	X
Summer Storm	X	X	X	X	X	X
Transportation Accident	X	X	X	X	X	X
Urban Fire or Structure Collapse		X	X	X	X	X
Wildland Fire	X	X	X	X	X	X
Windstorm	X	X	X	X	X	X
Winter Storm	X	X	X	X	X	X

Capabilities of the various agencies can be found in Attachment 4: Mitigation Capabilities.

The majority of jurisdictions are affected by the hazards with slight variances in susceptibility as described below:

Communicable Disease

Although each jurisdiction is susceptible to communicable disease, the more rural communities of Braddock and Hague and unincorporated Emmons County are particularly susceptible to those diseases that impact plants and animals. The cities, particularly the most populous city, Linton, are more susceptible to communicable disease.

The general age for disease susceptibility considers children under the age of 14 and adults over the age of 65 as most susceptible to disease (especially if exacerbated by underlying medical conditions). The table below depicts the susceptible ages for each jurisdiction.

Community	Population	0-14 Years	15-64 Years	65+ Years
Emmons	3,550	596	1,983	971
Braddock	21	3	7	11
Hague	71	7	35	29
Hazelton	235	52	121	62
Linton	1,097	156	582	359
Strasburg	409	48	176	185

Dam Failure

The western portion of Emmons County would be most vulnerable to the threat of dam failure from the Garrison Dam which is located approximately 130 miles northwest of the City of Linton, Emmons County.

All the dams in Emmons County are classified as “Low Hazard Potential” with the exception of Nieuwsma Dam which is classified as “Significant” and not required to have an emergency action plan. Dam failure for “Low Hazard” dams may results in low economic, environmental, and lifeline losses generally limited to the owner with no expected loss of human life. Failure of the Nieuwsma Dam would result in economic, environment, and lifelines losses with no expected loss of human life.

Drought, Urban Fire or Structure Collapse, and Wildland Fire

The impacts of drought and wildland fire could impact city residents in a number of ways; however, rural Emmons County is more susceptible to these hazards due to open prairie and agricultural activities. The five cities are more vulnerable to urban fire with losses greater in the more populated cities.

Although many rural residents have their own wells, rural Emmons County would suffer great agricultural losses in drought with 609 farms that average 1,222 acres per farm for a total acreage of 743,925 acres. (Source: [USDA Census of Agriculture](#))

Grain elevators in Braddock, Hague, Linton, and Strasburg as well as Hazelton's Cenex-Agronomy may suffer losses due to drought and loss of crops.

The incorporated cities (excluding Hazelton) have access to a newly-installed water treatment plant along the Missouri River at Beaver Bay into Lake Oahe (2.5 million gallon per day water treatment plant and a 500,000-gallon storage reservoir)

The City of Hazelton has a 50,000-gallon water tower with a backup generator.

The City of Linton has two underground water tanks—one holds 150,000 gallons and the other holds 250,000. The tanks are fed from South Central Regional Water.

Strasburg has a 75,000-gallon water which can be hooked up to a portable generator.

Resources for potable water supplies are identified in the Emmons County Emergency Operations Plan.

Fire Departments continue to lose staff and could run the risk disbanding. Additional and/or replacement equipment is always needed and sought through donations and grants.

Flood

The following figure displays that no jurisdiction is immune to flood vulnerability and has either experienced the vulnerability or has the increasing susceptibility to experience the vulnerability.

Flood Vulnerabilities by Jurisdiction						
	Emmons County	Braddock	Hague	Hazelton	Linton	Strasburg
River Flooding	X				X	X
Overland Flooding	X	X	X	X	X	X
Ice Jam Flooding	X				X	
Lift Stations					X	
Lagoon Overruns			X			X
Road Washouts	X					

Additionally, inundation maps can be found in the Attachments.

Geological Hazards

No jurisdictions have significant history of this hazard; however, the western edge of Emmons County is the most susceptible along the Missouri River. The only jurisdiction affected would be rural Emmons County. Approximately 30 farmsteads could experience some land erosion as well as the following recreational areas: Badger Bay, Bayside Resort/Beaver Bay, Cattail Resort, Hazelton Recreation Area, and Langeliers Bay

Hazardous Materials Release and Transportation Accident

Varied levels of susceptibility are apparent for all jurisdictions. Highway 83 runs through the middle of Emmons County (including Hazelton, Linton, and Strasburg). Additionally, County Highway 34 runs through Hazelton, and County Highway 10 runs through Hague. Railroad tracks run through Braddock. Throughout the year, farmers transport anhydrous ammonia in pup tanks. (See Attachment 3, Major Roadways Map in Emmons County)

The City of Linton is far more susceptible to the hazards due to being an urban center with the highest population density in Emmons County. Other factors increasing susceptibility include:

- County Seat
- Governmental Buildings (local, state, and federal)
- Hospital
- Increased Transportation Flow

Hazardous Materials Release and Transportation Accident						
	Emmons County	Braddock	Hague	Hazelton	Linton	Strasburg
Anhydrous Ammonia	X			X		X
Bulk Fuel	X	X	X	X	X	X
Bulk Fertilizer	X	X	X	X	X	X
Farm Chemicals			X		X	
Propane				X		X
Fuel and Gas	X	X	X	X	X	X
Natural Gas					X	
Major Transportation Route	X		X	X	X	X
Railroad	X	X				

Homeland Security Incident

All jurisdictions could be impacted by a homeland security event; the greater vulnerability would be expected to be in the most populous city of Linton.

Severe Summer Weather and Severe Winter Weather

All jurisdictions are impacted. Severe summer weather incidents may cause major economic losses based on the level of impact. Severe winter weather often results in blocked roads and can affect each jurisdiction and may lead to economic loss dependent upon severity and length of time.

Rural Emmons County residents have backup power sources (generators, coal or wood-burning stoves) and extra fuel sources (gas and propane).

The communities of Hague, Linton, and Strasburg each maintain an outdoor warning siren utilized to alert fire or ambulance crews and to signify a tornado.

The Emmons County Courthouse Auditorium is available as a shelter or temporary warming center during periods of power outages caused by extreme weather events.

Vulnerable populations:

- Linton Hospital, Linton
- Sunrise Trailer Court, Linton
- Strasburg Care Center, Strasburg

Disability Population*

	Population	Total with Disability	Under 18 Years	Total with Disability	18-64 Years	Total with Disability	65+ Years	Total with Disability
Emmons County	3,463	556	740	16	1,818	147	905	393

*2009-2013 American Community Survey 5-Year Estimates

Emmons County does not have the resources and shelter space to accommodate functional needs and general population for a large-event. (Source: Emmons County Evacuation and Shelter Plan)

Shortage or Outage of Critical Materials or Infrastructure

All jurisdictions could be impacted. The larger populous (Linton, Hazelton, and Strasburg) and communities with medical facilities (Linton and Strasburg) would experience greater impact without fuel, utilities, and/or medical supplies. Likewise, agriculture activities would be drastically impacted without utilities and fuel supplies.

Windstorm

Very similar to severe summer and winter storms, windstorms have the capacity to affect each jurisdiction. Downed power lines would have the greatest affect coupled with damages from flying debris and damage to facilities.

Mobile home dwellings are encouraged to have tie-downs.

Hazards Excluded from this Plan

Hazard	Why Excluded/Where Addressed
Avalanche	Avalanches generally require long stretches of 25-55 degree slopes; Emmons County has no areas that meet this criteria. North Dakota is not covered by a National Avalanche Center. North Dakota does not have a history of any declared state or federal avalanche disasters.
Coastal Erosion	Emmons County does not have an ocean coastline.
Coastal Storm	Emmons County does not have an ocean coastline.
Hurricane	Emmons County does not have an ocean coastline, nor is it located in a potential hurricane impact area.
Tsunami	Emmons County does not have an ocean coastline.
Volcano	Volcanic ashfall can occur over Emmons County, but the frequency is relatively rare and the potential impacts are not expected to exceed local capabilities. North Dakota does not have a history of any declared state or federal volcano disasters.

Risk Analysis Worksheet

Frequency: How often is this hazard likely to develop in this area?

Highly Likely	Nearly 100% probability in the next year
Likely	10–100% probability in the next year, or at least 1 chance in next 10 years
Possible	1–10% probability in the next year, or at least 1 chance in next 100 years
Unlikely	Less than 1% probability in next 100 years

Severity: What is the expected extent of damage caused by this type of hazard?

Catastrophic	More than 50% of jurisdiction affected
Critical	25–50% of jurisdiction affected
Limited	10–25% of jurisdiction affected
Negligible	Less than 10% of jurisdiction affected

Highly Likely	C	B	A	A
Likely	C	C	B	A
Possible	D	C	B	B
Unlikely	D	D	C	C
	Negligible	Limited	Critical	Catastrophic

(Source: [FEMA Multi-Hazard Identification and Risk Assessment, January 1, 1997, Risk Assessment Approaches – Chapter/Section Number: Part 3](#))

Risk Class: Classification of the overall risk posed to the jurisdiction and immediacy of necessary action:

Seasonal Pattern: When is the type of hazard most likely to occur?

Probable Duration: How long will this event typically have an impact on the community?

Speed of Onset: How much advance warning does the community have for this type of event?

Location/Jurisdiction: Which areas are affected?

Risks: Types of situations that might result from the hazard.

Hazard
Frequency: _____
Severity: _____
Risk Class: _____
Seasonal Pattern: _____
Duration: _____
Speed of Onset: _____

DESCRIPTION:

IDENTIFIED IMPACTS:

HISTORY:

Emmons County Hazard Risk Analysis Chart with Vulnerabilities for each Hazard

Risk Class:	B	D	B	C	D	B	C	B	A	B	C	D	C	B
HAZARD	Communicable Disease	Dam Failure	Drought	Flood	Geologic Hazards	Hazardous materials Release	Homeland Security Incident	Severe Summer Weather	Severe Winter Weather	Shortage or Outage of Critical Materials or Infrastructure	Transportation Accident	Urban Fire or Structure Collapse	Wildland Fire	Windstorm
Agriculture	X	X	X	X	X	X		X	X	X	X		X	X
Blocked Roads		X		X	X		X	X	X		X	X	X	X
Building Collapse		X			X			X	X		X	X	X	X
Business Interruptions	X	X	X	X	X		X	X	X	X	X	X	X	X
Delayed Emergency Response	X	X		X	X		X	X	X	X	X	X	X	X
Downed Power Lines		X		X	X		X	X	X	X		X	X	X
Downed Trees		X		X	X			X	X			X	X	X
Evacuation (Full)							X							
Evacuation (Localized)	X	X		X	X	X	X	X	X	X	X	X	X	X
Explosion					X	X	X				X	X	X	X
Flooding (Street)		X		X				X						
Flooding (Structure)		X		X				X						
HAZMAT Release		X		X	X	X	X	X	X		X	X	X	X
Increased Fire Potential			X	X	X	X	X	X	X	X	X	X	X	X
Increased Public Safety Runs	X	X		X	X	X	X	X	X	X	X	X	X	X
Livestock Injury/Death	X	X	X	X		X	X	X	X				X	X
Loss of Economy	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Loss/Overcrowded Medical Facilities	X			X	X		X				X	X		X
Loss of Potable Water	X	X	X	X	X	X	X	X		X	X			
Loss of Power		X		X	X		X	X	X	X		X	X	X
Mass Casualties	X	X			X	X	X	X			X			X
Personal Injury/Death Risk	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Property Damage		X	X	X	X	X	X	X	X	X	X	X	X	X
School Closure	X	X			X	X	X		X	X	X			X
Sewer Backup		X		X				X						
Wind Chill									X					X

Overall Vulnerability Summary

HAZARD	Description
Communicable Disease	Decreased from Risk Class “A” to “B”. Frequency is possible; however, historical severity is limited and primarily agricultural.
Dam Failure	No change.
Drought	Decreased from Risk Class “A” to “B”. Frequency is likely; however, historical severity is limited and primarily agricultural.
Flood	Decreased from Risk Class “B” to “C”. Frequency is possible; however, historical severity is limited.
Geologic Hazards	New hazard to match the State Plan. Hazard is likely; however, severity was deemed negligible-limited.
Hazardous Materials Release	Increased from Risk Class “C” to “B”. Frequency increased to likely due to increase in product moving through Highway 83; however, historical severity is limited.
Homeland Security Incident	No change.
Severe Summer Weather	Decreased from Risk Class “A” to “B”. Frequency is highly likely; however, historical severity is limited and not as broad based as a winter storm.
Severe Winter Weather	No change.
Shortage or Outage of Critical Materials or Infrastructure	No change.
Transportation Accident	Increased from Risk Class “D” to “C”. The frequency of hazardous materials incidents occurring in relation to transportation has increased with historical severity being Negligible-Limited.
Urban Fire or Structure Collapse	Decreased from Risk Class “C” to “D”. Frequency is likely-possible; however, historical severity is limited.
Wildland Fire	Decreased from Risk Class “B” to “C”. Fire Department respond to wildland fires every year; however, the historical severity has been negligible.
Windstorm	New hazard to match the State Plan. Windstorms are broadly based and annually affect more than 50% of the County.

THIRA Survey Results
As of 07-18-14

2013 Emmons County Hazard/Threat Identification Comparison*						
		Very Likely	Likely	Possible	Unlikely	Improbable
	Score	5	4	3	2	1
Catastrophic	5				• Nuclear Terrorism Attack	
Significant	4					
Moderate	3			• Animal Disease Outbreak	• Chemical Terrorism Attack • Explosives Terrorism Attack • Biological Terrorism Attack	
Minor	2			• Armed Assault • Human Pandemic Outbreak • Biological Food Contamination • Chemical Substance Spill or Release	• Chemical/Biological Food or Food Production Attack • RDD Terrorism Attack	
None/ Negligible	1	• Winter Storms • Wildfire	• Summer Storms • Flood	• Cyber Attack	• Dam Failure • Aircraft as a Weapon • Radiological Substance Release	

*Based on 9 responses

Emmons County Federal Major Disaster and Emergency Declarations

Number	Declared	State	Description
<u>3309</u>	03-14-2010	North Dakota	Flooding
<u>1907</u>	04-30-2010	North Dakota	Flooding
<u>1879</u>	02-26-2010	North Dakota	Severe Winter Storm
<u>1829</u>	03-24-2009	North Dakota	Severe Storms, Flooding
<u>3247</u>	09-13-2005	North Dakota	Hurricane Katrina Evacuation
<u>1334</u>	06-27-2000	North Dakota	Severe Storms, Flooding
<u>1279</u>	06-08-1999	North Dakota	Severe Storms, Tornadoes, Snow and Ice, Flooding, Ground Saturation, Landslides and Mudslides
<u>1174</u>	04-07-1997	North Dakota	Severe Storms, Flooding
<u>1157</u>	01-12-1997	North Dakota	Severe Winter Storms, Blizzards
<u>1118</u>	06-05-1996	North Dakota	Flooding
<u>1050</u>	05-16-1995	North Dakota	Flooding, Ground Saturation
<u>1001</u>	07-26-1993	North Dakota	Flooding, Severe Storms
<u>581</u>	04-26-1979	North Dakota	Snowmelt, Flooding
<u>554</u>	04-17-1978	North Dakota	Ice Jams, Snowmelt, Flooding
<u>3061</u>	02-16-1978	North Dakota	Blizzard, Snowstorms
<u>3016</u>	07-21-1976	North Dakota	Drought
<u>434</u>	05-14-1974	North Dakota	Heavy Rains, Snowmelt, Flooding
<u>287</u>	06-05-1970	North Dakota	Severe Storms, Flooding
<u>256</u>	04-18-1969	North Dakota	Flooding

Source: <http://www.fema.gov/disasters>

Communicable Disease

Frequency	Likely (10-100% probability in the next year, or at least 1 chance in next 10 years)
Severity	Critical (25-50% of jurisdiction affected)
Risk Class	B
Seasonal Pattern	None
Duration	Hours/Days
Speed of Onset	No warning
Location	Countywide

Description

Naturally occurring biological diseases in humans as well as those biological agents found in the environment, or diagnosed in animals, that have the potential for transmission to humans.

The probability of communicable disease in Emmons County presents challenges due to a limited history of outbreaks. Medical advances over the past fifty years prevent many disease outbreaks, yet the potential still remains. Emmons County is primarily a rural setting and somewhat isolated from the rapid spread of global diseases, however, international and domestic travel is so common that, like the Spanish Influenza Pandemic of 1918, North Dakotans would most likely be affected at some point. The urban areas could see rapid spread of such diseases through their populations.

Identified Impacts

- Business Interruptions
- Delayed Emergency Response
- Evacuation (Localized)
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss/Overcrowded Medical Facilities
- Loss of Potable Water
- Mass Casualties
- Personal Injury/Death Risk
- School Closure

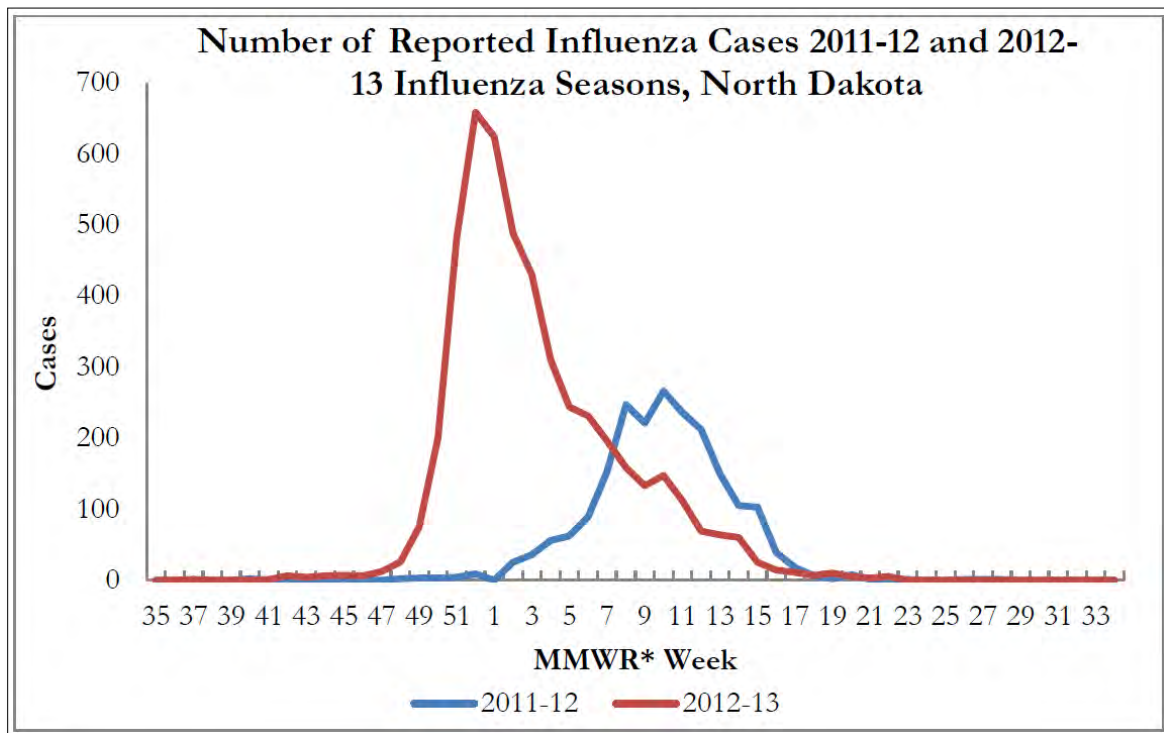
History

Although Emmons County has not experienced a pandemic in recent years, seasonal influenza outbreaks occur annually.

Emmons County Influenza Season Summary

Season	Cases Identified in Emmons County	Cases Identified in North Dakota
2012-2013	42	4,833
2011-2012	17	1,487
2010-2011	15	2,089
2009-2010	23	3,259

Source: [ND Department of Health](#)



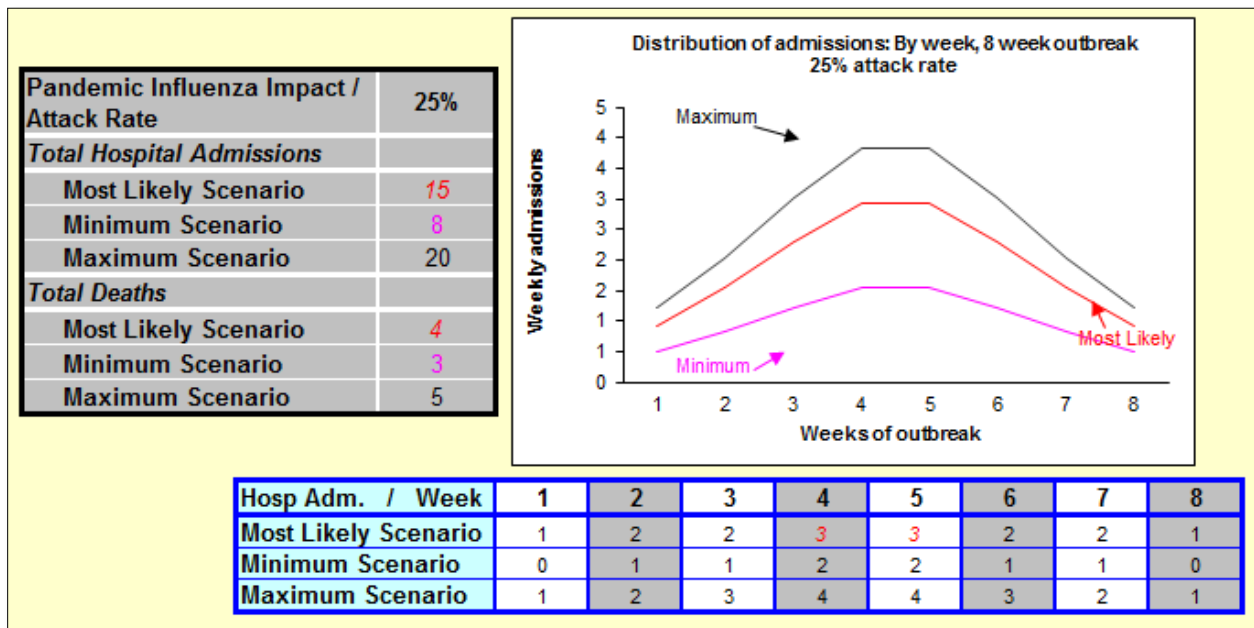
Source: www.ndflu.com

North Dakota has had three influenza pandemics in the 20th century: 1918 caused 5,100 deaths in North Dakota, 500,000 deaths in the United States; 1957 resulted in 70,000 deaths in the United States; and 1968 resulted in 34,000 deaths in the United States.

Spanish Influenza Pandemic of 1918

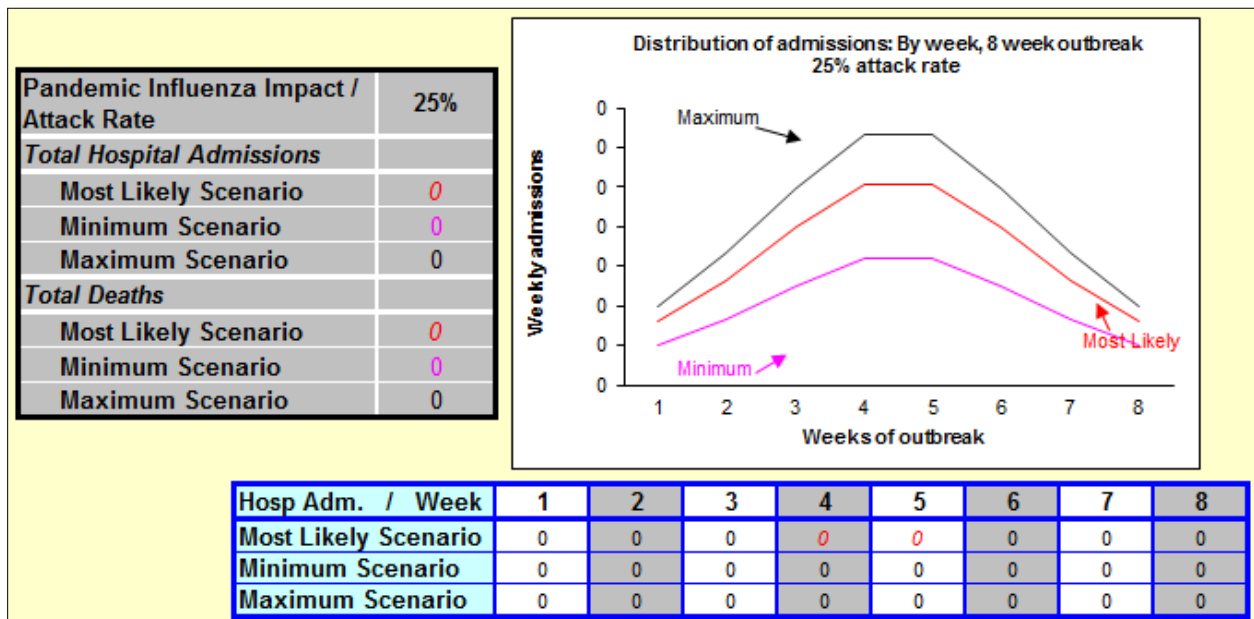
The magnitude of a communicable disease outbreak varies from everyday disease occurrences to widespread infection. During the 1918 Influenza Pandemic, infection rates approached 28% in the United States. (Billings, 1997) Other pandemics produced infections rates as high as 35% of the total population. (World Health Organization, 2007) Such a pandemic affecting North Dakota represents a severe magnitude event. Almost any highly contagious, incapacitating disease that enters the North Dakota population would quickly overwhelm local and state health resources. Similarly, any rapidly spreading bioterrorism event for which little vaccination or containment capability exists is a high magnitude event.

1918 Pandemic and Impact Rate Based on 2010 Census Data* Emmons County



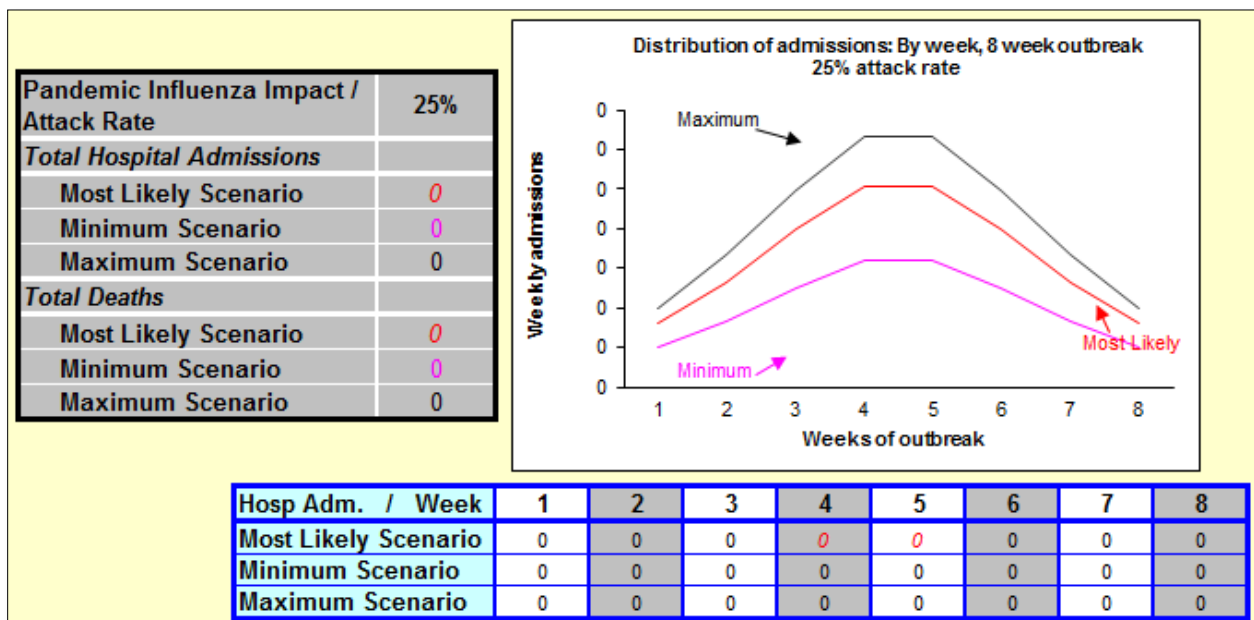
*According to Billings (1997) the 1918 attack rate was 28%, the figures above represented a 25% attack rate generated by [FluSurge](#).

1918 Pandemic and Impact Rate Based on 2010 Census Data* City of Braddock



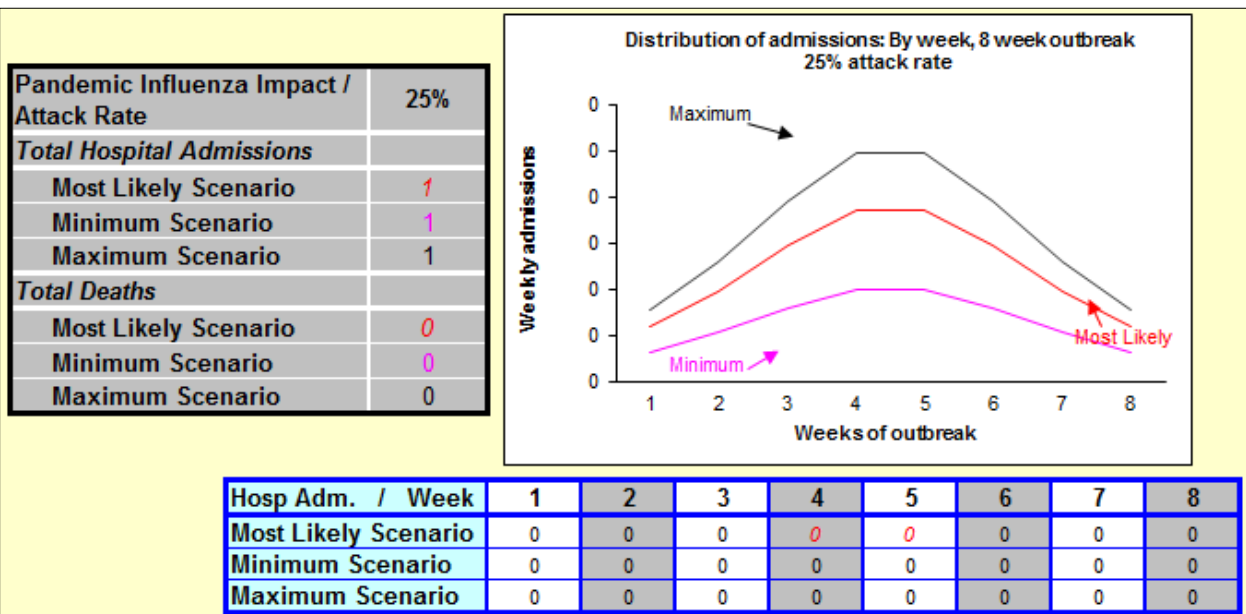
*According to Billings (1997) the 1918 attack rate was 28%, the figures above represented a 25% attack rate generated by [FluSurge](#).

1918 Pandemic and Impact Rate Based on 2010 Census Data* City of Hague



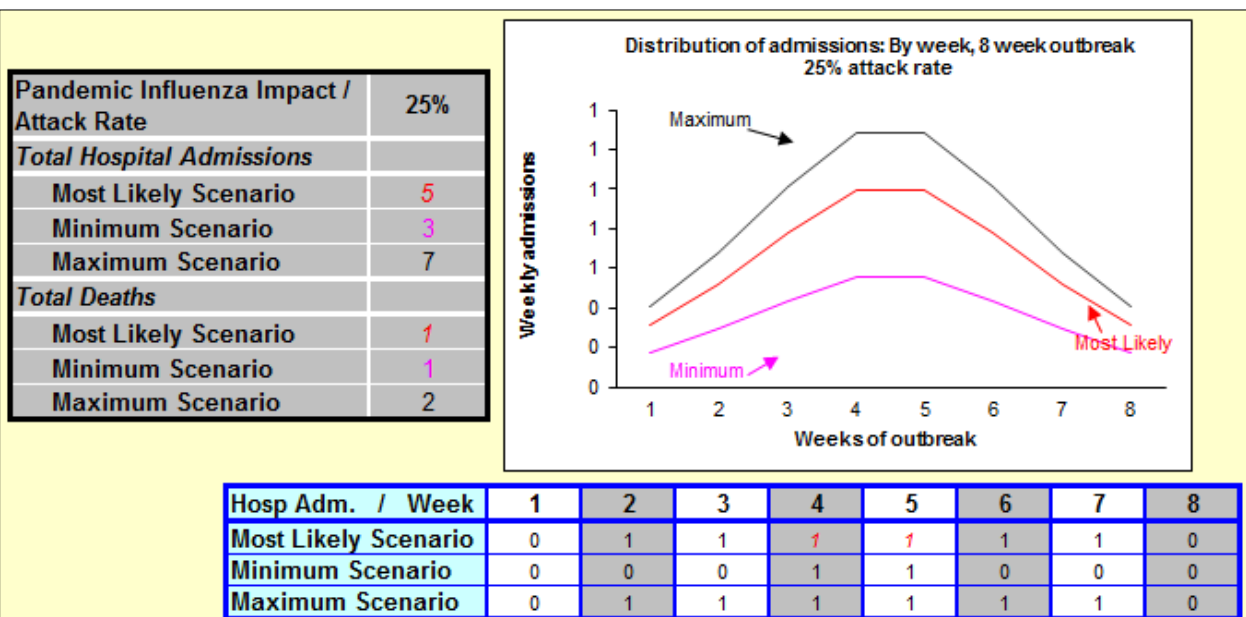
*According to Billings (1997) the 1918 attack rate was 28%, the figures above represented a 25% attack rate generated by [FluSurge](#).

1918 Pandemic and Impact Rate Based on 2010 Census Data* City of Hazelton



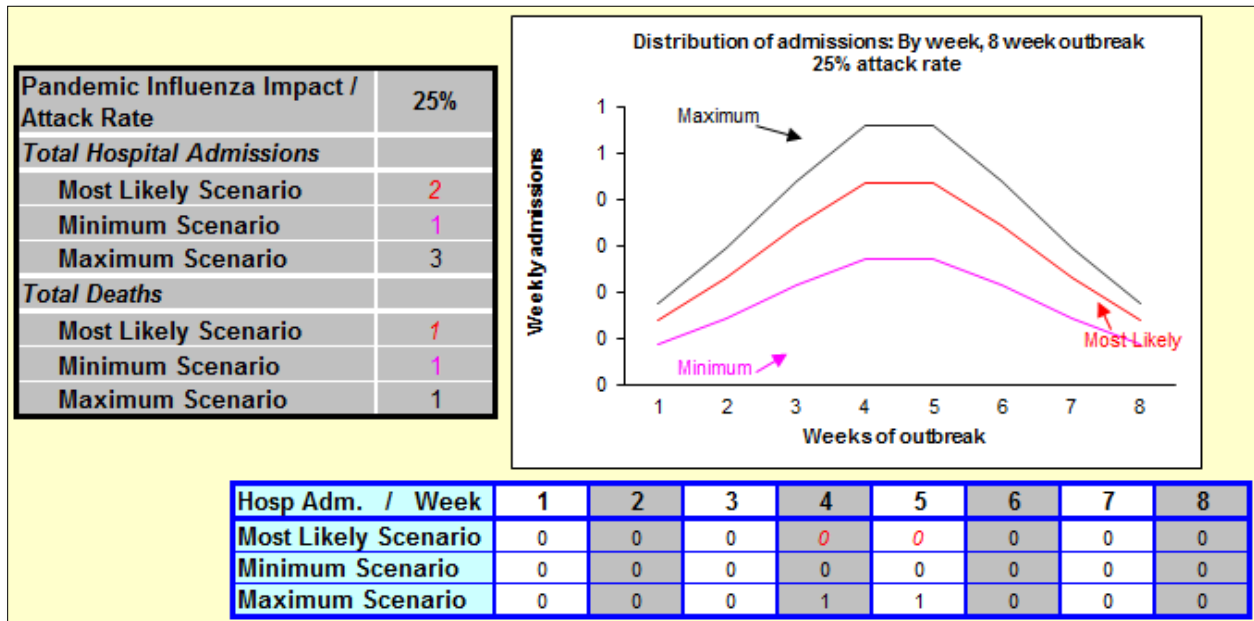
*According to Billings (1997) the 1918 attack rate was 28%, the figures above represented a 25% attack rate generated by [FluSurge](#).

1918 Pandemic and Impact Rate Based on 2010 Census Data* City of Linton



*According to Billings (1997) the 1918 attack rate was 28%, the figures above represented a 25% attack rate generated by [FluSurge](#).

1918 Pandemic and Impact Rate Based on 2010 Census Data*
City of Strasburg



*According to Billings (1997) the 1918 attack rate was 28%, the figures above represented a 25% attack rate generated by [FluSurge](#).

Agricultural Diseases, Noxious Weeds, and Pests

A comprehensive list of reportable conditions is maintained by the ND Department of Agriculture and available on their [website](#).

Anthrax

“Anthrax occurs worldwide and is associated with sudden death of cattle and sheep. Anthrax can infect all warm-blooded animals, including humans. The anthrax organism (*Bacillus anthracis*) has the ability to form spores and become resistant to adverse conditions. Pasteurization or ordinary disinfectants may destroy anthrax organisms in animals or their secretions. However, if the animal carcass is opened and the organisms are exposed to air, they will form spores. Sporulated anthrax organisms are highly resistant to heat, cold, chemical disinfectants and drying. The anthrax spore may live indefinitely in the soil of a contaminated pasture or yard.”
(Source: ND Department of Agriculture [website](#))

Emmons County has a low case history:

Anthrax Cases in Emmons County	
2014	0
2013	0
2010	0
2006	1
2005	0

Dam Failure

Frequency	Possible (1-10% probability in next year, or at least 1 chance in next 100 years)
Severity	Less than 10% of jurisdiction affected
Risk Class	D
Seasonal Pattern	Spring/Summer
Duration	Days/Weeks
Speed of Onset	Little Warning
Location	Western Boundary of Emmons County

Description

A dam is any artificial barrier, including appurtenant works, which impounds or diverts water. Its purposes include the storage of water for irrigation, hydroelectric power generation, flood control, water supply, recreation, wildlife, etc. A dam failure is defined as a sudden, rapid, and uncontrolled release of impounded water that will create a potential significant downstream hazard. The dam failure hazard is determined by the potential loss of life and downstream property damage it may cause, and not by any particulars of the dam itself. There are many reasons and/or potential causes for dam failure such as terrorism, earthquakes, etc.; however, the most common reasons are hydraulic inadequacy, seepage problems, and structural defects.

The “[FEMA Federal Guidelines for Dam Safety](#), Hazard Potential Classification System for Dams, April 2004” defines three classification levels:

- **Low Hazard Potential:** Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner’s property.
- **Significant Hazard Potential:** Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.
- **High Hazard Potential:** Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life.

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. One or more expected	Yes (but not necessary for this classification)

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Flooding (Street)
- Flooding (Structure)
- HAZMAT Release
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss of Potable Water
- Loss of Power
- Mass Casualties
- Property Damage
- School Closure
- Sewer Backup

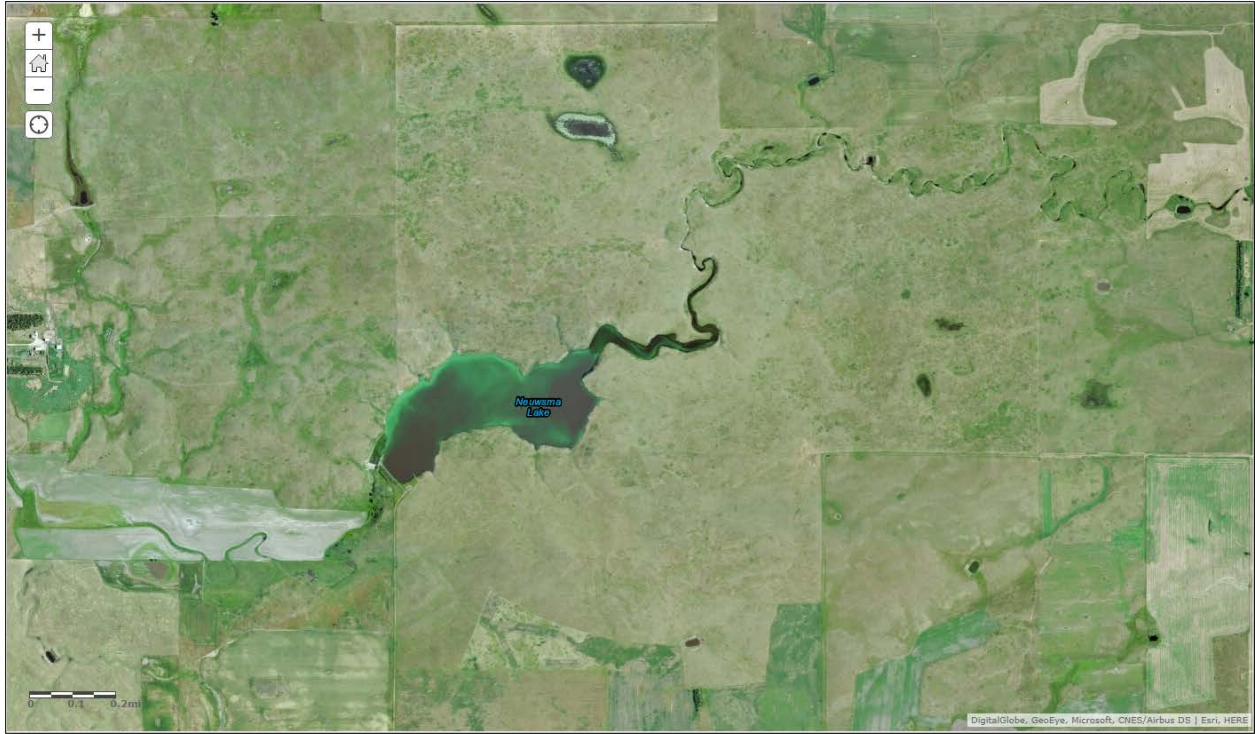
The [ND State Water Commission](#) identifies 62 dams in Emmons County. All of these dams have an element of hazard to cause loss of life and property damage should the dam fail. No dams are classified as “High Hazard Potential”.

Location	Type	Structure Name	County	Purpose	Federal Hazard Class
12907527AAA	Dam	NIEUWSMA DAM	Emmons	Recreation	Significant
12907731BDB	Dam	ODDE DAM; LARRY	Emmons	Fish & Wildlife	Low
12907823BD	Dam	RYCKMAN DAM; ARLO	Emmons	Livestock	Low
13007515CC	Dam	NIEUWSMA DAM; RAY	Emmons	Livestock	Low
13007525CA	Dam	EBERLY DAM; JOSEPH	Emmons	Livestock	Low
13007628BD	Dam	VANDERVAL DAM; KARL	Emmons	Livestock	Low
13107507BC	Dam	BAUMAN DAM; RONALD	Emmons	Livestock	Low
13107733DB	Dam	WELK DAM	Emmons	Recreation	Low
13107821BA	Dam	Parmley Dam; Richard	Emmons	Livestock	Low
13207418BC	Dam	Schaffer Dam; Jacob No.2	Emmons	Livestock	Low
13207436AA	Dam	WEISSER DAM	Emmons	Livestock	Low
13207513AA	Dam	Schaffer Dam; Jacob No.1	Emmons	Livestock	Low
13207513BB	Dam	Schaffer Dam; Jacob No.5	Emmons	Livestock	Low
13207513CA	Dam	Schaffer Dam; Jacob No.4	Emmons	Livestock	Low
13207513DA	Dam	Schaffer Dam; Jacob No.3	Emmons	Livestock	Low
13207601BB	Dam	Nieuwsm No. 1	Emmons	Livestock	Low
13207612AB	Dam	NIEUWSMA DAM; J ED 2	Emmons	Fish & Wildlife	Low
13207612AC	Dam	NIEUWSMA DAM; J ED 5	Emmons	Livestock	Low
13207612BC	Dam	NIEUWSMA DAM; J ED 4	Emmons	Livestock	Low
13207612CCB	Dam	NIEUWSMA DAM; J ED 1	Emmons	Fish & Wildlife	Low
13207612DA	Dam	Nieuwsma Dam; Ed 6	Emmons	Fish & Wildlife	Low
13207613BAA	Dam	NIEUWSMA DAM; J ED 3	Emmons	Fish & Wildlife	Low
13207618AD	Dam	BEAVER CK LAND MANAGE LLP#2	Emmons	Livestock	Low
13207618DA	Dam	BEAVER CK LAND MANAGE LLP#1	Emmons	Livestock	Low
13207633AD	Dam	RODENBURG DAM; RAYMOND 1	Emmons	Fish & Wildlife	Low
13207722DB	Dam	SCHATZ DAM; RIENHOLD	Emmons	Fish & Wildlife	Low
13207723BD	Dam	GLEASON DAM; CONNIE	Emmons	Fish & Wildlife	Low

13207729BC	Dam	OLIVER DAM; KEVIN	Emmons	Livestock	Low
13207813BB	Dam	KLAUDT DAM; REINHOLD	Emmons	Irrigation	Low
13307432AC	Dam	HOFF DAM; ALFRED	Emmons	Fish & Wildlife	Low
13307518BA	Dam	SANDWICK DAM; LOUIS	Emmons	Livestock	Low
13307533AB	Dam	SPRING WATER LAKE DAM	Emmons	Livestock	Low
13307534DA	Dam	Ibach Dam; Terry	Emmons	Fish & Wildlife	Low
13307605BB	Dam	TEMVIK DAM	Emmons	Livestock	Low
13307625AC	Dam	RODENBURG DAM; RAYMOND 2	Emmons	Fish & Wildlife	Low
13307625AD	Dam	RODENBURG DAM; RAYMOND 3	Emmons	Fish & Wildlife	Low
13307629BDD	Dam	ALVERSHERE DAM; LLOYD	Emmons	Fish & Wildlife	Low
13307717AB	Dam	HUBER DAM; JERALD	Emmons	Livestock	Low
13307729A	Dam	Hilzendeger Dam; Randy 1a	Emmons	Livestock	Low
13307729D	Dam	Hilzendeger Dam; Randy 2a	Emmons	Livestock	Low
13307729D	Dam	Hilzendeger Dam; Randy 3a	Emmons	Livestock	Low
13307804BB	Dam	HORSEHEAD CREEK DAM #1	Emmons	Fish & Wildlife	Low
13407536BC	Dam	ND STATE LAND DEPT DAM 12	Emmons	Livestock	Low
13407734AC	Dam	WILHELM DAM; DONALD H	Emmons	Livestock	Low
13407815BD	Dam	SCHIERMEISTER DAM; WILLIAM	Emmons	Livestock	Low
13407924AA	Dam	Ryckman Dam; Daniel	Emmons	Livestock	Low
13507504BA	Dam	BRADDOCK DAM	Emmons	Irrigation	Low
13507803CA	Dam	FOELL DAM; SHELLY 2	Emmons	Livestock	Low
13507803DD	Dam	FOELL DAM; SHELLY 1	Emmons	Livestock	Low
13507817AC	Dam	GRENZ DAM; KENNETH	Emmons	Fish & Wildlife	Low
13507832AB	Dam	GRENZ DAM; LYLE 2	Emmons	Fish & Wildlife	Low
13507832BA	Dam	GRENZ DAM; LYLE 1	Emmons	Fish & Wildlife	Low
13607517DB	Dam	NAADEN DAM; PETE 1	Emmons	Fish & Wildlife	Low
13607521CC	Dam	NAADEN DAM; PETE 4	Emmons	Livestock	Low
13607521CD	Dam	NAADEN DAM; PETE 5	Emmons	Fish & Wildlife	Low
13607522CC	Dam	NAADEN DAM; PETE 2	Emmons	Livestock	Low
13607522DC	Dam	NAADEN DAM; PETE 3	Emmons	Fish & Wildlife	Low
13607618CC	Dam	SCHLITTENHART DAM; BOB	Emmons	Livestock	Low

13607627DB	Dam	SCHIERMEISTER DAM; JAMES	Emmons	Livestock	Low
13607704AD	Dam	VETTER DAM; DONALD	Emmons	Livestock	Low
13607823AA	Dam	KALBERER DAM; JOSEPH E	Emmons	Fish & Wildlife	Low

The Nieuwsma Dam is classified as “Significant” and is located 5 miles south, 1 mile east, and 1 mile north of the intersection of US Highway 83 & ND 11. It’s a recreational purpose dam and a popular fishing area in Emmons County. Failure of the rural dam would most likely result in agricultural loss due to location and three farmsteads with multiple structures..

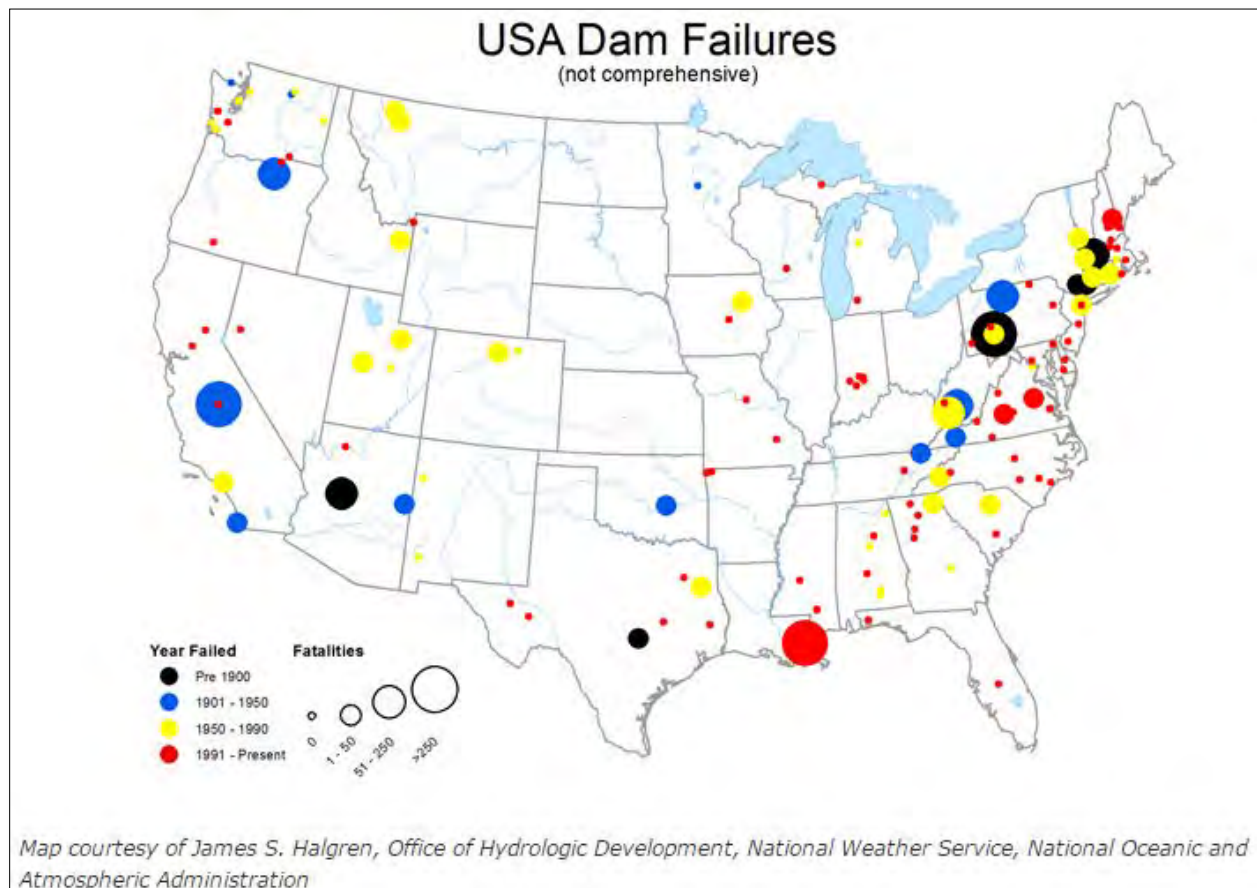


Source: ND Game and Fish [website](#)

History

July 15, 1995—Dam Failure. Reports of up to 10 inches of rain during the first part of July caused the Appert Lake Dam (Located southeast of Hazelton. . Latitude: 46.446656, **Longitude:** -100.2120562) to fail. Parts of Highway 13 were flooded for a time. No reports of property damage were received.

The Association of State Dam Safety Officials presents a map on their [website](#) compiled of a list of dam and levee failures.



Drought

Frequency	Likely (10-100% probability in the next year, or at least 1 chance in next 10 years)
Severity	Critical (25-50% of jurisdiction affected)
Risk Class	B
Seasonal Pattern	Summer
Duration	Weeks/Months
Speed of Onset	Slow Onset
Location	Countywide

Description

Drought is a condition of climatic dryness which is severe enough to reduce soil moisture and water below the minimum necessary for sustaining plant, animal, and human life systems. Drought characteristics usually include precipitation levels well below normal and temperatures higher than normal. In addition to severe damage to vegetation, soil in a drought area becomes dry and crumbles. Often, topsoil is blown away by hot, dry winds. Streams, ponds, and wells often dry up during a drought, thus wildlife and livestock suffer and even die. Although agriculture production is the most obvious recipient of drought losses, this hazard will also attack urban areas by impacting on domestic and industrial water supplies.

Identified Impacts

It is a fact that precipitation deficits as little as four to six inches can cause severe drought conditions.

Drought severity regarding our agriculture procedures depends on time of year, timing of precipitation, amount of stored soil water, type of crop, stage of growth, and meteorological variables such as temperature, humidity, and wind.

A number of secondary hazards are generally associated with drought. Rural grassland fires increase because of dry vegetation. Reduction in vegetation cover will expose the soil to wind, and dust storms and soil erosion will occur. Because of reduction in flow, the chemical quality of river and lake water will change, and the sediment transport regimes of streams will be altered.

Deterioration in water quality, in turn, results in injury and death to plants and animals. Stagnant pools along river courses will provide favorable habitats for insects, particularly mosquitoes and grasshoppers. Finally, with the return of the rains, the dry and unstable topsoil is vulnerable to gullying and flooding.

There are a wide range of possible consequences that have and can occur again in regard to drought.

- Business Interruptions
- Increased Fire Potential
- Livestock Injury/Death
- Loss of Economy
- Loss of Potable Water
- Property Damage

History

June 26, 2006—Emmons County declared a drought emergency. Extreme dry conditions caused lack of feed and water shortages for livestock, crop failures, water quality problems, and extreme danger of rural fires. Emmons County was declared a disaster area due to drought conditions.

June, 2002—Emmons County declared a drought emergency. Extreme dry conditions caused lack of feed and water shortages for livestock, crop failures, water quality problems, and extreme danger of rural fires.

June 12, 1992—Emmons County was declared a disaster area due to drought conditions.

May 1, 1990—Emmons County continues to experience drought since 1988 and was again declared a disaster area.

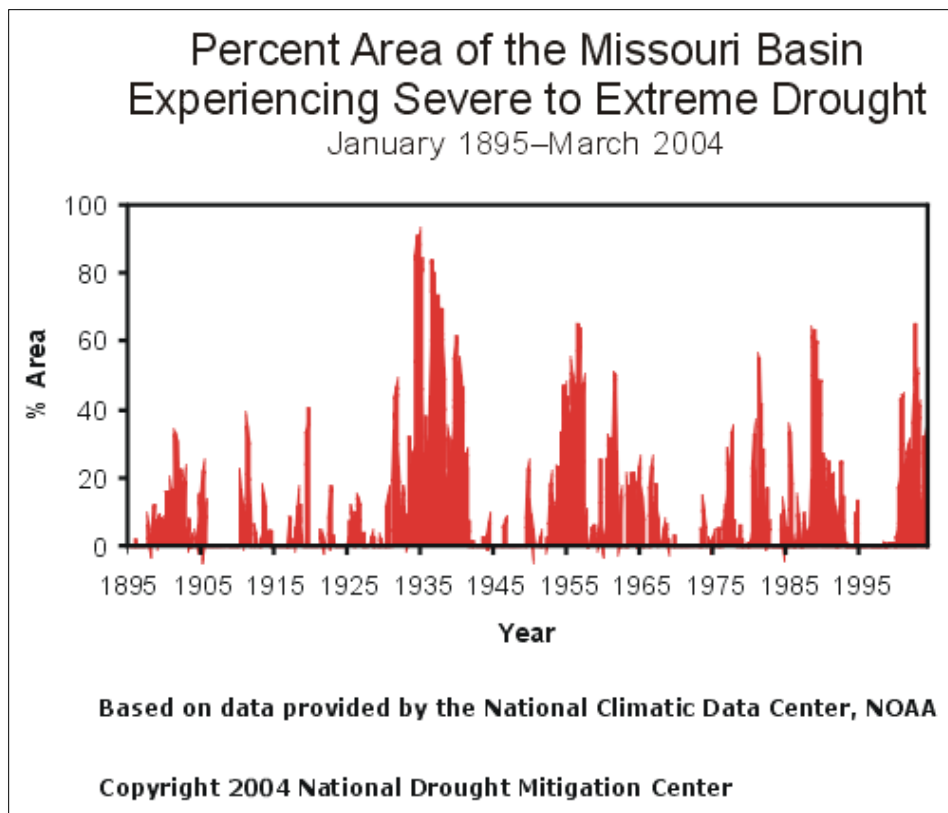
June 7, 1988—Emmons County was declared a disaster area due to drought conditions because of high temperatures and lack of rain. A burning ban was issued for all private and public fireworks. Cattlemen were forced to sell some of their livestock because of lack of feed. This drought extended into 1989.

July 21, 1976—Emmons County included in Federal Emergency Declaration.

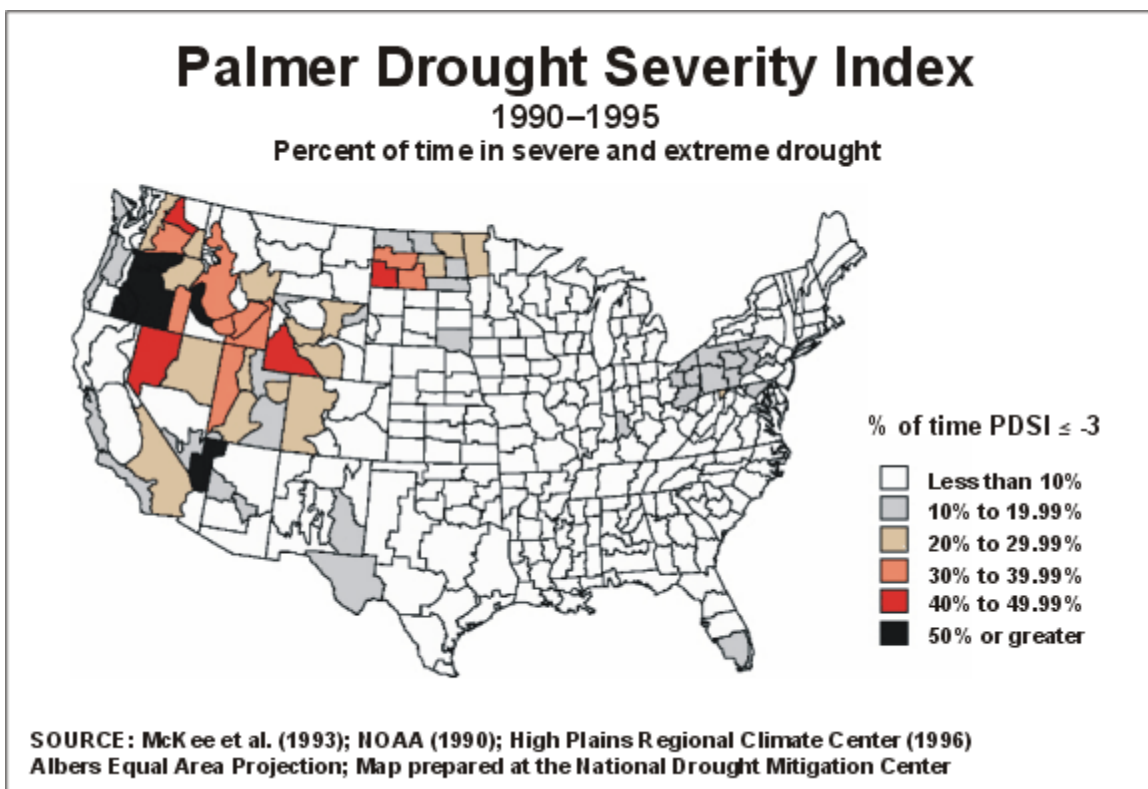
Excessive Heat

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	07/16/2011	11:00	CST-6	Excessive Heat		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Source: National Oceanic and Atmospheric Administration National Climatic Data Center [Website](#) (01/1950 to 08/2014)



Source: National Drought Mitigation Center [website](#)



Source: National Drought Mitigation Center [website](#)

Flood

Frequency	Likely (10-100% probability in the next year, or at least 1 chance in next 10 years)
Severity	Limited (10-25% of jurisdiction affected)
Risk Class	C
Seasonal Pattern	Spring and Summer
Duration	1 to 10 days
Speed of Onset	More than 24 hours warning
Location	Countywide

Description

Flooding is defined as an overflow of water on land not normally covered by water.

Flood hazards arise from the complex effects of water on land surfaces and by water pressure. Flooding and its impact occur from the overflow of rivers, creeks, drainage channels, streams, lakes, and other bodies of standing water. Also, the inundation of low lands, the temporary backup of sewer and storm water systems, the rise of ground water, and finally the failure of flood control facilities such as dams, dikes, and levees.

Floods can occur when the ground is frozen and/or saturated with moisture and cannot absorb any further moisture. This moisture can come from several different sources and circumstances. One source is heavy snowpack which is affected by a rapid warming trend as well as spring rain falling directly on the snowpack. Another source of flooding occurs when heavy rain falls in such a short time that the soil cannot absorb it. Flooding is also caused when heavy rain falls over a prolonged period of time and the ground becomes saturated and cannot absorb the additional moisture.

Flooding can also result from ice jamming or blockage along streams. Ice breaking up into pieces, called floes, move along with the flowing rivers or streams. The ice floes can jam at curves, narrow places in the channel, and at structures creating an effective dam that produces water backup and overflow. Finally, flooding can occur as a result of dam, dike, or levee failure, overtopping or breaching.

Floodplain Management in North Dakota

Flood control development had its beginning with the Flood Control Act of 1936. This Act provided a basic plan and an authorized program for the control of water resources. In the early 1940's the North Dakota State Water Commission cooperated with the Federal agencies to plan and engineer the overall program for North Dakota.

The U.S. Army Corps of Engineers occupies one of the major roles in flood control planning and construction. Two reservoirs built by the U.S. Soil Conservation Service have contributed materially to flood control by the construction of watershed projects in North Dakota. These watershed projects include channel work and flood retention structures. In such projects, the Soil Conservation District has the responsibility for assuring that 50 percent of the farms above a structure are under a basic conservation plan.

Floodplain Management in North Dakota: North Dakota has recognized that good floodplain management involves the utilization of a variety of tools to reduce the impact of flood disasters. It is also recognized that a balance must be reached between the three aspects of floodplain management which are: structural works designed to modify the flood itself, regulatory functions which may reduce susceptibility to flooding, and emergency preparedness actions which may reduce susceptibility to flooding, and emergency preparedness actions which minimize a flood's effect during a disaster.

The Federal Disaster Protection Act of 1973 requires state and local government to participate in the National Flood Insurance Program (NFIP) as a condition to the receipt of any federal loan or grant for construction projects in flood prone areas.

Participation in the NFIP requires communities to adopt floodplain regulations that meet NFIP objectives, which are: New buildings must be protected from flooding damages that occur as a result of the 100-year flood, and new development must not cause an increase in flood damages to other property. (See Attachment 3, Flood Insurance Rate Map for Emmons County and Flood Insurance Rate Map for City of Linton)

Communities have been provided assistance through passage, in 1981, of the state's first Floodplain Management Act which directs the State Engineer to aid local governments to reduce flood damages through sound floodplain management. As a start, the state legislature provided the State Engineer with an appropriation to be used in assisting communities to obtain base flood (100-year) elevation data. With appropriate planning, we will see continued reduction in flood damage susceptibility across the state, but it will likely take many years to achieve the established goals.

Missouri River Basin

The Missouri River Basin, comprised of seven major sub-basins, is the largest in the state, draining approximately 48 percent of the state's total area. The basin coincides roughly with the portion of the state having a semiarid climate. The tributaries on the south and west sides of the Missouri River typically occupy small but sharply defined valleys. This area is well drained with very few natural lakes. Numerous flat-topped, steep-sided buttes and hills characterize the topography. The most prominent are located in the Badlands along the Little Missouri River. Numerous small lakes and wetlands characterize the area east of the Missouri River. Annual mean precipitation in the basin ranges from 13 inches in the northwest to 17 inches in the east.

Lake Sakakawea was formed by the construction of the Garrison Dam in 1953. Lake Sakakawea covers 368,000 surface acres, can store a maximum of 24.5 million acre-feet, and has 1,600 miles of shoreline in six counties. Lake Oahe Dam in South Dakota covers 40,000 to 80,000 surface acres in North Dakota, with an average storage of 989,605 acre-feet and a maximum storage of 1,626,588 acre-feet, depending upon the management elevation of the lake. The two projects required a total of 550,000 acres of land in North Dakota, including shoreline acres needed for flood conditions.

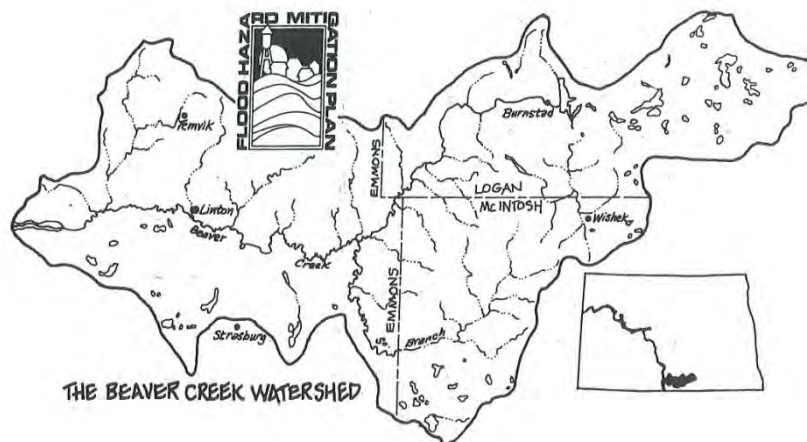
Beaver Creek Watershed

Beaver Creek drains parts of Emmons, Logan and McIntosh Counties in North Dakota.



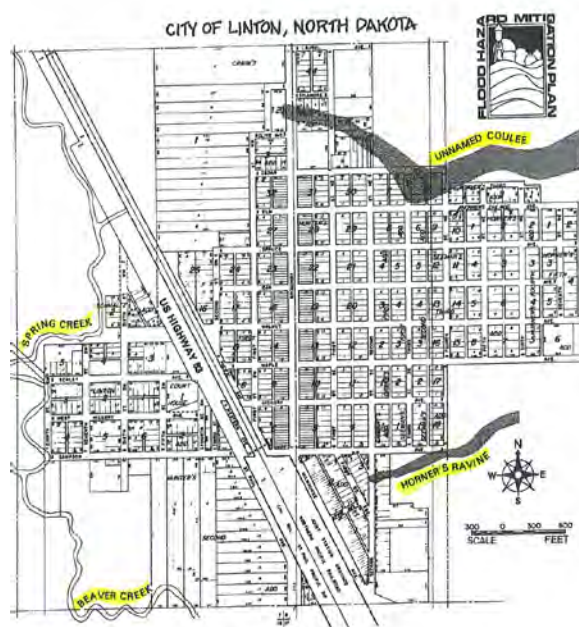
Source: United States Environmental Protection Agency [website](#)

Below is another map of the Beaver Creek Watershed showing that Beaver Creek drains parts of Emmons, Logan and McIntosh Counties with an inset showing the watershed's location in North Dakota.

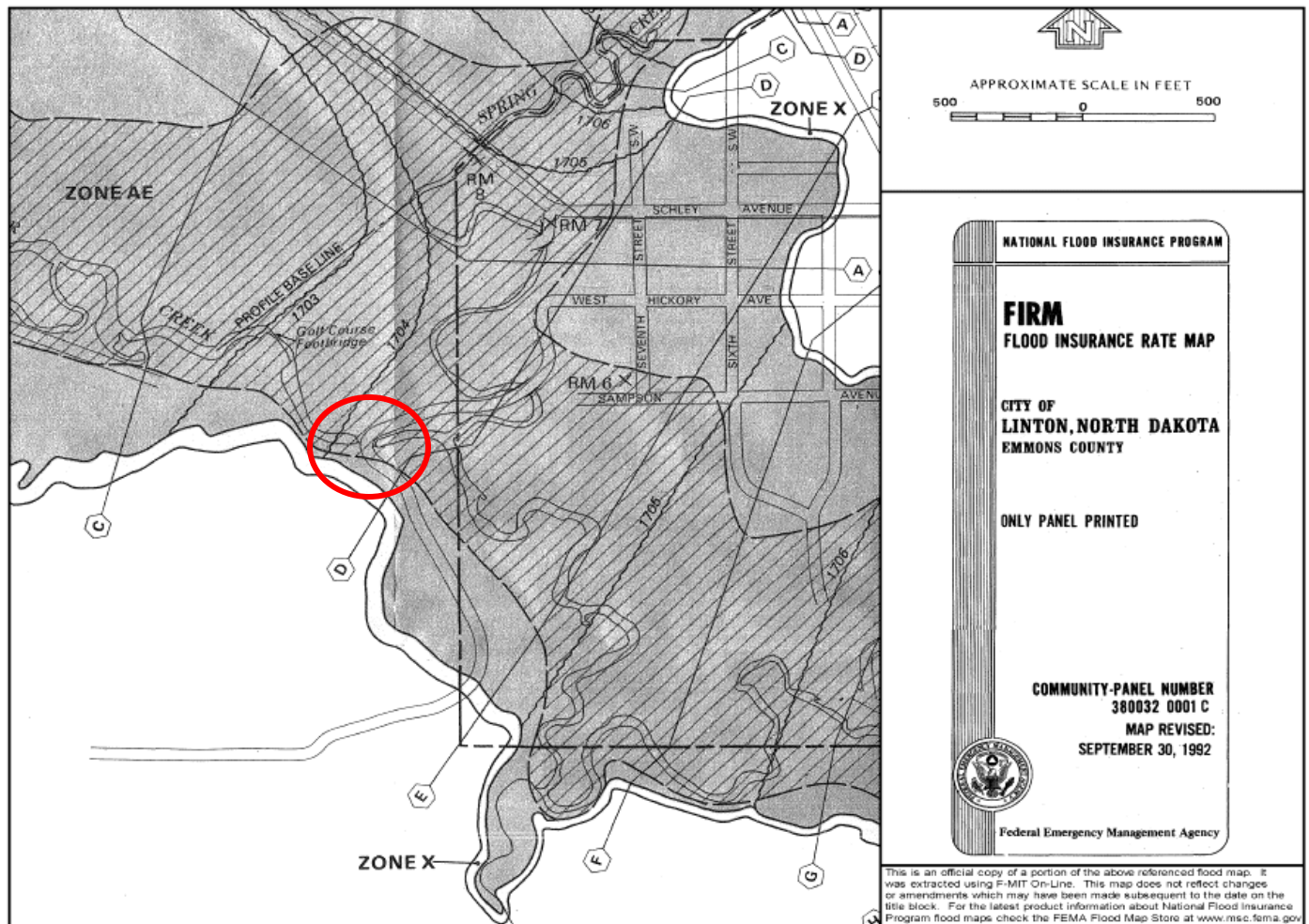


Source: Flood Hazard Mitigation Plan, City of Linton, ND, September 1984.

The map of the City of Linton shows the location of the Unnamed Coulee, Horner's Ravine, Spring Creek, Beaver Creek and their confluence.

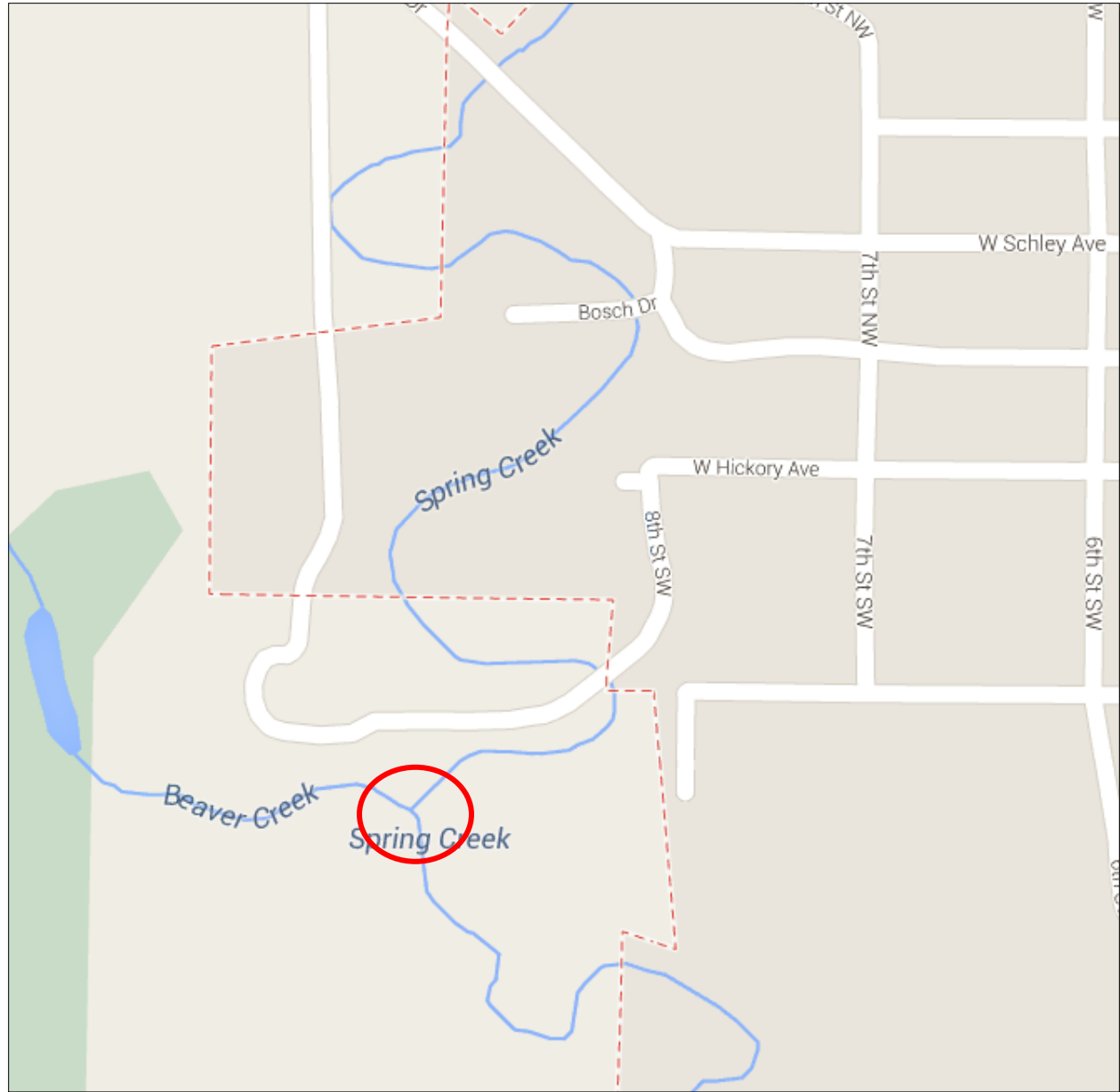


Source: Flood Hazard Mitigation Plan, City of Linton, ND, Sept. 1984.

Beaver Creek and Spring Creek Confluence

Source: FEMA Map Service Center [website](http://www.msc.fema.gov)

The potential remains for the Beaver Creek and Spring Creek confluence to exacerbate flood events during torrential rain events and/or spring thaw. Approximately 50 structures would be impacted from confluence flooding to the north and south. Historically, Beaver Creek and Spring Creek do not thaw simultaneously in the Spring.



Source: Google Maps [website](#)

Identified Impacts

- Blocked Roads
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Flooding (Street)
- Flooding (Structure)
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss/Overcrowded Medical Facilities
- Loss of Potable Water
- Loss of Power
- Property Damage
- Sewer Backup

History

Flash Flood

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
TEMVIK	EMMONS CO.	ND	06/20/2013	19:00	CST-6	Flash Flood		0	0	25.00K	0.00K
LINTON	EMMONS CO.	ND	08/04/2006	18:00	CST	Flash Flood		0	0	15.00K	0.00K
LINTON	EMMONS CO.	ND	07/23/2005	03:23	CST	Flash Flood		0	0	0.00K	0.00K
Totals:								0	0	40.00K	0.00K

Flood

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
HAZELTON	EMMONS CO.	ND	04/01/2009	00:00	CST-6	Flood		0	0	300.00K	0.00K
HAZELTON	EMMONS CO.	ND	03/06/2009	00:00	CST-6	Flood		0	0	748.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/21/1997	08:00	CST	Flood		0	0	0.00K	0.00K
Totals:								0	0	1.048M	0.00K

Heavy Rain

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
KINTYRE	EMMONS CO.	ND	07/08/2011	19:39	CST-6	Heavy Rain		0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/14/2011	09:21	CST-6	Heavy Rain		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Source: National Oceanic and Atmospheric Administration National Climatic Data Center [Website](#) (01/1950 to 08/2014)

March 13, 2009 to August 10, 2009—Major Disaster Declaration declared on March 24, 2009 (DR-1829). Significant flooding occurred as a result of spring thaw, snow, and torrential rains. Numerous bridges and roads were damaged and washed out. Significant numbers of livestock perished. The ND National Guard evacuated 20 residents of Linton, many from the “Old Town” area. Several homes were purchased in Linton and Emmons County as part of the mitigation process.

Sourced from 2003 Emmons County Multi-Hazard Mitigation Plan

April-June 2000—Excessive spring runoff, high water table and torrential rains caused flooding in Emmons County.

May 1999—Above average rainfall caused damage to basements and farm buildings due to flooding and seepage. A number of roads went under water. Public utilities exceeded their budget due to the fact the poles and guy wires were giving way because of water and saturated soil.

March-April 1997—Spring runoff and ice jams caused flooding along Beaver Creek and low-lying areas. Flooding occurred in the southwest portion of the city of Linton. Roads were washed out and culverts became undermined. Five concrete bridges over Beaver Creek were damaged. Homes along Beaver Creek experienced water seepage. Four farm homes were abandoned. One dairy farmer was forced to completely disperse of his herd.

March 1996—Spring runoff and ice jams caused flooding along Beaver Creek. The west side of the city of Linton also experienced flooding. Major damage was done to rural roads that became submerged. There was also major damage to the Seaman Park bridge.

June 15, 1995—The City of Hague suffered damage to their city lagoon due to high water and heavy rainfall.

March 1995 – Spring runoff and ice jams caused flooding along Beaver Creek. Highway 83 in the city of Linton overflowed and was closed for a four-hour period. The southwest area of the city of Linton was flooded with several basements flooding. Many county roads washed out in low-lying areas and some bridges were also damaged.

August 1, 1993—Flood. Deaths: 1. Property Damages of \$50,000. Crop Damages of \$50,000. The heavy rains of July swelled Beaver Creek. On the evening of the first, a vehicle attempted to cross the spillway in Linton. When the attempt was unsuccessful, the occupants got out of their vehicle. One of the occupants lost her footing, fell into the creek, and drowned.

July 15, 1993—During the late evening hours heavy rain fell in Emmons County causing flash flooding in the northern third of the county. Major damage was done to roads, bridges, culverts, farmlands, homes, businesses and other public facilities. On August 1, 1993, one woman trying to cross the spillway with her bicycle was swept off the spillway and drowned.

Sourced from Flood Insurance Study, City of Linton, ND, Emmons County, FEMA, Revised: 09/13/1992.

1952—The flood problem in Linton is severe. The information on extent of flooding and monetary losses experienced in the floods prior to 1952 is fragmentary and consists of items taken from newspaper files of the Emmons County Record. Portions of the Old Town section of Linton were under water during almost every flood.

August, 1989—Approximately 6 inches of rain fell in a one and one-half hour period causing Spring Creek to swell. The worst damage occurred from fast-moving water coming into Linton on Horner's Ravine and the Unnamed Coulee from the steep bluffs to the east of town. During this flood, the flows on Beaver Creek and Horner's Ravine peaked at 4,450 cfs and 414 cfs, respectively.

Marcy, 1987—Once again rapid snowmelt caused Beaver Creek to overflow its banks and inundate the Old Town.

July, 1977—There was white water on Beaver Creek. Recent rains swelled the usually gently running stream flooding more than one half of the Seeman Park land surface area.

March 18, 1972—Spring Creek was out of its banks at Linton and was pouring water down the north-south streets in Old Town. At the northwest corner of the City, an ice jam formed at the railroad bridge, causing water to flood the east-west road north of the city.

April 9, 1969—Beaver Creek hit 17-year high. At the John Deere Implement Shop, water reached the door, which was sandbagged. At the Linton Hatcher, water was up to within less than 1 foot of the foundation. In the Old Town section, Sampson Avenue was flooded from the MDU building to the creek. Beaver Creek was crossing over the road south of the cemetery and was approximately two-blocks wide. Water in the backyards of several homes along the west side of U.S. Highway 83 ranged from approximately 12- to 16-inches below the 1952 flood.

June, 1956— On June 5 and 6, heavy rainfall, totaling approximately 4.5 inches, caused high stages on Beaver and Spring Creeks at and near Linton. Beaver Creek crested 0.3 foot below flood stage at Linton, but overbank flows from Spring Creek inundated six city blocks.

June, 1953— Four inches of rainfall in the Beaver Creek basin resulted in flooding in the Linton area. Twenty-nine homes in the Old Town area were flooded.

April, 1952— (Maximum flood of record; slightly higher than 50-year frequency) Rapid melting of snow in the Beaver Creek basin resulted in the most damaging flood of record at Linton. Forty-one families were forced to evacuate the low-lying Old Town section of Linton, and water reached a depth of 4 feet. The U.S. Highway 83 bridge spanning Beaver Creek was weakened by floodwaters.

April, 1950— Peak flows of Beaver Creek inundated homes along U.S. Highway 83 and in the Old Town section of Linton.

March, 1948— High flows on Beaver Creek inundated portions of Old Town. Subsequent to the flood Beaver Creek, high stages occurred on Spring Creek, and portions of Old Town were again flooded.

March, 1945— The damage resulting from the flood of 1945 was not as severe as a in the two previous years. U.S. Highway 83 was under water, and two homes had water on the first floor.

April, 1944— Floodwaters inundated the greater part of Old Town and washed out a section of U.S. Highway 83 at Linton.

March, 1943— Spring Creek overflowed its banks on March 23, inundating a 9-square block area in Old Town in one of the worst floods of history on Spring Creek. Shortly after the Spring Creek overflow, Beaver Creek overflowed, again inundating Old Town.

June, 1939— Heavy rains on June 27 caused overflow of Beaver and Spring creeks at Linton.

June, 1934— Cloudburst rains caused Beaver Creek to overflow, inundating highways and flooding basements in Linton.

March, 1929— Heavy snows and continuous warm weather during the middle of the month caused Beaver Creek to overflow and flood Old Town.

May, 1927— Runoff from heavy rainfall caused Spring Creek to overflow, inundating a large section of Old Town.

September, 1926— Heavy rainfall during the first 10 days of September caused flood stages in the Linton area.

March, 1916— On March 29, snowmelt flows of Beaver Creek inundated most of the Old Town section of Linton.

June, 1914— On June 26, runoff from a three-hour cloudburst inundated most of Old Town when a railroad grad north of the city failed and released impounded water.

Portions of unincorporated Emmons County and the City of Linton include Special Flood Hazard Areas (SFHAs). FEMA has not completed a study of the Cities of Braddock, Hague, Hazelton, and Strasburg to determine flood hazard.

As a means of providing protection from large monetary losses, the County encourages property owners to purchase flood insurance through the National Flood Insurance Program (NFIP). Properties that have sustained two or more losses of \$1000 or more in a 10-year period since 1978 are considered to be repetitive loss properties.

Policy and Claims Report

CID	Community Name	Number Policies	Total Coverage	Total Premium	Total Claims Since 1978	Total Paid Since 1978
380032	Linton, City of	17	\$ 1,635,700	\$19,159	57	\$827,233
380232	Hazelton, City of	0	\$ -	\$0	1	\$411
380327	Emmons County	1	\$ 55,000	\$594	14	\$1,047,095
	County Total:	18	\$ 1,690,700	\$19,753	72	\$1,874,739

State Total	12,157	\$ 3,105,154,500	\$7,933,893	13,183	\$258,225,596
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Source: Jeff Klein, State NFIP Coordinator

The Emmons County Water Resource Board serves as the Floodplain Administrator for Emmons County. The City of Linton currently has floodplain ordinance is looking at updating the ordinance. Emmons County has no floodplain ordinance and has hired a consultant to assist with zoning and planning policies to include development of a floodplain ordinance. The overall goal is to decrease the vulnerability of development in the hazard-prone areas.

Community Repetitive Loss

COMMUNITY : EMMONS COUNTY*

Community	State	Regional	National	
	AE, A1-30, AO, AH, A	VE, V1-30, V	B, C, X	TOTAL
RL Buildings (Total)	0	0	0	1
RL Buildings (Insured)	0	0	0	1
RL Losses (Total)	0	0	0	3
RL Losses (Insured)	0	0		3
RL Payments (Total)	\$.00	\$.00	\$.00	\$62,236.16
Building	\$.00	\$.00	\$.00	\$62,236.16
Contents	\$.00	\$.00	\$.00	\$.00
RL Payments (Insured)	\$.00	\$.00	\$.00	\$62,236.16
Building	\$.00	\$.00	\$.00	\$62,236.16
Contents	\$.00	\$.00	\$.00	\$.00
Post - FIRM SFHA RL Buildings:		0		
Insured Buildings with 4 or More Losses:		0		
Insured Buildings with 2-3 Losses > Building Value:		0		
Total Target RL Buildings:		0		

Source: Jeff Klein, State NFIP Coordinator

Community Repetitive Loss				
COMMUNITY : LINTON, CITY OF				
Community	State	Regional	National	
	AE, A1-30, AO, AH, A	VE, V1-30, V	B, C, X	TOTAL
RL Buildings (Total)	3	0	1	4
RL Buildings (Insured)	1	0	1	2
RL Losses (Total)	6	0	3	9
RL Losses (Insured)	2	0		5
RL Payments (Total)	\$128,180.34	\$0.00	\$32,604.07	\$160,784.41
Building	\$127,460.34	\$0.00	\$31,604.07	\$159,064.41
Contents	\$720.00	\$0.00	\$1,000.00	\$1,720.00
RL Payments (Insured)	\$2,540.00	\$0.00	\$32,604.07	\$35,144.07
Building	\$1,820.00	\$0.00	\$31,604.07	\$33,424.07
Contents	\$720.00	\$0.00	\$1,000.00	\$1,720.00
Post - FIRM SFHA RL Buildings:		0		
Insured Buildings with 4 or More Losses:		0		
Insured Buildings with 2-3 Losses > Building Value:		0		
Total Target RL Buildings:		0		

Source: Jeff Klein, State NFIP Coordinator

After the 2009 flood event, the City of Linton and Emmons County proceeded with five acquisitions (three in the City and two in the County). The acquisitions had suffered severe damage and/or were left uninhabitable. The “green-space” properties are maintained by the respective jurisdictions.

This type of insurance is only available to property owners whose jurisdiction participates in the NFIP. The following jurisdictions participate in the National Flood Insurance Program (NFIP):

Federal Emergency Management Agency Community Status Book Report NORTH DAKOTA Communities in the National Flood Program							
CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Sanction Date	Tribal
380327#	EMMONS COUNTY* INCLUDES ALL UNORGANIZED TOWNSHIPS	EMMONS COUNTY		02/04/87	(All Zone)	02/04/87	No
380260	BRADDOCK, CITY OF	EMMONS COUNTY				03/29/99(E)	No
380232	HAZELTON, CITY OF	EMMONS COUNTY	01/17/75		(NSFHA)	01/30/84	No
380032#	LINTON, CITY OF	EMMONS COUNTY	06/28/74	11/19/80	09/30/92	11/19/80	No
380252	STRASBURG, CITY OF	EMMONS COUNTY	02/14/75		(NSFHA)	04/25/97	No
Legend:							
	(E)	Indicates Entry In Emergency Program					
	NSFHA	No Special Flood Hazard Area - All Zone C					
	(>)	Date of Current Effective Map is after the Date of This Report					
	N/A	Not Applicable At This Time					
	(S)	Suspended Community					
	(W)	Withdrawn Community					
	(M)	No Elevation Determined - All Zone A, C and X					
	(L)	Original FIRM by Letter - All Zone A, C and X					

Source: FEMA [Community Status Book Report](#), 07/24/14

Emmons County is trying to foster participation from the City of Hague.

Flood Insurance Study (FIS)

The last Flood Insurance Study (FIS), effective September 30, 1992, covered the jurisdiction of the City of Linton, Emmons County, North Dakota and is available at <http://www.msc.fema.gov/ProductID380032V000>. The Study reaffirms the history of the principal flood problems on pages 5-8.

Geologic Hazards

Frequency	Unlikely (Less than 1% probability in the next 100 years)
Severity	Negligible (Less than 10% of jurisdiction affected)
Risk Class	D
Seasonal Pattern	Spring and Summer
Duration	1 to 10 days
Speed of Onset	Hours to days
Location	Countywide (areas along Missouri River and Creeks)

Description

Geologic hazards in Emmons County are not anticipated to cause severe damage; however, the potential exists for the occasional landslide or earthquake to cause some loss.

Landslide

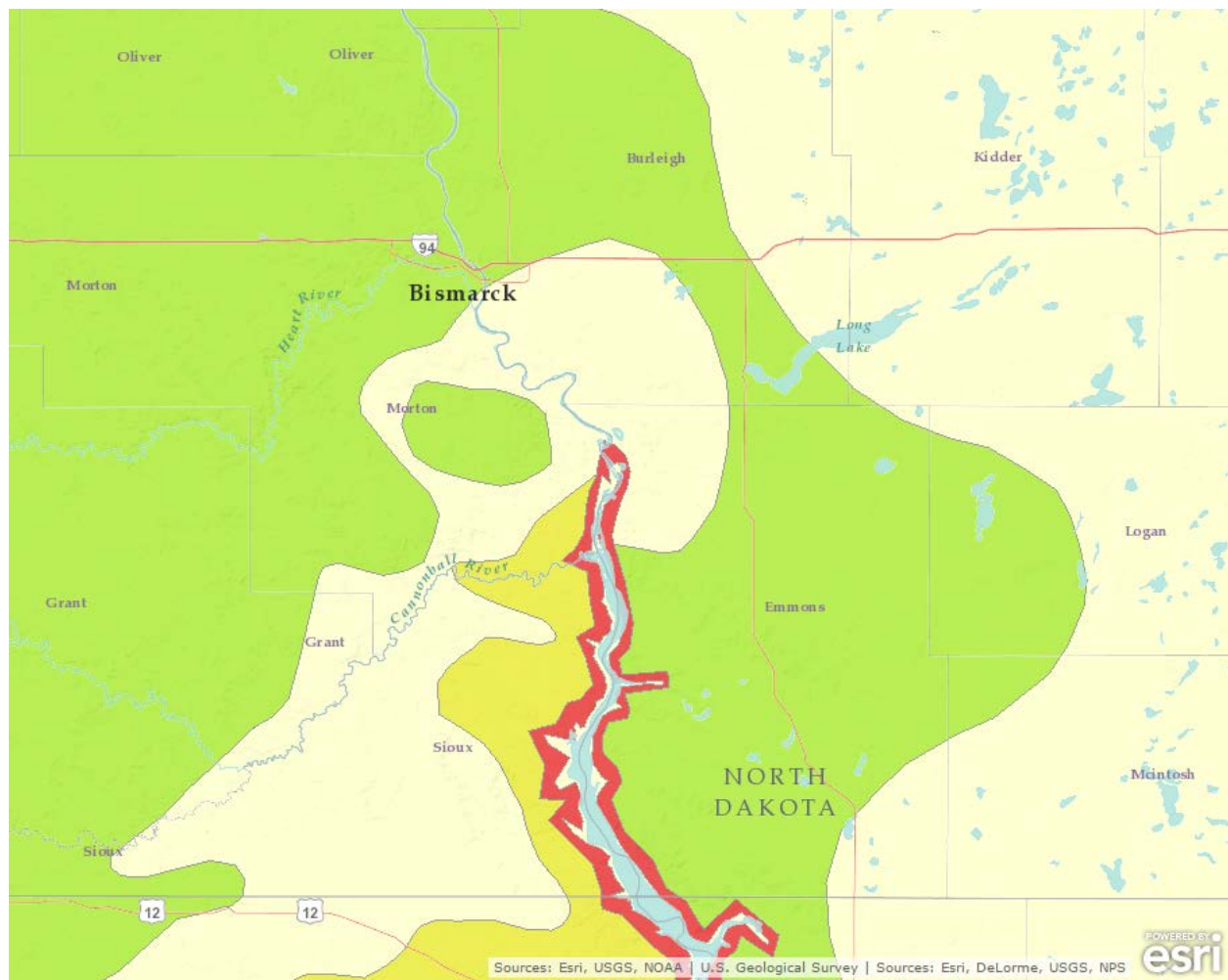
The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- erosion by rivers, glaciers, or ocean waves create oversteepened slopes
- rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- earthquakes create stresses that make weak slopes fail
- earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures



Slope material that becomes saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path.

(Source: US Geological Survey [website](#))



Source: ArcGIS USA Landslide Susceptibility [website](#)

USA Landslide Susceptibility

Landslides Incidence and Susceptibility

Landslides Incidence and Susceptibility

- High landslide incidence (over 15% of the area is involved in landsliding)
- Moderate landslide incidence (1.5 - 15% of the area is involved)
- High susceptibility to landsliding and moderate incidence
- High susceptibility to landsliding and low incidence
- Moderate susceptibility to landsliding and low incidence
- Low landslide incidence (less than 1.5 % of the area is involved)
- No data

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Loss of Economy
- Loss/Overcrowded Medical Facilities
- Loss of Potable Water
- Loss of Power
- Mass Casualties
- Personal Injury/Death Risk
- Property Damage
- Sewer Backup

History

There is no identified history of geologic hazards for Emmons County; however, the landslide susceptibility has been identified for the western edge of Emmons County which borders the Missouri River.

Hazardous Materials Release

Frequency	Highly Likely (Nearly 100% probability in the next year)
Severity	Limited (10-25% of jurisdiction affected)
Risk Class	B
Seasonal Pattern	None
Duration	Hours/Days
Speed of Onset	No warning
Location	Countywide

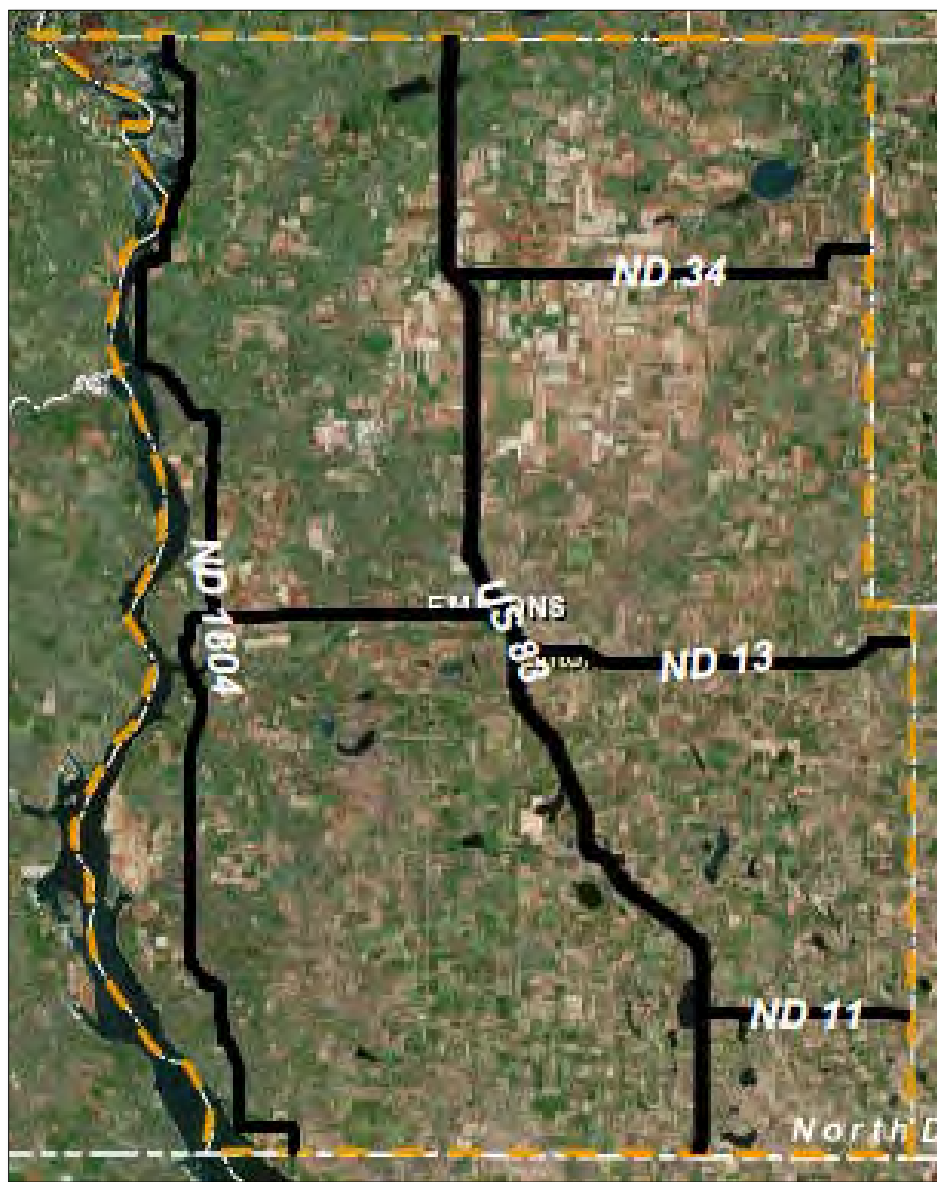
Description

Hazardous materials are any substances in any quantity or form which may pose an unreasonable risk to the safety, health, environment, and property of citizens. The term “hazardous materials” covers a wide array of products, from relatively innocuous ones such as hair spray in aerosol dispensers and wash preservatives such as creosote to highly toxic or poisonous materials such as anhydrous ammonia and phosgene gas. The potential severity of hazards of these materials is varied, but the primary reason for their designation is their risk to public safety. Tier II forms are on file with Emmons County Emergency Management.

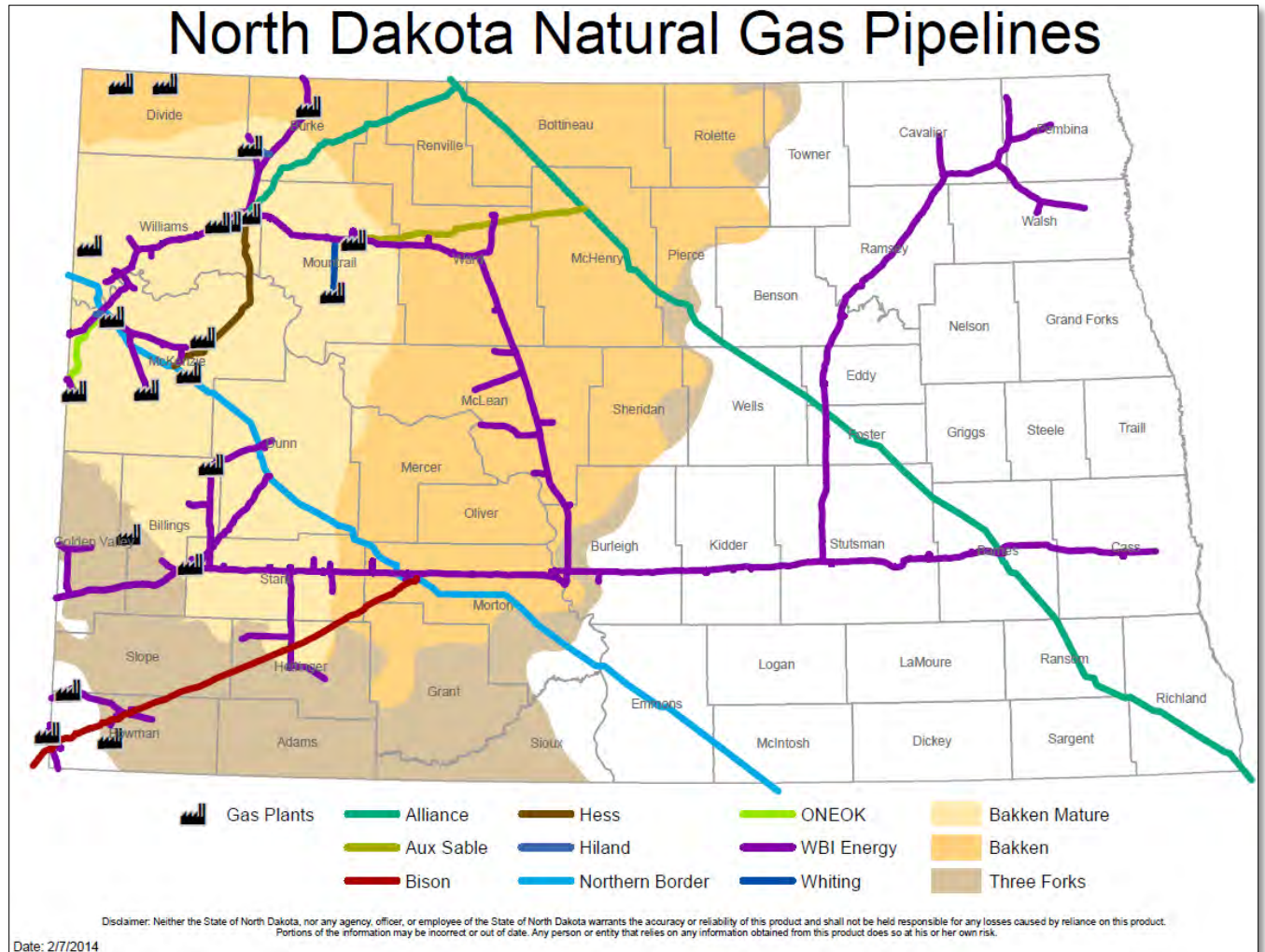
The County is exposed to and is at risk from accidents and/or incidents involving hazardous materials. The economy is based upon agriculture, manufacturing, and industry. All of these rely on the production, use, storage, transportation, etc. of hazardous materials. Explosives, flammable liquids, flammable solids, gases, poisons, pesticides, oxidizing substances, miscellaneous dangerous substances, and radioactive materials are either used in or transported through Emmons County.

Highway 83 is a major transportation route and increases the probability of an event, as well as the use of anhydrous in the rural areas. One natural gas pipeline diagonally transects the county.

Major Roadways in Emmons County



Source: Emmons County GIS



Source: ND Pipeline Authority [website](#)

Identified Impacts

- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss of Potable Water
- Mass Casualties
- Property Damage
- School Closure

History

The ND Department of Health, Environment Health Section, records data whenever a General Environmental Incident report is filed. Emmons County reportable data is identified below:

Incident ID	Date Reported	Incident Date	Township Range Section	Latitude	Longitude	Contaminant	Volume	Units
EIR1883	03/06/13	02/23/13	13107623	46.15268	-100.16001	diesel fuel from truck saddle tank during accident	50	gallons
EIR1184	09/24/09	09/24/09	13507619	46.49489	-100.28382	Monsanto RT 3 (Herbicide)		
EIR976	01/31/08	01/31/08	13007533	46.03644	-100.07726	Number 6 Diesel	792	gallons
EIR671	04/15/04	04/14/04	13007528	46.05094	-100.07733	Rolls of paper pulp. (Consistency of Paper Towels)	36021	pounds
EIR583	02/28/03	02/28/03	13207617	46.25434	-100.22233	No. 1 and No. 2 dyed-diesel	250	gallons
EIR183	07/26/93	07/26/93	13007920	46.06678	-100.59700	Diesel Fuel	5	gallons
EIR143	06/22/90	06/22/90	13507719	46.49510	-100.40964	Alley & Amine	65	gallons

Source: ND Department of Health [website](#)

Homeland Security Incident

Frequency	Likely (10-100% probability in the next year, or at least 1 chance in next 100 years)
Severity	Limited (10-25% of jurisdiction affected)
Risk Class	C (Low to moderate risk condition, sufficiently high to give consideration for further mitigation)
Seasonal Pattern	None
Duration	Unknown

Description

A homeland security incident is any intentional adversarial human-caused incident, domestic or international, that causes mass casualties, large economic losses, or widespread panic in the country. Terrorism and civil unrest are examples of human-caused hazards that are intentional and often planned. Terrorism, both domestic and international, is a violent act done to try and influence government or the population of some political or social objective. Terrorist acts can come in many recognized forms or may be more subtle using untraditional methods. The primary recognized forms of terrorism are chemical, explosive, biological, radiological/nuclear, and cyber; however, terrorism's only limitation is the human imagination. (Source: State of North Dakota Multi-Hazard Mitigation Plan, February 2014)

Identified Impacts

- Blocked Roads
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Evacuation (Full)
- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss of Potable Water
- Loss/Overcrowded Medical Facilities
- Loss of Power
- Mass Casualties
- Property Damage
- School Closure

Key Facilities within Emmons County

Due to the critical nature and sensitivity of the information, key facilities are on file at the Emmons County Emergency Management Office.

History

Although there have been no National Security Emergencies specific to Emmons County, any suspicious activity is reported to the ND State and Local Intelligence Center.

Key Facilities

Key facilities are seen as having local impact within Emmons County. A key facility would be one, which, if destroyed or incapable of functioning, would have a negative impact on the County's ability to respond or recover. Due to Emmons County's limited resources, any incidents that occur within its jurisdiction may affect the entire county.

The Multi-Hazard Mitigation Plan for Emmons County identifies key facilities located in the County and the hazards to which these facilities are susceptible. The hazards most likely to impact the key facilities are winter storms, hazardous materials, floods and summer storms.

- **Summer Storms:** Wind, hail, torrential rains, lightning, and tornadoes may cause damage to key facilities in Emmons County.
- **Winter Storms:** Major arterials are vulnerable to becoming blocked with snow making them impassible. Many county and township roads become blocked during winter storms and cities are largely affected by winter storms.
- **Floods:** Flooding of Beaver Creek and Spring Creek cause damage to homes in the western part of Emmons County and the City of Linton as well as farmlands and rural homes along the creek areas. During flooding events, roads may become inundated with water.
- **Hazardous Material:** There are three anhydrous plants in Emmons County; one is located near the City of Hazelton, one is located near the City of Strasburg, and one near the unincorporated town of Kintyre. There is one natural gas pipeline in the southeastern part of Emmons County. US Highway 83 is a major route for the transportation of chemicals.

Major Facilities to consider:

- Transportation (commercial airports, mainline railroads, rail yards, interstate highways, port/harbor facilities, major bridges/trestles)
- Industrial (food processors, health and medical supplies, major industries)
- Utilities (electric power generating plants/dams, electrical cross-country transmission lines, major electrical substations, municipal water systems, municipal sewage systems, telephone switching centers)
- Storage Sites (health and medical supplies, food, liquid fuels)
- Medical Capability (hospitals, nursing homes, clinics)
- Administrative (emergency operations centers, information/data/record centers, law enforcement/fire protection centers)

Emmons County Key Facilities

Facility	Address	Property Value
Northern Border Pipeline Site 28	6725 Hwy. 1804, Hazelton, ND	\$150,000
Northern Border Pipeline Site 29	7527 Hwy. 83, Linton, ND	\$150,000
Northern Border Pipeline Site 30	8492 16 th Ave. SE, Strasburg, ND	\$150,000
State Line Water	9952 2 nd Ave. SE, Pollock, SD	\$150,000
County Communications Tower	4 mi. N. of Linton on US Hwy. 83, Linton, ND	\$35,000
Linton Municipal Airport	8395 7 th Ave. SE, Linton, ND	\$250
Bakker Public School	880 95 th St. SE, Hague, ND	\$100,000
Kintyre South Central Grain	300 Main Ave. S, Kintyre, ND	\$250,000
BEK Communications (substation)	117 Main Ave. N, Kintyre, ND	\$100,000
Cellular Towers	850 78 th St. SE, Linton, ND	\$10,000
Hull Christian Reformed Church	1233 96 th St. SE, Hague, ND	\$50,000
Hope Reformed Church	830 96 th St. SE, Hague, ND	\$65,000
St. Michael's Catholic Church	2155 76 th St. SE, Linton, ND	\$50,000
Trinity Lutheran Church	170 2 nd Ave. N, Kintyre, ND	\$200,000
Emmons County Shop	7975 6 th Ave. SE, Linton, ND	\$150,000
KEM Electric Cooperative, Inc.		
Hazelton substation	SE ¼ Sec. 18, T135, R77	\$346,000
Linton substation	NW ¼ Sec. 17, T132, R76	\$6,000,000
Sunburst substation	NW ¼ Sec. 6, T132, R78	\$600,000
Krassna substation	SE ¼ Sec. 33, T130, R77	\$726,000

Braddock Key Facilities

Facility	Address	Property Value
Water Works	15th Ave. & 59th St, Braddock, ND	\$30,000
Braddock Fire Department	207 Mitchell St. N, Braddock, ND	\$15,000
Braddock Community Center	107 Mitchell St. N, Braddock, ND	\$50,000
Emmons County Shop	100 Mitchell St. S, Braddock, ND	\$86,590
St. Katherine's Catholic Church	200 1st Ave. N, Braddock, ND	\$70,000
South Central Threshing Assoc.	400 Bobcat Dr. N, Braddock, ND	\$50,000

Hague Key Facilities

Facility	Address	Property Value
Hague Café	220 Main Ave. W, Hague, ND	\$15,000
US Post Office	215 Main W, Hague, ND	\$20,000
St. Mary's Catholic Church	205 4th St. S, Hague, ND	\$1,000,000
Hague Farmers Elevator	218 Main Ave. W, Hague, ND	\$200,000
Hague Fire Department	309 Main Ave. W, Hague, ND	\$15,000
Hague KC Hall	301 3rd St. S, Hague, ND	\$50,000
VFW		\$150,000

Hazelton Key Facilities

Facility	Address	Property Value
Hazelton City Hall	342 Main St., Hazelton, ND	\$100,000
US Post Office	345 Main St., Hazelton, ND	\$35,000
Hazelton Clinic	343 Main St., Hazelton, ND (located in Hazelton Credit Union)	
Hazelton Fire Department	342 Main St., Hazelton, ND	\$100,000
HMB Public School	211 Hazel Ave., Hazelton, ND	\$2,000,000
Bank of Hazelton	363 Main St., Hazelton, ND	\$150,000
Hazelton Credit Union	341 Main St., Hazelton, ND	\$50,000
St. Paul's Lutheran Church	705 Clairmont Ave., Hazelton, ND	\$80,000
First Presbyterian Church	601 Cook Ave., Hazelton, ND	\$25,000
St. Paul's Catholic Church	370 Harold St., Hazelton, ND	\$100,000
East Well House	East Main St., Hazelton, ND	\$10,000
West Well House	Hazelton Ave., Hazelton, ND	\$10,000
Beastrom Oil Co.	448 Main St., Hazelton, ND	\$35,000
Hazelton Cenex-Agronomy	602 Hwy. 34, Hazelton, ND	\$500,000
Stramer Automotive Service	240 Main St., Hazelton, ND	\$40,000
BEK Communications (substation)	445 Clairmont Ave., Hazelton, ND	\$100,000
Prairie Village Business Center		\$675,00

Linton Key Facilities

Facility	Address	Property Value
Linton City Hall/Community Center	101 NE 1st St., Linton, ND	\$1,000,000
Water Tower Booster Shed	Walnut Ave., Linton, ND	\$35,880
Well House #1	Broadway St., Linton, ND	\$13,490
Well House #2	Pine Ave., Linton, ND	\$9,630
Well House #3	Pine Ave., Linton, ND	\$14,740
Main Lift Station	West Sampson Ave., Linton, ND	\$38,670
KC Lift Station	1st St. N, Linton, ND	\$21,000
Linton Fire Department & Storage Building	101 Pine Ave., Linton, ND	\$296,410 \$79,790
Linton City Shop	5th Ave. SW, Linton, ND	\$272,900
Linton Hospital	518 Broadway St. N., Linton, ND	\$2,000,000
Linton Public School	101 3rd St. NE, Linton, ND	\$3,000,000
Linton Ambulance	1st St. NW, Linton, ND	\$33,000
BNC National Bank	104 Broadway St. N, Linton, ND	\$350,000
Security State Bank	203 Broadway St. N, Linton, ND	\$66,000
Linton Food Center	206 Hwy. 83 N, Linton, ND	\$523,000
Public Health	118 Spruce Ave E, Linton, ND	
St. Anthony's Catholic Church	613 Broadway St. N, Linton, ND	\$2,000,000
United Methodist Church	419 Broadway St. N, Linton, ND	\$750,000
First Baptist Church	320 Broadway St. N, Linton, ND	\$1,500,000
Peace Lutheran Church	205 5th St. E, Linton, ND	2,000,000
Assembly of God Church	7895 7th Ave. SE, Linton, ND	\$300,000
Learning Tree Preschool	619 Broadway St. N, Linton, ND	\$1,000,000
US Post Office	115 1st St. NW, Linton, ND	\$130,000
Emmons County Courthouse	100 4th St. NW, Linton, ND	\$3,000,000
BEK Communications (substation)	119 Maple Ave., Linton, ND	\$750,000
MDU Substation	Sampson Ave. S, Linton, ND	\$500,000
Martin Oil Co.	214 Broadway St. S, Linton, ND	\$75,000
Northern Vet Service.	751 Hwy. 13, Linton, ND	\$175,000
Gas Plus	312 St. Paul Ave., Linton, ND	\$86,000
KEM Electric Coop., Inc.	107 Broadway St. S, Linton, ND	\$115,000

JB Construction, Inc.	7922 Hwy 83 N, Linton, ND	\$250,000
K & H Electric Coop., Inc.	243 St. Paul Ave., Linton, ND	\$150,000
Sunrise Trailer Court (caretaker's residence)	146 Sunrise Lane, Linton, ND	\$60,000
Schatz's Trailer Court	No main address Located in west Linton	\$25,000
Linton KC Hall	601 Cedar Ave., Linton, ND	\$100,000
Myers Funeral Home	203 2nd St. SE, Linton, ND	\$138,000
Kimble's Guns & Repair	201 Hickory Ave., W, Linton, ND	\$30,000
FSA/USDA	318 Milwaukee Ave., Linton, ND	\$295,000
H & R Block	114 Broadway St. N., Linton, ND	\$219
Public Health	118 Spruce Ave., Linton, N.D.	\$50,000
M.C.I.	116 Broadway, Linton, N.D.	\$50,000
Linton Elevator		\$210,000
Linton Drug		\$72,500

Strasburg Key Facilities

Facility	Address	Property Value
Strasburg City Hall	713 Main St., Strasburg, ND	\$217,000
Water Tower	105 E. Ave. S, Strasburg, ND	\$225,000
BEK Communications (substation)	701 Main St., Strasburg, ND	\$30,000
Montana-Dakota-Utilities Co.	3rd St. N, Strasburg, ND	\$500,000
US Post Office	604 Main St., Strasburg, ND	\$25,000
Strasburg Care Center	409 3rd St. S, Strasburg, ND	\$2,000,000
Strasburg Fire Department	600 Main St., Strasburg, ND	\$100,000
Strasburg Public School	307 Main St. W, Strasburg, ND	\$2,000,000
TJ Foods	712 Main St., Strasburg, ND	
Strasburg State Bank	720 Main St., Strasburg, ND	\$500,000
St. Peter & Paul Catholic Church	505 2nd St. N, Strasburg, ND	\$2,000,000
Strasburg Reformed Church	706 2nd St. S, Strasburg, ND	\$30,000
Strasburg Ampride	80 Main St. W, Strasburg, ND	\$350,000
North Central Farmers Elevator	200 H Ave. N, Strasburg, ND	\$3,000,000
The Blue Room	622 Main St., Strasburg, ND	\$500,000
Ellingson's Auto Body	97 Main St. W, Strasburg, ND	\$30,000
Strasburg Trailer Court	909 3rd St. S, Strasburg, ND	\$10,000
County Shop		\$142,231

Severe Summer Weather

Frequency	Highly Likely (Nearly 100% probability in the next year)
Severity	Limited (10-25% of jurisdiction affected)
Risk Class	B
Seasonal Pattern	April to November
Duration	2 to 5 hours
Speed of Onset	Little to no warning
Location	Countywide

Description

Severe summer storms are generated by temperature imbalances in the atmosphere, and as warm, moist air rises, the thunderstorm develops. These conditions will produce updrafts and downdrafts which are the reason for gust fronts, heavy rain (flash flooding), lightning, hail, and high winds. Downburst or straight-line winds can be as deadly as tornadoes. If the thunderstorm continues to intensify, a tornado may develop.

Why Worry About Thunderstorms?

Lightning:

- Causes an average of 55-60 fatalities and 400 injuries each year
- Occurs with all thunderstorms
- Costs more than \$1 billion in insured losses each year

Tornadoes:

- Cause an average of 60-65 fatalities and 1,500 injuries each year
- Can produce wind speeds in excess of 200 mph
- Can be 1 mile wide and stay on the ground over 50 miles

Straight-line Winds:

- Can exceed 125 mph
- Can cause destruction equal to a tornado
- Are extremely dangerous to aviation

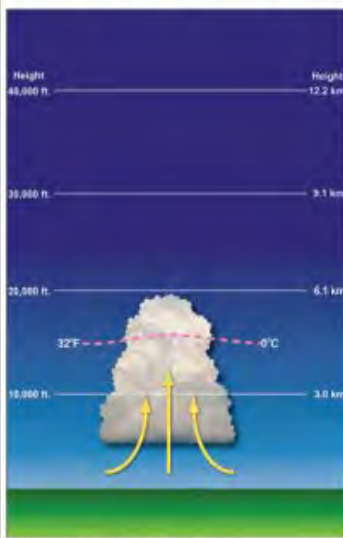
Hail:

- Can be larger than a softball (5 inches in diameter)
- Causes more than \$1 billion in crop and property damage each year

A thunderstorm affects a relatively small area when compared to a winter storm. The typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Despite their small size, all thunderstorms are dangerous! Every thunderstorm needs:

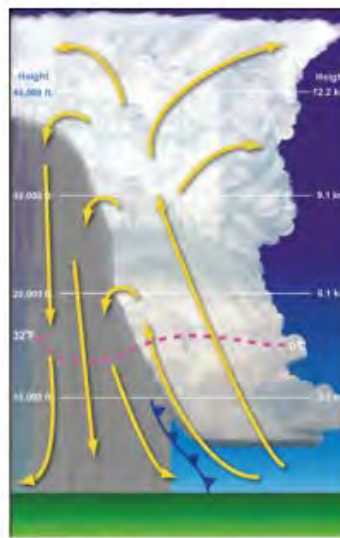
- Moisture—to form clouds and rain
- Unstable air—warm air that can rise rapidly
- Lift—caused by cold or warm fronts, sea breezes, mountains, or the sun's heat.

The Thunderstorm Life Cycle



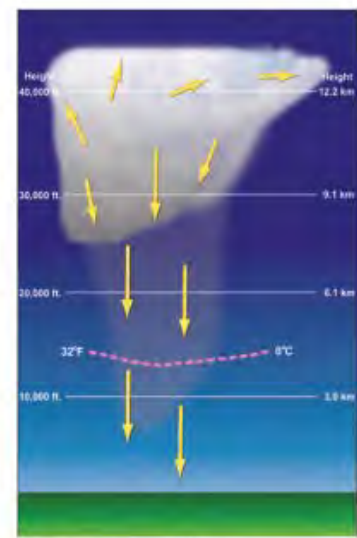
Developing Stage

- Towering cumulus cloud indicates rising air
- Usually little if any rain during this stage
- Lasts about 10 minutes
- Occasional lightning



Mature Stage

- Most likely time for hail, heavy rain, frequent lightning, strong winds, and tornadoes
- Storm occasionally has a black or dark green appearance
- Lasts an average of 10 to 20 minutes but some storms may last much longer



Dissipating Stage

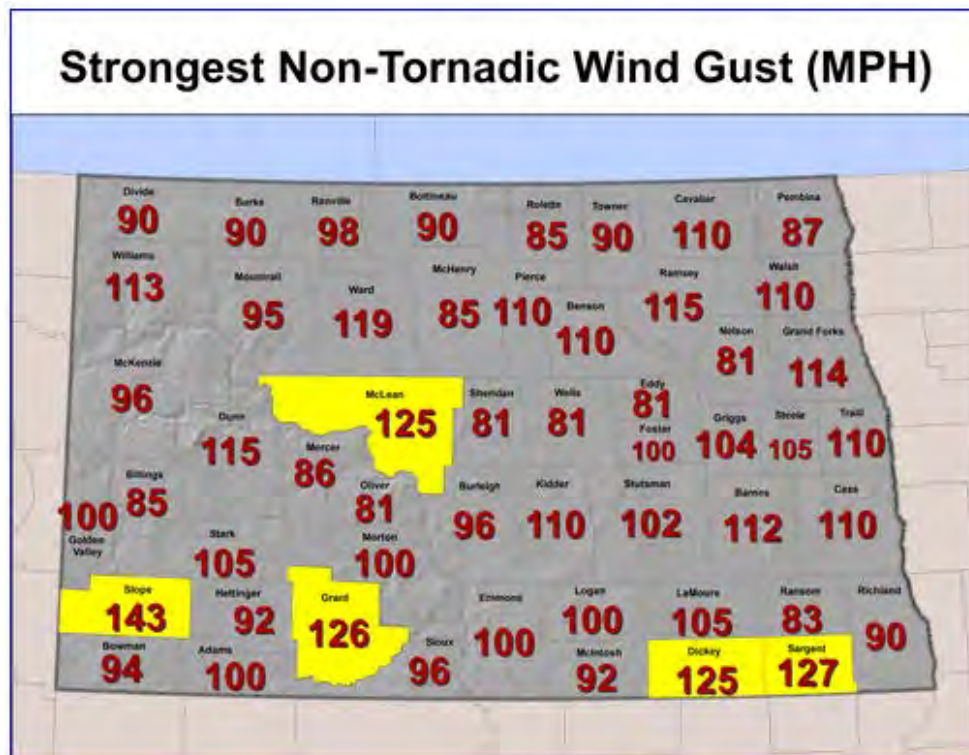
- Downdrafts, downward flowing air, dominate the storm
- Rainfall decreases in intensity
- Can still produce a burst of strong winds
- Lightning remains a danger

Source: [Thunderstorms, Tornadoes, Lightning](#)...A Preparedness Guide, US Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service

Downbursts/Straight-Line Winds

Straight-line winds are any winds not associated with the rotation of a tornado and are responsible for most thunderstorm damage. The winds can exceed 125 mph! A downburst is a small area of rapidly descending air beneath a thunderstorm and can cause damage equivalent to a strong tornado and can be extremely hazardous to aviation.

The number one cause of wind damage in North Dakota is from downburst winds, not tornadoes.

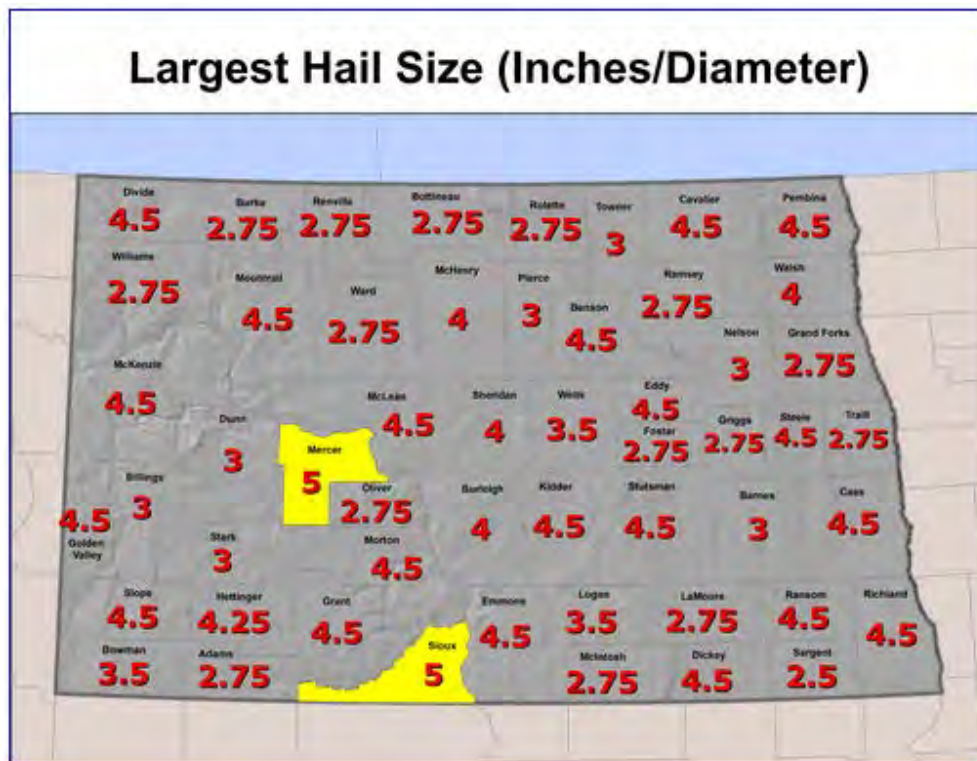


Source: National Weather Service Weather Forecast Office, Bismarck, ND [website](#)

Hail

Strong rising currents of air within a storm (updrafts) carry water droplets to a height where they freeze. Ice particles grown in size, becoming too heavy to be supported by the updraft, and fall to the ground. Hail is larger than sleet and forms only in thunderstorms. Hail stones can range from pea size to the size of a grapefruit. Hail has the potential to be life-threatening due to falling from great heights; large hailstones can fall at speeds faster than 100 mph!

The major hazard is to crops, aircraft, automobiles, roofs, and windows, etc. The destructiveness of hailstorms is not due to the hailstones alone. Hail damage is difficult to determine, as hail, wind, and rain frequently occur at the same time.



Source: National Weather Service Weather Forecast Office, Bismarck, ND [website](#)

Lightning

The rising air in a thunderstorm cloud causes various types of frozen precipitation to form within the cloud. Included in these precipitation types are very small ice crystals and much larger pellets of snow and ice. The smaller ice crystals are carried upward toward the top of the clouds by the rising air while the heavier and denser pellets are either suspended by the rising air or start falling toward the ground. Collisions occur between the ice crystals and the pellets, and these collisions serve as the charging mechanism of the thunderstorm. The small ice crystals become positively charged while the pellets become negatively charged. As a result, the top of the cloud becomes positively charged and the middle to lower part of the storm becomes negatively charged. At the same time, the ground underneath the cloud becomes charged oppositely of the charges directly overhead.

When the charge difference between the ground and the cloud becomes too large, a conductive channel of air develops between the cloud and the ground, and a small amount of charge (step leader) starts moving toward the ground. When it nears the ground, an upward leader of opposite charge connects with the step leader. At the instant this connection is made, a powerful discharge occurs between the cloud and the ground. We see this discharge as a bright visible flash of lightning.



Source: [Thunderstorms, Tornadoes, Lightning](#)...A Preparedness Guide, US Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service

Severe Thunderstorms can occur any time of the day or night, but are most frequent during the late afternoon and evening hours. This is mostly due to the daytime heating which creates the extra heat energy to form these large thunderstorms. The criteria used by the National Weather Service for calling a thunderstorm severe is winds of 58 mph or more and/or hail three-quarters of an inch larger in diameter. There are other elements that make thunderstorms deadly, such as severe lightning, heavy rains, hail, straight-line winds, and tornadoes.

The general makeup of a severe thunderstorm is similar to that of a regular thunderstorm, except that each element is enhanced or more intense. This can be seen in the cloud formations and the weather that the storm produces.

Tornado

Tornadoes are nature's most destructive weapons. They occur in many parts of the world—most frequently in the United States and can occur at any time of day.

- A tornado is a violently rotating column of air extending from a cumuliform cloud, such as a thunderstorm, to the ground.
- Tornadoes may appear nearly transparent until dust and debris are picked up or a cloud forms within the funnel. The average tornado moves from southwest to northeast, but **tornadoes can move in any direction** and can suddenly change their direction of motion.
- The average forward speed of a tornado is 30 mph but may vary from nearly stationary to 70 mph.
- The strongest tornadoes have rotating winds of more than 200 mph.
- Tornadoes can accompany tropical storms and hurricanes as they move onto land.
- Waterspouts are tornadoes that form over warm water. Water spouts can move onshore and cause damage to coastal areas.

Tornadoes are Nature's Most Violent Storms

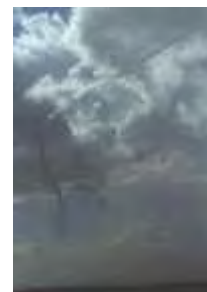
North Dakota has on average 23 *reported* tornadoes a year (1950 through 2012). The numbers range from only two in 1950, 1951 and 1961 to as many as 61 in 1999. Most tornadoes in the state occur from 3 PM to 11 PM local time in the months of June, July and August.



Development Phase



Mature Stage

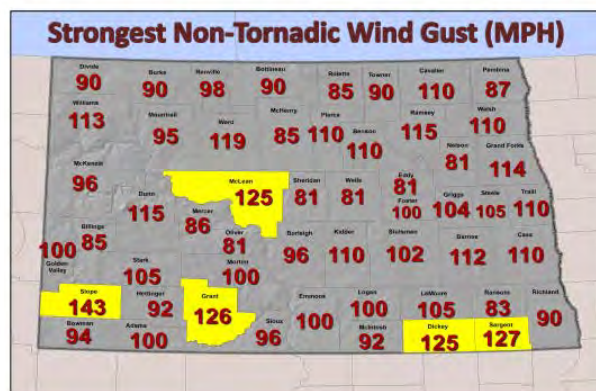
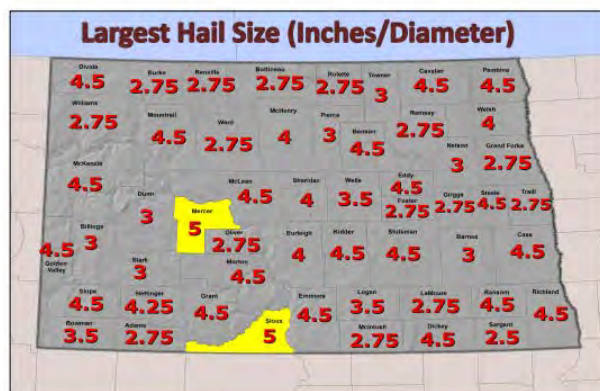
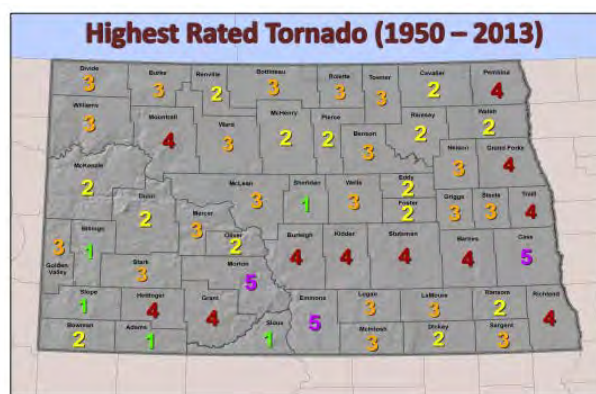
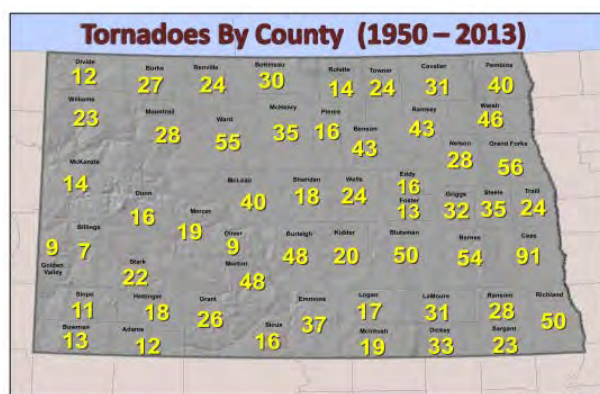


Dissipation Stage

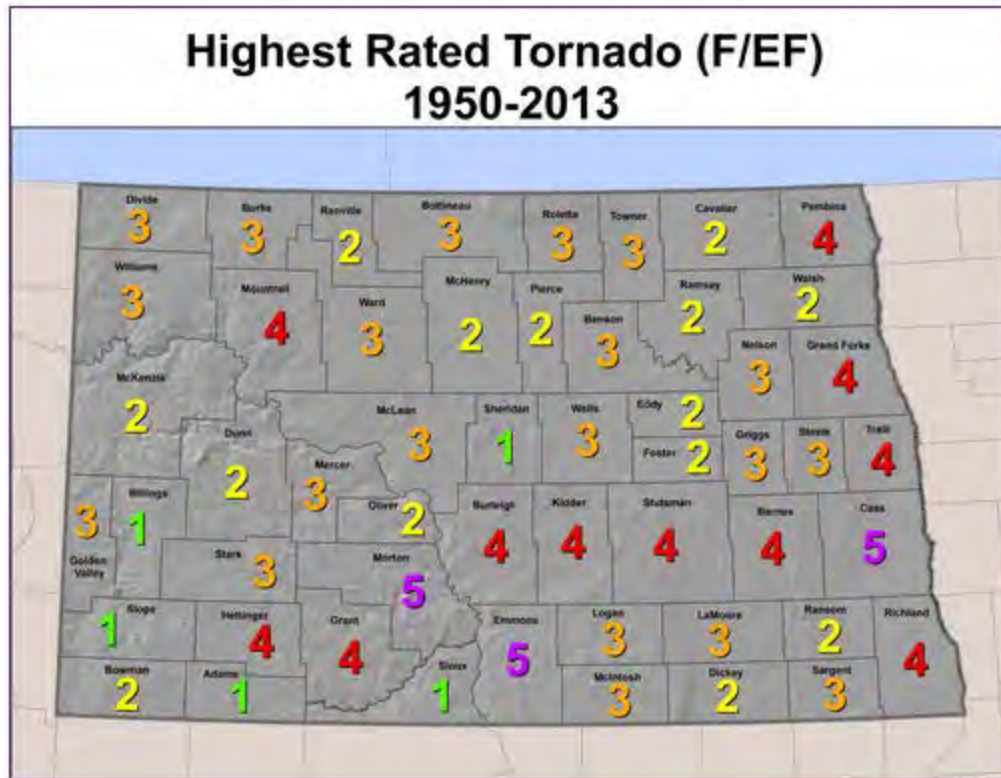
Source: Source: National Weather Service Weather Forecast Office, Bismarck, ND [website](#)

Tornado Scales

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4 mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	EF Number	3 Second Gust (mph)
0	40-72	45-78	0	65-85	0	65-85
1	73-112	79-117	1	86-109	1	86-110
2	113-157	118-161	2	110-137	2	111-135
3	158-207	162-209	3	138-167	3	136-165
4	208-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200



Source: National Weather Service Weather Forecast Office, Bismarck, ND [website](#)



Source: National Weather Service Weather Forecast Office, Bismarck, ND [website](#)

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Flooding (Street)
- Flooding (Structure)
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss of Potable Water
- Loss of Power
- Mass Casualties
- Property Damage
- Sewer Backup

History

Source: National Oceanic and Atmospheric Administration National Climatic Data Center [Website](#) (01/1950 to 08/2014)

Funnel Cloud

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
HAZELTON	EMMONS CO.	ND	08/11/2008	12:40	CST-6	Funnel Cloud		0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	08/10/2007	17:53	CST-6	Funnel Cloud		0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	07/15/2001	16:13	CST	Funnel Cloud		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Hail

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
LINTON MUNI ARPT	EMMONS CO.	ND	06/22/2013	19:15	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/20/2013	19:30	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	06/20/2013	18:28	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	06/20/2013	17:55	CST-6	Hail	2.75 in.	0	0	250.00K	50.00K
BRADDOCK	EMMONS CO.	ND	06/20/2013	17:45	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	06/20/2013	17:35	CST-6	Hail	1.75 in.	0	0	75.00K	0.00K
BRADDOCK	EMMONS CO.	ND	06/20/2013	17:02	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
KINTYRE	EMMONS CO.	ND	06/20/2013	16:45	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
KINTYRE	EMMONS CO.	ND	06/20/2013	16:23	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	ND	08/28/2011	03:20	CST-6	Hail	1.50 in.	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	ND	08/28/2011	03:00	CST-6	Hail	1.50 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/03/2011	00:00	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K

KINTYRE	EMMONS CO.	ND	07/14/2010	02:05	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	07/14/2010	01:44	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	07/14/2010	01:43	CST-6	Hail	1.50 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	07/14/2010	01:30	CST-6	Hail	1.75 in.	0	0	20.00K	50.00K
LINTON	EMMONS CO.	ND	07/14/2010	00:15	CST-6	Hail	2.50 in.	0	0	500.00K	650.00K
HAGUE	EMMONS CO.	ND	06/26/2010	19:05	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HAGUE	EMMONS CO.	ND	06/26/2010	19:00	CST-6	Hail	1.00 in.	0	0	0.00K	75.00K
HAZELTON	EMMONS CO.	ND	06/25/2010	16:50	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/25/2010	16:30	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/25/2010	16:17	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
KINTYRE	EMMONS CO.	ND	06/24/2010	22:01	CST-6	Hail	1.75 in.	0	0	0.00K	100.00K
KINTYRE	EMMONS CO.	ND	05/22/2010	19:05	CST-6	Hail	1.25 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	06/22/2009	18:25	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	05/28/2009	15:35	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
HAGUE	EMMONS CO.	ND	08/26/2008	18:40	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	07/27/2008	02:20	CST-6	Hail	3.00 in.	0	0	500.00K	25.00K
DANA	EMMONS CO.	ND	07/19/2008	20:30	CST-6	Hail	2.00 in.	0	0	65.00K	90.00K
STRASBURG	EMMONS CO.	ND	07/19/2008	16:50	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	07/15/2008	18:17	CST-6	Hail	0.88 in.	0	0	0.00K	0.00K
HULL	EMMONS CO.	ND	07/10/2008	19:15	CST-6	Hail	1.50 in.	0	0	0.00K	0.00K

WESTFIELD	EMMONS CO.	ND	06/26/2008	20:20	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	10/06/2007	21:18	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	ND	07/09/2007	20:55	CST-6	Hail	1.75 in.	0	0	0.00K	0.00K
HAGUE	EMMONS CO.	ND	07/09/2007	20:50	CST-6	Hail	0.75 in.	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	ND	06/06/2007	20:39	CST-6	Hail	1.00 in.	0	0	0.00K	0.00K
HAGUE	EMMONS CO.	ND	08/24/2006	15:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
KINTYRE	EMMONS CO.	ND	08/22/2006	20:10	CST	Hail	1.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	06/30/2006	19:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
BRADDOCK	EMMONS CO.	ND	06/30/2006	18:46	CST	Hail	1.00 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/30/2006	17:45	CST	Hail	1.75 in.	0	0	1.00K	0.00K
WESTFIELD	EMMONS CO.	ND	06/23/2006	16:34	CST	Hail	0.75 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/14/2006	08:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	05/31/2006	19:01	CST	Hail	0.75 in.	0	0	0.00K	0.00K
BRADDOCK	EMMONS CO.	ND	05/26/2006	18:55	CST	Hail	0.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	07/10/2005	19:48	CST	Hail	0.88 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/07/2005	20:50	CST	Hail	1.75 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/07/2005	20:35	CST	Hail	1.75 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/07/2005	20:06	CST	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/07/2005	20:00	CST	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	06/07/2005	19:45	CST	Hail	1.00 in.	0	0	0.00K	0.00K

STRASBURG	EMMONS CO.	ND	06/06/2005	22:47	CST	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	05/07/2005	18:15	CST	Hail	0.88 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	08/23/2004	21:25	CST	Hail	0.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	08/23/2004	20:55	CST	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	08/09/2003	12:05	CST	Hail	1.50 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	08/09/2003	10:13	CST	Hail	1.00 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	07/17/2003	12:06	CST	Hail	1.00 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	07/13/2003	21:40	CST	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	07/04/2003	00:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/23/2003	03:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	09/18/2002	16:45	CST	Hail	0.88 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/09/2001	18:10	CST	Hail	0.88 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	06/21/1999	06:20	CST	Hail	1.75 in.	0	0	130.00K	0.00K
HAZELTON	EMMONS CO.	ND	06/08/1999	23:15	CST	Hail	1.00 in.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	ND	08/18/1998	20:10	CST	Hail	1.00 in.	0	0	0.00K	0.00K
KINTYRE	EMMONS CO.	ND	08/18/1998	19:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	07/06/1998	20:30	CST	Hail	0.75 in.	0	0	0.00K	800.00K
HAGUE	EMMONS CO.	ND	07/06/1998	17:00	CST	Hail	1.00 in.	0	0	50.00K	100.00K
LINTON	EMMONS CO.	ND	08/02/1996	22:40	CST	Hail	0.75 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	07/10/1996	21:03	CST	Hail	1.75 in.	0	0	0.00K	0.00K

LINTON	EMMONS CO.	ND	07/10/1996	20:45	CST	Hail	0.75 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	07/10/1996	18:00	CST	Hail	0.75 in.	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	ND	05/31/1996	15:45	CST	Hail	0.75 in.	0	0	1.00K	0.00K
HAZELTON	EMMONS CO.	ND	05/31/1996	15:00	CST	Hail	1.25 in.	0	0	12.00K	5.00K
MOFFIT	EMMONS CO.	ND	05/31/1996	14:45	CST	Hail	1.00 in.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	ND	05/31/1996	14:30	CST	Hail	1.00 in.	0	0	0.00K	0.00K
Linton	EMMONS CO.	ND	07/09/1995	21:30	CST	Hail	2.50 in.	0	0	0.00K	0.00K
Hazelton	EMMONS CO.	ND	05/21/1995	18:50	CST	Hail	0.75 in.	0	0	0.00K	0.00K
Hazelton	EMMONS CO.	ND	05/21/1995	18:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	05/21/1992	15:35	CST	Hail	0.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	08/27/1989	17:15	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	06/28/1989	18:30	CST	Hail	0.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	07/19/1987	23:30	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	06/24/1985	19:15	CST	Hail	1.00 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	07/17/1983	22:50	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	06/21/1983	18:58	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	06/27/1981	20:00	CST	Hail	4.50 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	06/15/1978	21:28	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	05/04/1977	17:34	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	08/15/1967	20:00	CST	Hail	1.50 in.	0	0	0.00K	0.00K

EMMONS CO.	EMMONS CO.	ND	09/15/1962	20:00	CST	Hail	1.75 in.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	ND	06/27/1960	20:30	CST	Hail	0.00 in.	0	0	0.00K	0.00K
Totals:								0	0	1.604M	1.945M

High Wind

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/15/2014	20:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/17/2012	21:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/07/2011	10:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	09/20/2011	03:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	05/31/2011	09:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/30/2011	13:00	CST-6	High Wind	52 kts. EG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/13/2011	09:00	CST-6	High Wind	35 kts. ES	0	0	20.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/26/2010	11:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	08/13/2010	00:00	CST-6	High Wind	55 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	06/18/2010	10:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	07/13/2009	23:55	CST-6	High Wind	52 kts. EG	0	0	5.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/26/2008	09:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	07/12/2008	11:47	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS	EMMONS	ND	05/01/2008	17:00	CST-	High	36	0	0	0.00K	0.00K

(ZONE)	(ZONE)				6	Wind	kts. MS				
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/24/2008	17:45	CST- 6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/09/2005	22:00	CST	High Wind	44 kts. MS	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/20/2004	09:00	CST	High Wind	48 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/11/2004	18:00	CST	High Wind	43 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/13/2004	12:58	CST	High Wind	53 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/10/2004	15:30	CST	High Wind	45 kts. MS	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/29/2002	08:00	CST	High Wind	47 kts. M	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/11/2002	13:00	CST	High Wind	53 kts. M	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/01/2001	10:00	CST	High Wind	34 kts. M	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/05/2000	08:30	CST	High Wind	62 kts. E	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/01/1999	02:30	CST	High Wind	53 kts.	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/10/1996	10:00	CST	High Wind	50 kts.	0	0	0.00K	0.00K
Totals:								0	0	25.00K	0.00K

Thunderstorm Wind

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dt</u>	<u>In</u>	<u>PrD</u>	<u>CrD</u>
EMMONS CO.	EMMONS CO.	N D	08/20/2014	20:45	CST -6	Thunderstorm Wind	52 kts. EG	0	0	2.00K	0.00K
HAZELTON	EMMONS CO.	N D	07/21/2014	17:05	CST -6	Thunderstorm Wind	59 kts. MG	0	0	0.00K	0.00K
LINTON MUNI ARPT	EMMONS CO.	N D	07/06/2014	22:35	CST -6	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	07/06/2014	22:14	CST -6	Thunderstorm Wind	65 kts. EG	0	0	45.00K	0.00K
LINTON	EMMONS CO.	N D	06/07/2012	19:10	CST -6	Thunderstorm Wind	70 kts. EG	0	0	35.00K	0.00K
LINTON MUNI ARPT	EMMONS CO.	N D	05/02/2012	19:05	CST -6	Thunderstorm Wind	56 kts. MG	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	N D	08/28/2011	03:20	CST -6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	07/22/2011	22:50	CST -6	Thunderstorm Wind	61 kts. EG	0	0	35.00K	0.00K
BRADDOCK	EMMONS CO.	N D	07/10/2011	13:33	CST -6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
HAZELTON ARPT	EMMONS CO.	N D	07/10/2011	13:24	CST -6	Thunderstorm Wind	61 kts. EG	0	0	25.00K	0.00K
HAZELTON	EMMONS CO.	N D	07/10/2011	13:15	CST -6	Thunderstorm Wind	83 kts. MG	0	0	150.00K	0.00K
HAZELTON	EMMONS CO.	N D	07/08/2011	18:30	CST -6	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K

							EG				
KINTYRE	EMMONS CO.	N D	06/02/2011	23:53	CST -6	Thunderstorm Wind	78 kts. EG	0	0	200.00 K	0.00K
KINTYRE	EMMONS CO.	N D	06/02/2011	23:52	CST -6	Thunderstorm Wind	78 kts. EG	0	0	125.00 K	0.00K
KINTYRE	EMMONS CO.	N D	06/02/2011	23:50	CST -6	Thunderstorm Wind	87 kts. EG	0	0	350.00 K	0.00K
LINTON	EMMONS CO.	N D	06/02/2011	23:37	CST -6	Thunderstorm Wind	83 kts. EG	0	0	35.00K	0.00K
LINTON MUNI ARPT	EMMONS CO.	N D	06/02/2011	23:35	CST -6	Thunderstorm Wind	82 kts. M G	0	0	100.00 K	0.00K
LINTON	EMMONS CO.	N D	08/12/2010	22:50	CST -6	Thunderstorm Wind	70 kts. EG	0	0	15.00K	0.00K
HAGUE	EMMONS CO.	N D	06/26/2010	19:05	CST -6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	N D	06/26/2010	18:24	CST -6	Thunderstorm Wind	65 kts. EG	0	0	6.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/22/2010	01:45	CST -6	Thunderstorm Wind	70 kts. EG	0	0	20.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/16/2010	23:15	CST -6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	N D	05/24/2010	19:51	CST -6	Thunderstorm Wind	56 kts. EG	0	0	20.00K	0.00K
LINTON	EMMONS CO.	N D	05/24/2010	19:40	CST -6	Thunderstorm Wind	70 kts. EG	0	0	90.00K	0.00K
LINTON	EMMONS CO.	N D	05/22/2010	03:00	CST -6	Thunderstorm Wind	70 kts. EG	0	0	50.00K	0.00K
TEMVIK	EMMONS CO.	N D	07/12/2009	01:27	CST -6	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K

							EG				
HAGUE	EMMONS CO.	N D	07/27/2008	03:35	CST -6	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
BRADDOCK	EMMONS CO.	N D	06/11/2008	02:35	CST -6	Thunderstorm Wind	61 kts. EG	0	0	35.00K	0.00K
STRASBURG	EMMONS CO.	N D	06/11/2008	02:34	CST -6	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	08/04/2006	18:00	CST	Thunderstorm Wind	78 kts. ES	0	0	200.00K	0.00K
LINTON	EMMONS CO.	N D	08/04/2006	17:47	CST	Thunderstorm Wind	61 kts. EG	0	0	5.00K	0.00K
HAGUE	EMMONS CO.	N D	06/07/2005	20:00	CST	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	06/07/2005	19:50	CST	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
WESTFIELD	EMMONS CO.	N D	07/05/2003	20:04	CST	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	07/03/2003	19:40	CST	Thunderstorm Wind	57 kts. EG	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	08/11/2002	14:40	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	N D	08/08/2002	20:05	CST	Thunderstorm Wind	52 kts. M	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	07/24/2002	21:20	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	N D	07/30/2001	23:48	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	07/30/2001	23:40	CST	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K

HAZELTON	EMMONS CO.	N D	07/22/2001	04:00	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	07/21/2001	00:40	CST	Thunderstorm Wind	53 kts. E	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	07/19/2001	22:13	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/09/2001	18:25	CST	Thunderstorm Wind	74 kts. E	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/09/2001	18:15	CST	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/09/2001	18:10	CST	Thunderstorm Wind	60 kts. E	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/25/1999	21:05	CST	Thunderstorm Wind	68 kts.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	06/25/1999	20:55	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	N D	07/06/1998	16:40	CST	Thunderstorm Wind	87 kts.	0	0	200.00K	80.00K
LINTON	EMMONS CO.	N D	10/11/1997	20:10	CST	Thunderstorm Wind	85 kts.	0	0	150.00K	0.00K
LINTON	EMMONS CO.	N D	08/02/1996	20:45	CST	Thunderstorm Wind	65 kts.	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	06/28/1996	21:15	CST	Thunderstorm Wind	65 kts.	0	0	0.00K	0.00K
CANNONBALL	EMMONS CO.	N D	05/16/1996	22:50	CST	Thunderstorm Wind	65 kts.	0	0	50.00K	0.00K
N of Linton	EMMONS CO.	N D	05/21/1995	18:30	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
Linton	EMMONS CO.	N D	08/28/1993	16:15	CST	Thunderstorm Wind	60 kts.	0	0	50.00K	50.00K
EMMONS CO.	EMMONS CO.	N D	06/20/1991	05:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/20/1991	05:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS	EMMONS	N	08/01/19	14:4	CST	Thunderstorm	52	0	0	0.00K	0.00K

CO.	CO.	D	88	5		m Wind	kts.				
EMMONS CO.	EMMONS CO.	N D	06/16/1987	21:45	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/02/1983	01:25	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/02/1983	01:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/02/1983	00:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/17/1983	22:50	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/21/1983	20:45	CST	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/21/1983	19:15	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/12/1981	01:20	CST	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/10/1981	19:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/27/1981	23:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/27/1981	20:00	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/13/1980	17:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/11/1979	23:55	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/03/1979	21:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/04/1978	23:03	CST	Thunderstorm Wind	65 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/15/1978	23:35	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/15/1978	22:25	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/10/1977	18:50	CST	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/04/1977	22:40	CST	Thunderstorm Wind	56 kts.	0	0	0.00K	0.00K

EMMONS CO.	EMMONS CO.	N D	06/11/1976	21:45	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/27/1960	20:30	CST	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
Totals:								0	0	1.993 M	130.00 K

Tornado

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dt</u> <u>h</u>	<u>In</u> <u>i</u>	<u>PrD</u>	<u>CrD</u>
LINTON	EMMONS CO.	N D	07/16/2011	20:47	CST -6	Tornado	EF0	0	0	30.00K	50.00K
LINTON MUNI ARPT	EMMONS CO.	N D	06/25/2010	16:35	CST -6	Tornado	EF0	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	N D	06/07/2005	19:19	CST	Tornado	F0	0	0	0.00K	0.00K
BRADDOCK	EMMONS CO.	N D	07/03/2003	19:52	CST	Tornado	F0	0	0	0.00K	0.00K
STRASBURG	EMMONS CO.	N D	06/05/2003	11:35	CST	Tornado	F0	0	0	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/09/2001	18:10	CST	Tornado	F1	0	1	0.00K	0.00K
HAZELTON	EMMONS CO.	N D	06/03/1999	16:29	CST	Tornado	F0	0	0	0.00K	0.00K
HAGUE	EMMONS CO.	N D	07/06/1999	16:55	CST	Tornado	F0	0	0	0.00K	0.00K
LINTON	EMMONS CO.	N D	08/03/1999	22:30	CST	Tornado	F0	0	0	750.00K	0.00K
STRASBURG	EMMONS CO.	N D	07/10/1999	21:40	CST	Tornado	F0	0	0	25.00K	0.00K
LINTON	EMMONS CO.	N D	07/10/1999	19:05	CST	Tornado	F0	0	0	0.00K	0.00K
Linton	EMMONS CO.	N D	07/03/1999	18:53	CST	Tornado	F0	0	0	0.00K	0.00K
Linton	EMMONS CO.	N D	07/03/1999	18:20	CST	Tornado	F0	0	0	0.00K	0.00K
Strasburg	EMMONS CO.	N D	10/06/1999	16:55	CST	Tornado	F0	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	05/21/1999	15:12	CST	Tornado	F0	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/01/1998	14:35	CST	Tornado	F1	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/01/1998	14:07	CST	Tornado	F1	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	05/11/1998	19:20	CST	Tornado	F0	0	0	0.00K	0.00K

EMMONS CO.	EMMONS CO.	N D	05/11/1986	19:20	CST	Tornado	F0	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/02/1983	15:20	CST	Tornado	F0	0	0	0.03K	0.00K
EMMONS CO.	EMMONS CO.	N D	04/28/1981	18:30	CST	Tornado	F0	0	0	0.25K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/12/1976	23:45	CST	Tornado	F0	0	2	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/11/1976	23:10	CST	Tornado	F0	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/11/1976	21:30	CST	Tornado	F1	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/11/1976	21:10	CST	Tornado	F1	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	06/11/1976	21:10	CST	Tornado	F1	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/19/1974	18:15	CST	Tornado	F2	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/11/1974	21:10	CST	Tornado	F1	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	05/26/1974	22:30	CST	Tornado	F2	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	05/05/1964	21:05	CST	Tornado	F2	0	0	250.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	08/25/1959	17:17	CST	Tornado	F2	0	0	0.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	07/01/1955	17:10	CST	Tornado	F3	0	0	25.00K	0.00K
EMMONS CO.	EMMONS CO.	N D	05/29/1953	17:30	CST	Tornado	F5	0	0	250.00K	0.00K
Totals:								0	3	1.480M	50.00K

Severe Winter Weather

Frequency	Highly Likely (Nearly 100% probability in the next year)
Severity	Critical (25-50% of jurisdiction affected)
Risk Class	A
Seasonal Pattern	November to April
Duration	2 to 5 days
Speed of Onset	12 to 24 hours warning
Location	Countywide

Description

Winter storms occur in many forms and vary significantly in size, strength, intensity, duration, and impact. The winter season can begin as early as September and last into May. Generally, a period from mid-November through early April provides the bulk of winter storms.

Heavy snow can paralyze a community by stranding travelers, stopping the flow commodities, and disrupting emergency services. The weight of snow can cause roofs to collapse and knock down trees and utility lines. Homes and farms may be isolated for days and unprotected livestock may die. The cost of snow removal, damage repair, and loss of business can have economic impacts on communities.

HOW WINTER STORMS FORM

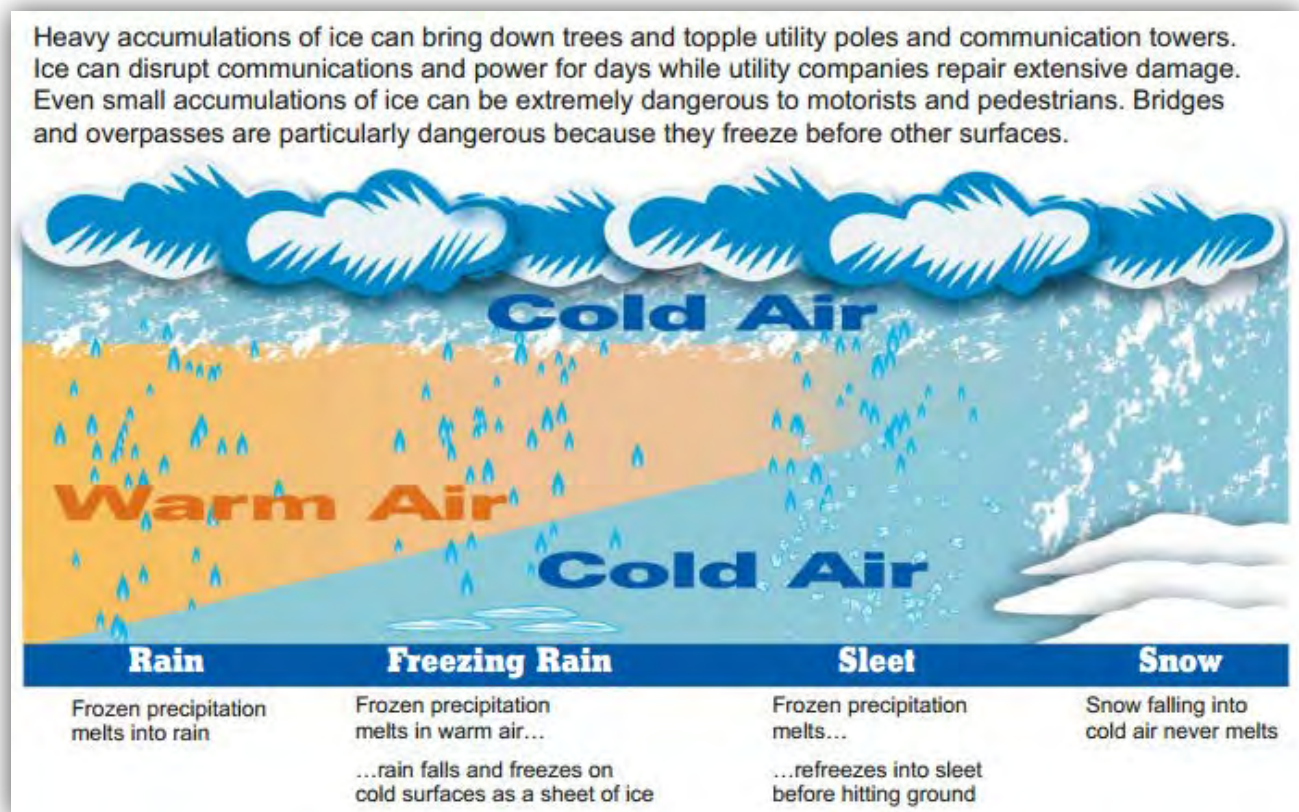
There are many ways for winter storms to form; however, all have three key components.

COLD AIR: For snow and ice to form, the temperature must be below freezing in the clouds and near the ground.

MOISTURE: Water evaporating from bodies of water, such as a large lake or the ocean, is an excellent source of moisture.

LIFT: Lift causes moisture to rise and form clouds and precipitation. An example of lift is warm air colliding with cold air and being forced to rise. Another example of lift is air flowing up a mountain side.

Source: [Winter Storms, The Deceptive Killers](#), A Preparedness Guide, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, June 2008



Source: [Winter Storms, The Deceptive Killers](#), A Preparedness Guide, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, June 2008

Key Terms

Blizzard: Sustained winds or frequent gusts of 35 mph or more with snow and blowing snow frequently reducing visibility to less than a quarter mile for 3 hours or more.

Blowing Snow: Wind-driven snow that reduces visibility. Blowing snow may be falling snow and/or snow on the ground picked up by the wind.

Freezing Rain: Rain that freezes when it hits the ground; creating a coating of ice on roads, walkways, trees and power lines.

Sleet: Rain that turns to ice pellets before reaching the ground. Sleet also causes moisture on roads to freeze and become slippery.

Snow Squalls: Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant.

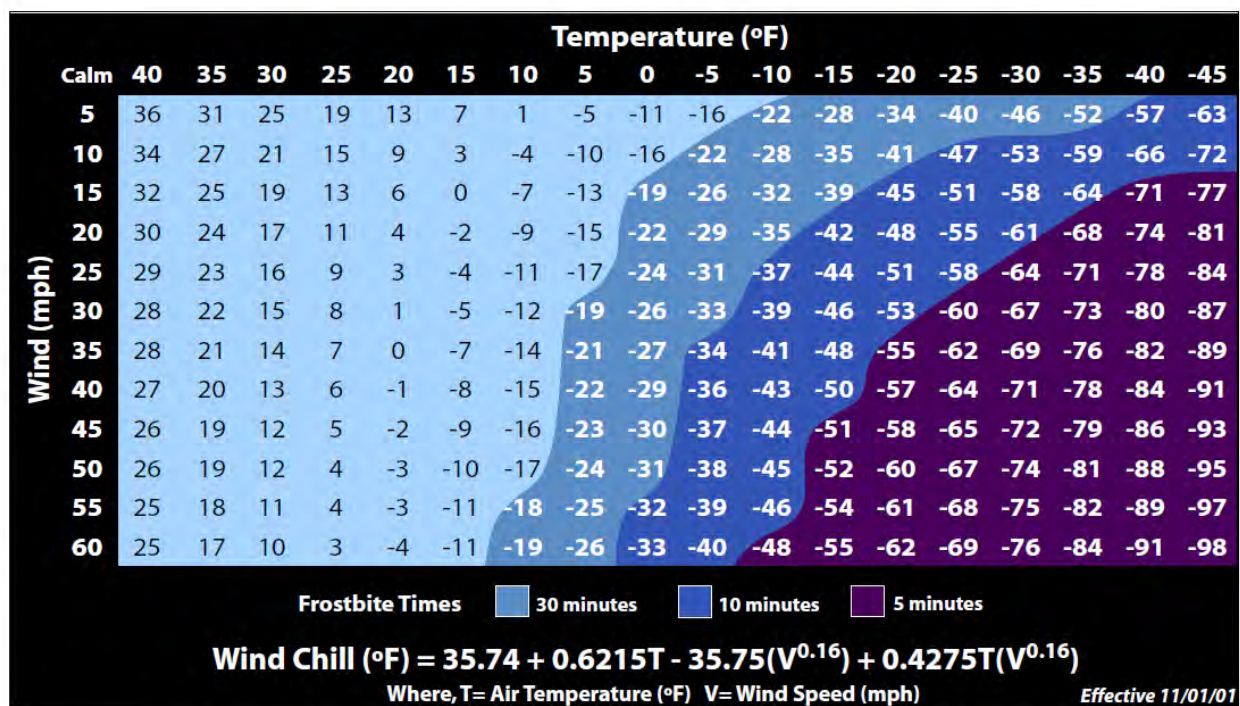
Snow Showers: Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

Snow Flurries: Light snow falling for short durations with little or no accumulation.

Wind Chill: A measure of how cold people feel due to the combined effect of wind and cold temperatures; the [Wind Chill Index](#) is based on the rate of heat loss from exposed skin. Both cold temperatures and wind remove heat from the body; as the wind speed increases during cold conditions, a body loses heat more quickly. Eventually, the internal body temperature also falls and hypothermia can develop. Animals also feel the effects of wind chill; but inanimate objects, such as vehicles and buildings, do not. They will only cool to the actual air temperature, although much faster during windy conditions.



Wind Chill Chart



Sources: [Winter Storms, The Deceptive Killers](#), A Preparedness Guide, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, June 2008

National Weather Service, National Oceanic and Atmospheric Administration, Winter Storm Safety, [website](#)

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss of Power
- Property Damage
- School Closure
- Wind Chill

History

Source: National Oceanic and Atmospheric Administration National Climatic Data Center [Website](#) (01/1950 to 08/2014)

Blizzard

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/31/2014	05:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/26/2014	07:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/14/2013	09:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/11/2011	13:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/01/2011	00:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/30/2010	12:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/26/2010	23:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/25/2010	09:00	CST-6	Blizzard		0	0	1.100M	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/25/2009	06:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/29/2009	15:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/23/2009	22:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/11/2009	21:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/13/2008	17:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/06/2008	18:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/02/2007	06:00	CST-6	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/10/2004	14:30	CST	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/10/2004	14:49	CST	Blizzard		0	0	0.00K	0.00K

EMMONS (ZONE)	EMMONS (ZONE)	ND	12/16/2000	04:00	CST	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/01/1999	04:00	CST	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/04/1997	18:00	CST	Blizzard		1	1	1.750M	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/09/1997	04:00	CST	Blizzard		0	1	1.530M	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/04/1997	06:00	CST	Blizzard		0	0	250.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/04/1997	06:00	CST	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/16/1996	04:00	CST	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/26/1996	21:30	CST	Blizzard		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/17/1996	04:30	CST	Blizzard		0	0	0.00K	0.00K
Totals:								1	2	4.630M	0.00K

Cold/Wind Chill

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/16/2006	18:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/13/2005	14:58	CST	Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/27/2004	20:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/04/2004	18:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/25/1996	06:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/19/1996	20:00	CST	Cold/wind Chill		1	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/01/1996	00:00	CST	Cold/wind Chill		0	0	0.00K	0.00K
Totals:								1	0	0.00K	0.00K

Extreme Cold/Wind Chill

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/01/2014	00:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/22/2014	21:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/04/2014	04:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/06/2013	21:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/30/2013	20:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/20/2013	20:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/18/2012	12:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/08/2011	00:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/01/2011	18:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/07/2010	06:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/20/2008	06:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/14/2008	23:59	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/10/2008	00:00	CST-6	Extreme Cold/wind Chill		0	0	0.00K	0.00K
EMMONS	EMMONS	ND	01/29/2008	02:00	CST-	Extreme		0	0	0.00K	0.00K

(ZONE)	(ZONE)				6	Cold/wind Chill					
Totals:								0	0	0.00K	0.00K

Heavy Snow

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	12/03/2013	03:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	02/28/2012	20:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	04/14/2011	18:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	02/20/2011	00:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	03/09/2009	23:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	02/27/2009	01:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	12/29/2008	22:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	12/30/2006	04:00	CST-6	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	01/28/2002	05:00	CST	Heavy Snow		0	0	0.00K	0.00K
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	04/22/2001	10:00	CST	Heavy Snow		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Ice Storm

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
<u>EMMONS (ZONE)</u>	EMMONS (ZONE)	ND	03/30/2007	04:00	CST-6	Ice Storm		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Winter Storm

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/14/2013	03:00	CST-6	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/22/2011	10:00	CST-6	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/22/2010	12:00	CST-6	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/05/2010	15:00	CST-6	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/23/2009	16:00	CST-6	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/28/2007	02:00	CST-6	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/29/2005	22:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/10/2004	11:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/24/2004	11:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/17/2002	14:52	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/07/2000	06:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/08/2000	04:15	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/26/2000	00:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/25/2000	11:40	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/03/1999	03:45	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/26/1999	04:30	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/01/1999	03:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/18/1998	00:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS	EMMONS	ND	03/12/1997	21:00	CST	Winter		0	0	0.00K	0.00K

(ZONE)	(ZONE)					Storm					
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/23/1996	06:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/19/1996	04:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/05/1996	04:00	CST	Winter Storm		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/23/1996	04:30	CST	Winter Storm		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Winter Weather

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/02/2010	04:00	CST-6	Winter Weather		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/09/2010	12:00	CST-6	Winter Weather		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/21/2010	06:00	CST-6	Winter Weather		0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/16/2009	12:00	CST-6	Winter Weather		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Shortage or Outage of Critical Materials or Infrastructure

Frequency	Possible (1-10% probability in next year, or at least 1 chance in next 100 years)
Severity	Critical (25-50% of jurisdiction affected)
Risk Class	B
Seasonal Pattern	None
Duration	Days/Weeks
Speed of Onset	Little to no warning
Location	Countywide

Description

A shortage or outage of critical materials or infrastructure occurs when demand for a product exceeds supply. A shortage of critical materials may include a wide variety of resources. The potential for a shortage of energy products requires preparing provisions for providing electric power and fuels to support emergency and disaster response operations and for the normal functioning of business and industry throughout the county. Supplying energy related resources during a shortage involves the production/generation, refinement, and transportation/transmitting of such resources. It also includes the conservation of these resources and the construction and maintenance of the energy system and its components.

The sudden and devastating occurrence of a severe natural disaster to include an extended period of severe cold weather; the disruption of a supply system; an embargo, which could result from international global conflict; or other significant event can disrupt the availability of fuels and other critical energy products. Such occurrences could impact future energy supplies and place extreme pressure on existing supplies, threatening the health, safety, and well-being of the citizens.

Shortages of critical energy supplies can cause:

- Widespread and prolonged electric power failure, which impacts both day-to-day and emergency communications capability;
- A lack of transportation fuels, causing surface Movement gridlock and disruption of commerce; and,
- Diminished supplies of heating fuels during winter. This could cause severe economic impact on the general public, because they would be forced to seek alternate, possibly more costly, energy sources. Such energy shortages will impact on other emergency public health and safety services as well.

Identified Impacts

- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Evacuation (Localized)
- Increased Fire Potential
- Increased Public Safety Runs
- Loss of Economy
- Loss of Potable Water
- Loss of Power
- Property Damage
- School Closure

History

There is no significant history of shortage or outage of critical materials or infrastructure within the County. Electrical outages in summer typically last for mere hours, while outages in the winter have lasted up to 2-3 days. Some critical sites have backup generators. Water conservation during periods of drought or extreme temperature has always been voluntary as conditions have not warranted water bans.

January 21, 2010: KEM Electric customers without power in rural Emmons, Logan, and McIntosh Counties due to power lines and poles down from ice and wind. Power restoration occurred January 27th. The community utilized their alternate power and heating sources, and the Emmons County Courthouse Shelter was available for anyone needing warming and/or shelter. The Emmons County Sheriff's Department performed welfare checks in the rural areas.

2009 Flood Event: Flood waters cut off transportation in Emmons County and basic supplies were somewhat limited.

February 1, 1996: Extreme Wind Chill. Electric companies reported peak loads, while natural gas companies had trouble keeping gas flowing through pipelines. Numerous schools closed and many water main breaks occurred. There were also shortages of #1 diesel fuel.

June 26, 2006—Emmons County declared a drought emergency. Extreme dry conditions caused lack of feed and water shortages for livestock, crop failures, water quality problems, and extreme danger of rural fires. Emmons County was declared a disaster area due to drought conditions.

June, 2002—Emmons County declared a drought emergency. Extreme dry conditions caused lack of feed and water shortages for livestock, crop failures, water quality problems, and extreme danger of rural fires.

June 7, 1988—Emmons County was declared a disaster area due to drought conditions because of high temperatures and lack of rain. A burning ban was issued for all private and public fireworks. Cattlemen were forced to sell some of their livestock because of lack of feed. This drought extended into 1989.

Transportation Accident

Frequency	Likely (10-100% probability in the next year, or at least 1 chance in next 100 years.)
Severity	Negligible (Less than 10% of jurisdiction affected)
Risk Class	C
Seasonal Pattern	None
Duration	Hours
Speed of Onset	No warning
Location	Countywide

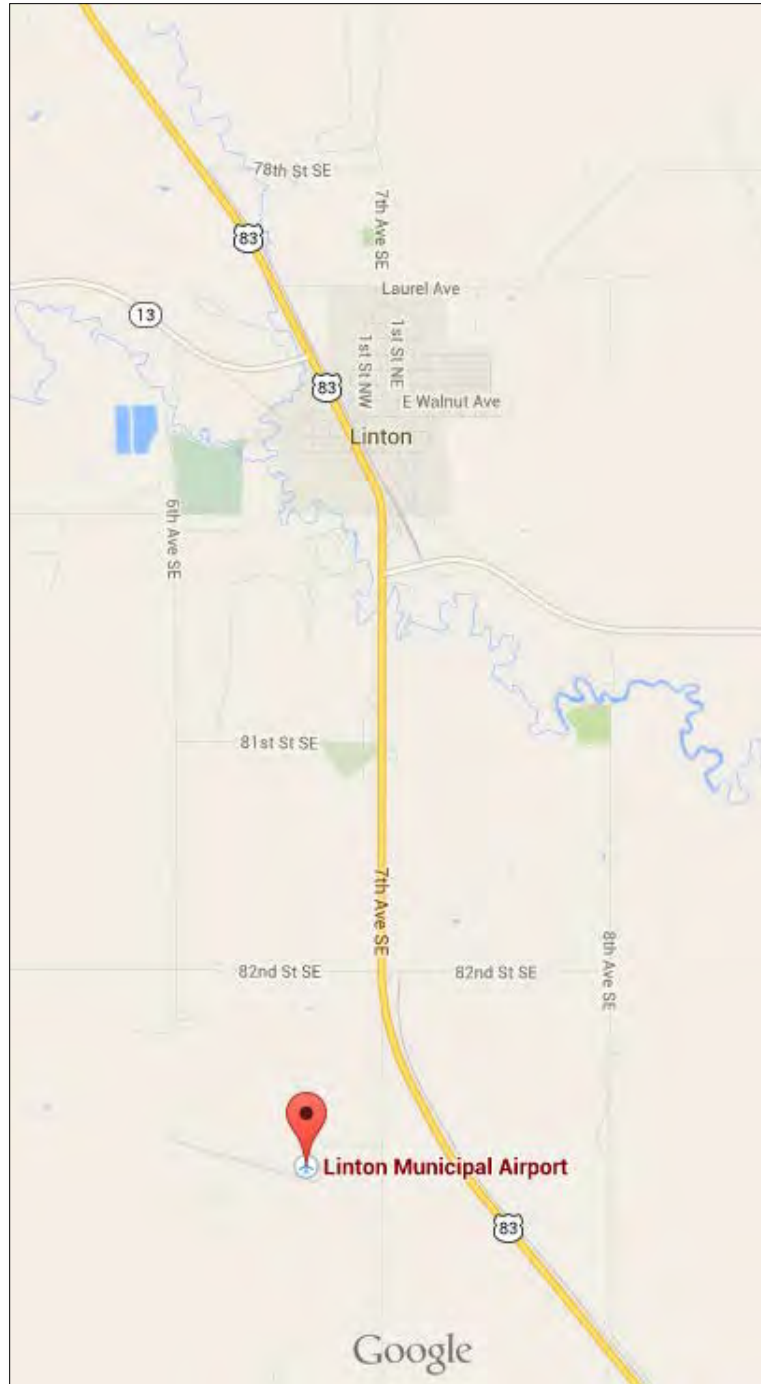
Description

A transportation accident is any large-scale aircraft, railroad, or vehicular accident involving mass casualties.

Emmons County has one airport, a freight service rail line, and one major highway.

Airport

Emmons County has one airport: The [Linton Municipal Airport](#). It is located 2 miles south of Linton. The airport's focus is on small aircraft and has a 3,700 foot lighted runway.

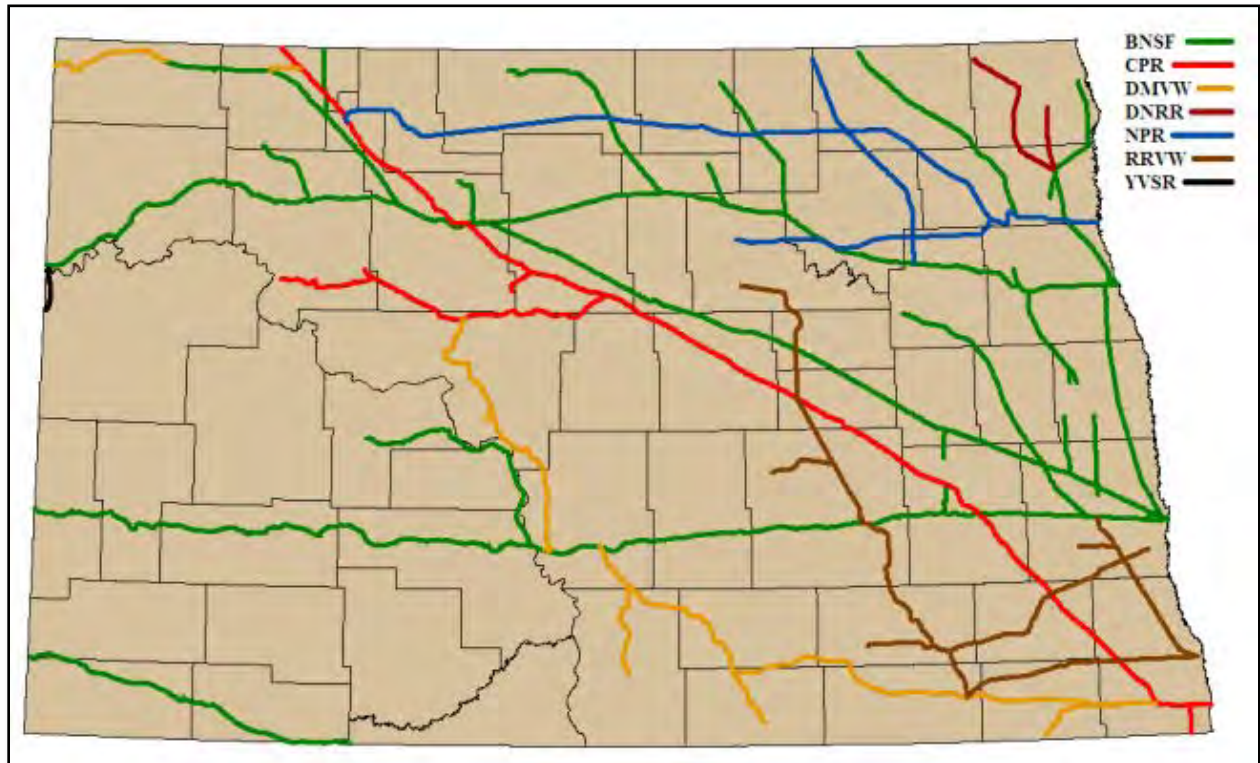


Source: Google Maps [website](#)

Railroad

One railroad traverses the county: Dakota, Missouri Valley Western Railroad (DMVW).

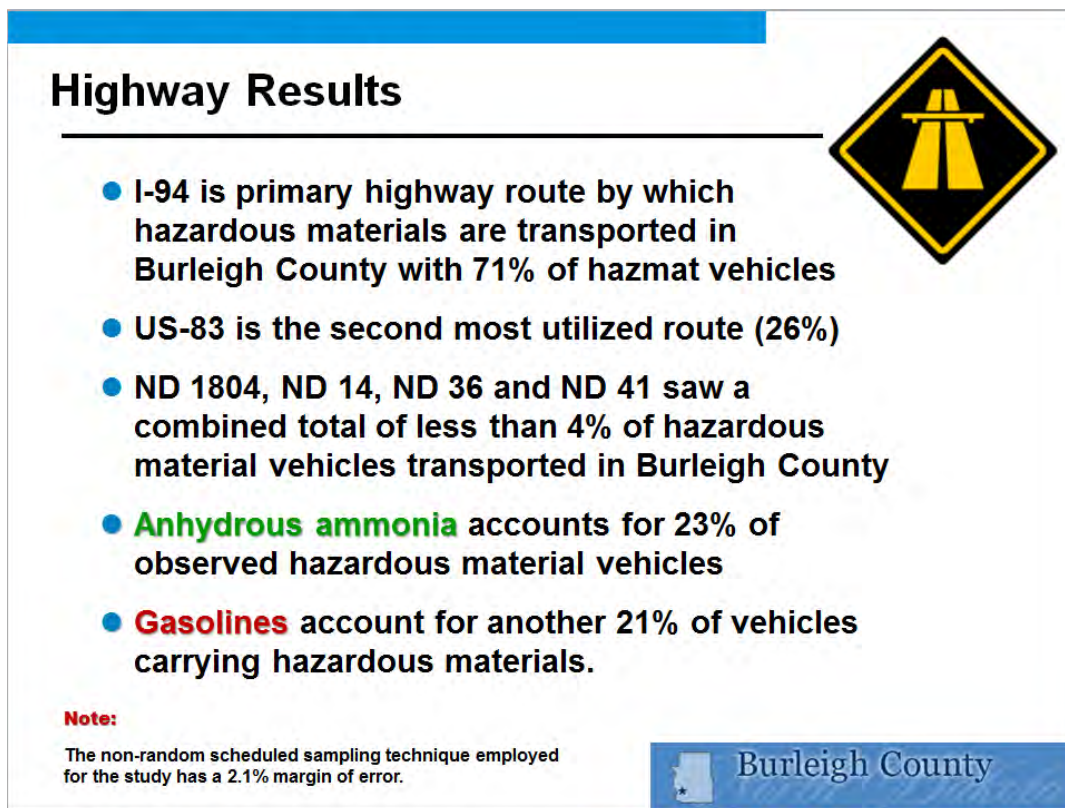
Emmons County has limited railroad service, freight service only. The Dakota Missouri Valley and Western Railroad (DMVW) provides freight services, mostly for the transport of agricultural products, in North Dakota, South Dakota and Montana. In Emmons County, DMVW passes by the communities of Braddock, Kintyre, into Logan County to the east.



Source: [ND State Rail Plan](#), December 2007

Vehicle

U.S. Highway 83 is a major, north/south transportation route intersecting Emmons County and the Cities of Hazelton and Linton thereby increasing the probability of an event. Highway 83 is the second most utilized route through Burleigh County which north of Emmons County. The most predominant products observed in the study were anhydrous ammonia and gasolines. (See Attachment 3, Major Roadways Map in Emmons County)



Source: HazMat Traffic Flow Study, Burleigh County, September 2012

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Loss of Economy
- Loss/Overcrowded Medical Facilities
- Loss of Potable Water
- Mass Casualties
- Property Damage
- School Closure

History

There is no history of mass casualty within Emmons County.

Aviation

Current Synopsis	PDF Report(s) (Published)	Event Date	Location	Make/Model	Regist. Number	NTSB No.	Event Severity
_____	Factual	5/15/2010	Linton, ND	WSK-PZL WARZAW A-OKECIE PZL-104 WILGA 80	N4346 M	CEN10CA333	Nonfatal
_____	Factual	8/9/2007	Hazelton, ND	Snow S-2C	N16535	CHI07CA267	Nonfatal
_____	Factual	8/10/2001	Hazelton, ND	Grumman G-164B	N48624	CHI01LA273	Fatal(1)
_____	Factual	7/26/1996	Hazelton, ND	Beech C24R	N5247 M	CHI96LA259	Nonfatal
_____	Factual	6/30/1995	Linton, ND	PIPER PA-28-140	N6917 W	CHI95LA207	Nonfatal
_____	Factual	6/22/1990	Hazelton, ND	PIPER PA-25-260	N4988 Y	DEN90LA140	Nonfatal
_____		6/27/1974	HAZELTON, ND	PIPER PA-25	N7358Z	MKC74FTG22	Nonfatal
_____		10/31/1966	STRASBURG, ND	CESSNA 180	N4775 U	Unknown	Nonfatal

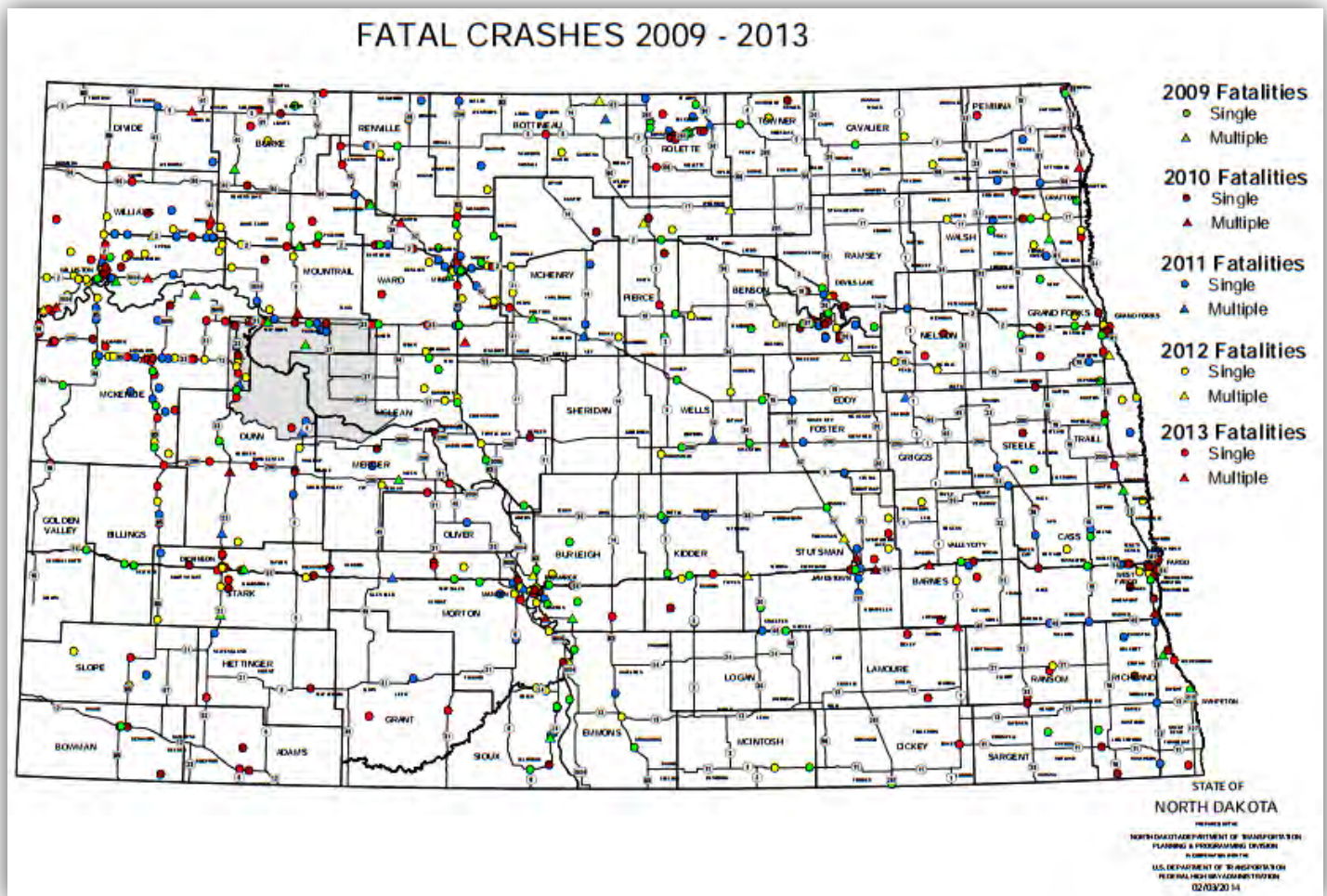
Source: National Transportation Safety Board Aviation [website](#)

Railroad

The National Transportation Safety Board, Railroad Accident Reports [website](#) shows no incidents in Emmons County.

The Federal Railroad Administration Office of Safety Analysis [website](#) shows no major incidents in Emmons County

Vehicle



Source: [2013 North Dakota Crash Summary](#), North Dakota Department of Transportation

Urban Fire or Structure Collapse

Frequency	Highly Likely (Nearly 100% probability in the next year)
Severity	Negligible (Less than 10% of jurisdiction affected)
Risk Class	D (Low risk condition, to be considered in planning)
Seasonal Pattern	None
Duration	Hours
Speed of Onset	No warning
Location	Countywide

Description

The urban fire department is one of the oldest continuing institutions in America. Their profession and skill is to arrive at the fire as soon as possible, get all human life to safety, and to suppress the fire as quickly as possible. Primary factors that influence the potential for urban fire or structure collapse include: Electrical; incendiary-arson; smoking materials; heating devices; fuel systems; sparks; spills; spontaneous combustion and the levels of human activity in urban areas. Primary factors may also be secondary factors to another hazard such as tornado, wildfire, and severe winter storms.

The increasing cost of natural gas and fuel oil has caused families to rediscover alternate heating methods to heat their homes. As a result, the use of space heaters, fireplaces, and wood burning stoves can increase the fire hazard.

Many portable propane gas or kerosene heaters have self-continued fuel supplies and can be hazardous; even when used according to the manufacturer's instructions. The open flame provides a potential fire hazard, fuel leakage from the container could cause an explosion, and the fuel vapor is a source of indoor pollution.

Most people have limited experience with wood burners. As a result, a number of fires are caused by faulty installation of stoves and chimneys—wood heat has a poor safety record.

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Loss of Economy
- Loss/Overcrowded Medical Facilities
- Loss of Power
- Property Damage

History

In the past there have been a number of urban structures that burned in Emmons County. Elevators in the cities of Linton, Braddock, Strasburg, and Hague have all been destroyed due to fire.

The ND Forest Service was unable to provide complete historical data due to a recent upgrade and issues with retrieving public data. Data retrieved from 2010-2013 indicated no structural fires.

Fire Data 2010-2013							
Date	Fire Name	County	Latitude	Longitude	Cause Code	Ownership	Final Acres
03/29/13	0019 HWY1804 Fire	Emmons	46.180068	-100.519109	5	P	5
03/28/13	Wohl Fire	Emmons	46.302577	-100.1548	5	P	1
05/06/13	Beck Fire	Emmons	46.326772	-100.190989	2	P	10
05/06/13	Beck Fire	Emmons	46.326772	-100.190989	2	P	10
04/26/13	Beck Fire	Emmons	46.313146	-100.188124	2	P	5
04/26/13	Beck Fire	Emmons	46.313146	-100.188124	2	P	5
01/04/12	George Lawler Farm	Emmons	46.2061318	-100.2953039	5	P	1
01/04/12	George Lawler Farm	Emmons			5	P	1
Total Acres							38

Cause Codes:

- 1= Lightning
- 2= Equipment Use
- 3= Smoking
- 4= Campfire
- 5= Debris Burning
- 6= Railroad
- 7= Arson
- 8= Children
- 9= Miscellaneous
- 10= Fireworks
- 11= Power Line
- 12= Structure

Ownership

- P= Private
- F= Federal
- S= State

Source: ND Forest Service

Summary By Incident Type

Report Period: From 01/01/2009 to 12/01/2014

All Selected Fire Departments

Calls By Incident Type

Calls By Incident Type									
FIRES	Frequency	Percent Of Total Calls	Mutual Aid None	Mutual Aid Given	Mutual Aid Received	Other Aid Given	Invalid Aid Flag	Exposures	Total Incidents
Structure Fires (110-118, 120-123)	24	9.60 %	20	8	4	0	0	0	32
Vehicle Fires (130-138)	38	15.20 %	38	0	0	0	0	0	38
Other Fires (100, 140-173)	91	36.40 %	81	19	9	1	0	1	111
Total Fires	153	61.20 %	139	27	13	1	0	1	181
Pressure Ruptures, Explosion, Overheat (200-251)	0	0.00 %	0	0	0	0	0	0	0
RESCUE CALLS									
Emergency Medical Treatment (300-323)	0	0.00 %	0	0	0	0	0	0	0
All Others (331-381)	40	16.00 %	36	24	4	0	0	0	64
Total Rescue Calls	40	16.00 %	36	24	4	0	0	0	64
Hazardous Condition Calls (400-482)	11	4.40 %	11	0	0	0	0	0	11
Service Calls (500-571)	8	3.20 %	8	0	0	0	0	0	8
Good Intent Calls (600-671)	10	4.00 %	10	3	0	0	0	0	13
Severe Weather or Natural Disaster Calls (800-815)	0	0.00 %	0	0	0	0	0	0	0
Special Incident Calls (900-911)	3	1.20 %	3	1	0	0	0	0	4
Unknown Incident Type (UUU)	0	0.00 %	0	0	0	0	0	0	0
FALSE CALLS									
Malicious Calls (710-715, 751)	1	0.40 %	1	0	0	0	0	0	1
Other False Calls (700, 721-746)	24	9.60 %	24	0	0	0	0	0	24
Total False Calls	25	10.00 %	25	0	0	0	0	0	25
TOTAL CALLS	250	100.00 %	232	55	17	1	0	1	306
Total Incidents With Exposure Fires			1	Total Fire Dollar Loss				\$ 2,494,800.00	
Total Exposure Fires			1	Total Dollar Loss				\$ 2,968,200.00	
Casualty Summary									
	Civilian		Fire Service						
Fire Related Injuries	0		0						
Non-Fire Injuries	4		0						
Fire Related Deaths	0		0						
Non-Fire Deaths	2		0						

Source: ND Fire Marshal's Office, NFIRS 5.0 National Reporting System

Date	Location	Cause	Structures Lost	Description
03-27-14	2 Miles N of the Hazelton Boat Ramp on Hwy 1804	Electrical	20'x25' Barn	Anita Schmidt farm. No injuries.
11-22-13	NW 1 st St, Linton	Chimney		Minor damage caused by creosol from burned wood built up in the lining of the chimney.
07-09-13	117 W Broadway, Linton	Service mast detached and caused fuse box to blow inside bldg.		Model Baker received fire and smoke damage.
05-02-13	3 Miles E of Hazelton	Burn Pit	Barn	High winds spread burn pit flames and burned about 60 acres..
01-13-13	Strasburg	Kitchen Area	Mobile Home	Brent Kleinsasser home totaled by kitchen ceiling fire. No injuries.
08-20-06	1 Block S of Main Street, Hague	Electrical Box Short	1 House	
08-16-02	Main Street, Hague	Wind Short Circuit Arc	2 Vacant Buildings 1 Damaged	Emmons County experienced an urban fire caused by an electrical malfunction in the City of Hague. This fire completely destroyed two vacant buildings and damaged a new building that was in the process of being built.
05-21-02	3 Miles S of Zeeland	Undetermined	6 Storage Buildings	

Source: Fire Districts in Emmons County and the Emmons County Record

Wildland Fire

Frequency	Highly Likely (Nearly 100% probability in the next year)
Severity	Negligible (Less than 10 of jurisdiction affected)
Risk Class	C
Seasonal Pattern	None
Duration	Hours/Days
Speed of Onset	No warning
Location	Countywide

Description

Emmons County experiences wildland fires every year. Factors that influence the potential for wildland fires include: type, amounts and conditions of fuel supply (vegetation); temperatures; wind conditions; precipitation patterns; humidity levels; topography and the levels of human activity on the land. Fires in areas of heavy vegetation, if not quickly detected and suppressed can quickly flare out of control and cause major damage to habitat, crops, livestock, wildlife, people, and structural property.

Wildland fires can occur at any time of the year, although they seldom occur during winter months (cold and snow are excellent mitigating factors).

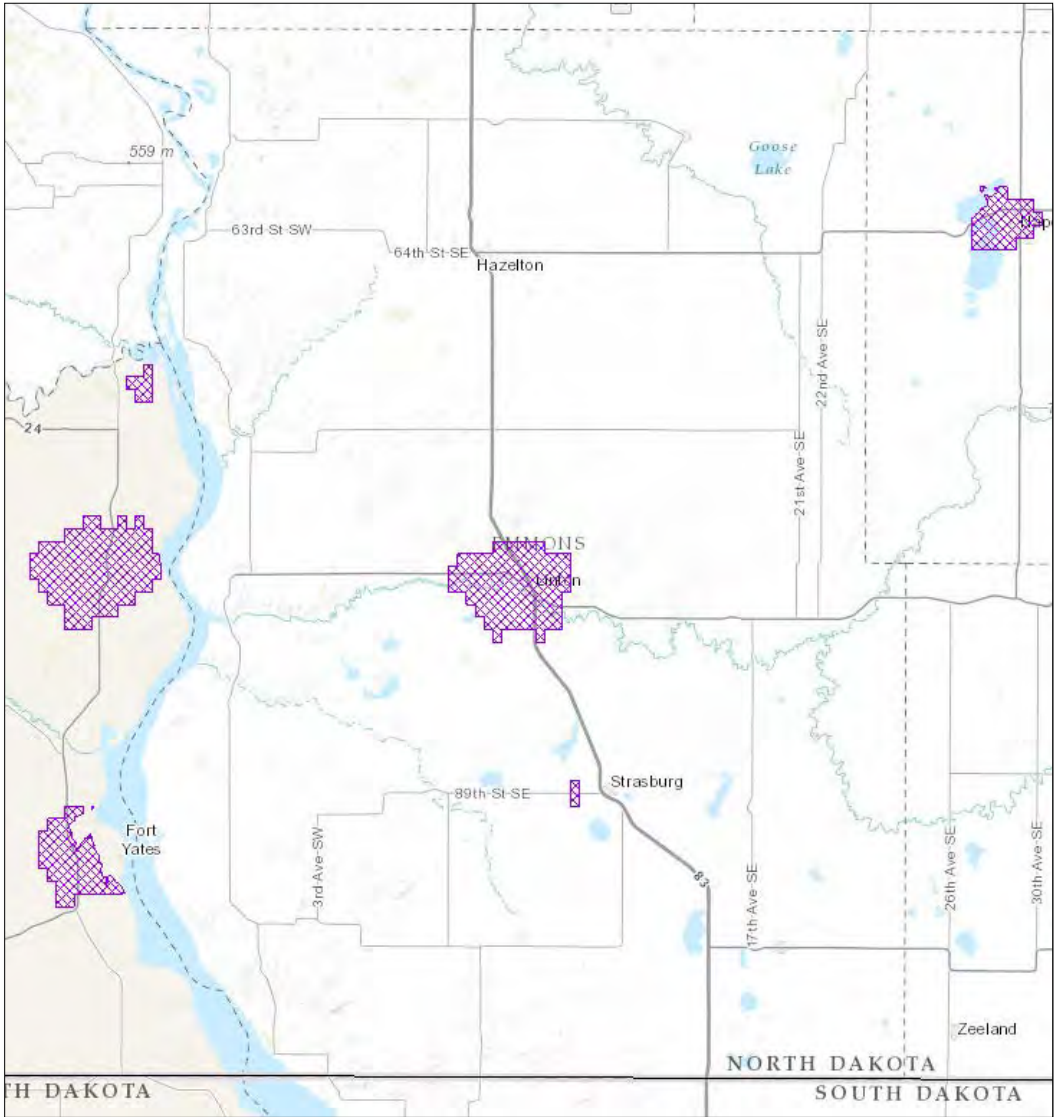
The main fire season normally begins about July 15th, when summer weather warms significantly and precipitation is usually limited to that resulting from thunderstorm activity. This longer and more dangerous season extends until about October 30th or until the first significant snow cover.

Most wildland fires result from acts of human carelessness during activities such as: controlled burns of sloughs, ditches, and fields by landowners; recreational activity such as camping, hunting, and other off-road vehicle travel; and use of fireworks preceding and immediately following the 4th of July.

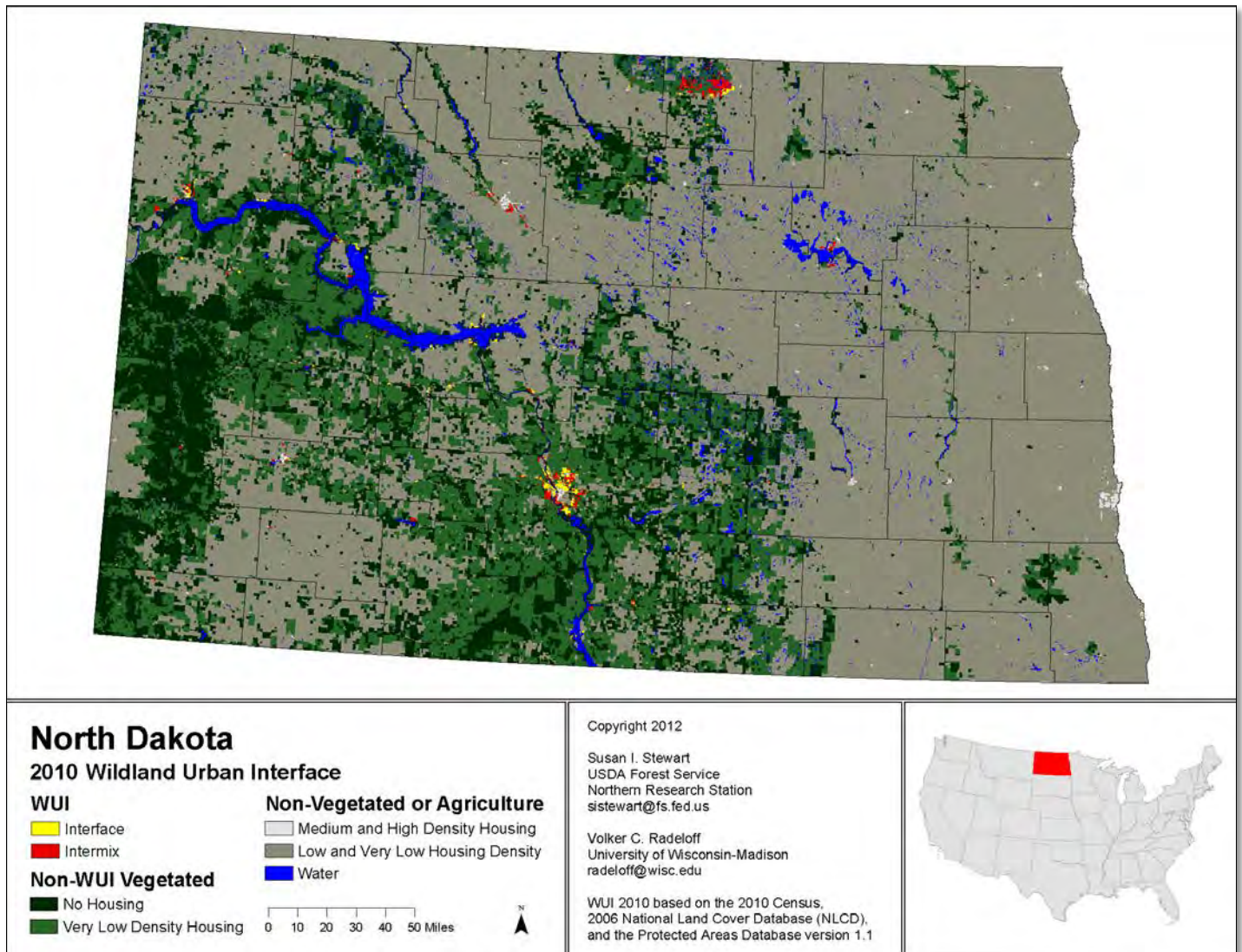
Numerous fires are reported annually as a direct result from the use of farm machinery in fields and pastures. Fires along railroad right-of-ways are common occurrences during extremely dry conditions. Finally, some fires are caused annually by Mother Nature during lightning or thunderstorms.

The vulnerability risk for Emmons County, based on the following maps, is low due to the very low density housing.

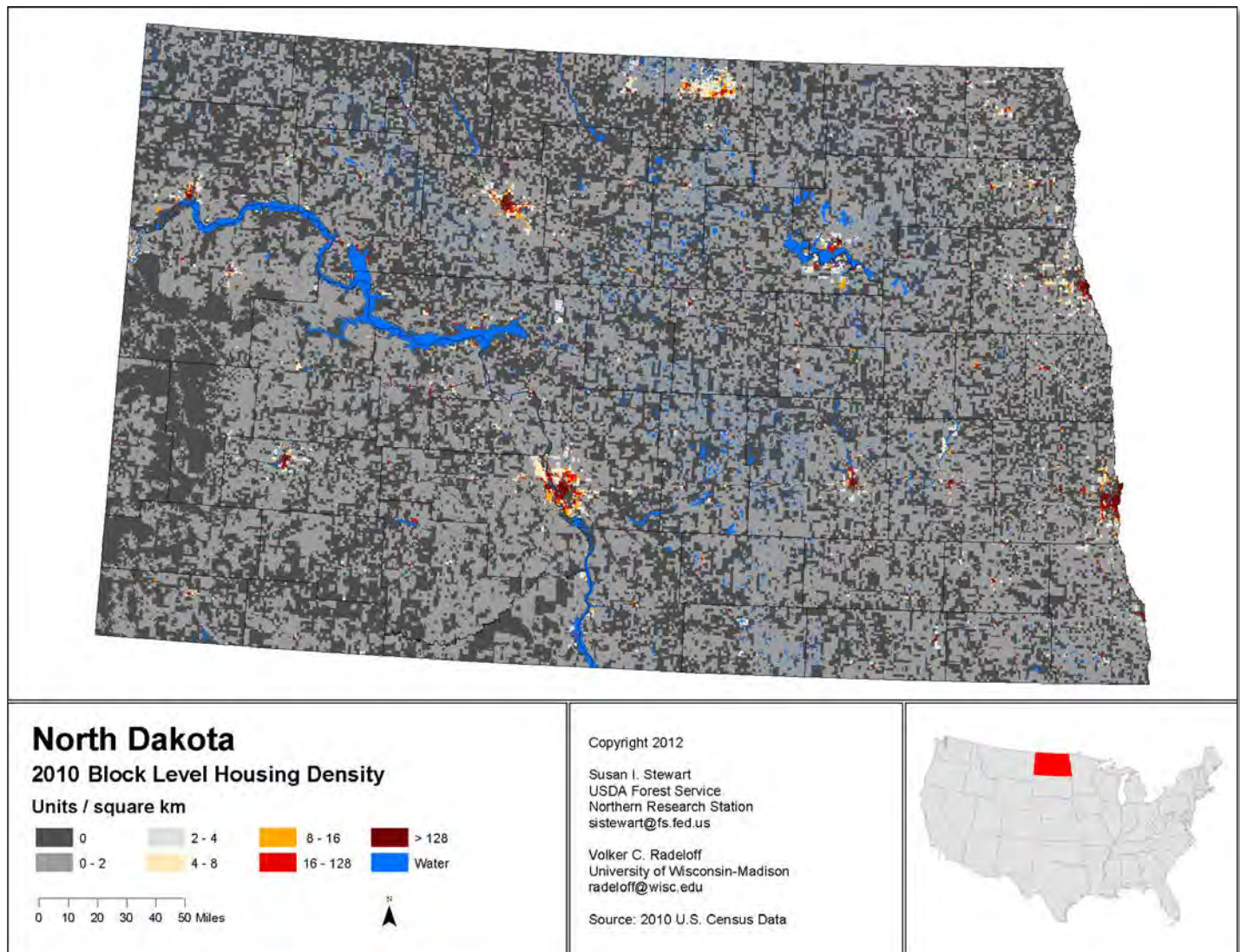
Emmons County Wildland-Urban Interface



Source: Federal Fire Occurrence [Website](#)

ND 2010 Wildland Urban Interface

Source: SILVIS Lab, Spatial Analysis for Conservation and Sustainability [website](#)

North Dakota 2010 Block Level Housing Density

Source: SILVIS Lab, Spatial Analysis for Conservation and Sustainability [website](#)

Population and Housing Units in SILVIS High and Moderate Risk Threat Zones

County	Pop in High Risk	Housing Units in High Risk	Pop in Moderate Risk	Housing Units in Moderate Risk	Total Population in High and Moderate Risk	Total Housing Units in High and Moderate Risk
Emmons	791	490	725	436	1,516	926

Housing Unit Values in High and Moderate Wildfire Risk Areas

County	Total Housing Units in High and Moderate Risk Categories	Media Housing Value	Housing Unit Values in High and Moderate Wildfire Risk Areas
Emmons	926	\$64,400	\$59,634,400

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss of Power
- Property Damage

History

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
LINTON	EMMONS CO.	ND	04/09/2003	14:14	CST	Wildfire		0	0	0.00K	0.00K
Totals:								0	0	0.00K	0.00K

Source: National Oceanic and Atmospheric Administration National Climatic Data Center [Website](#) (01/1950 to 08/2014)

The following history was obtained from the Fire Districts and the Emmons County Record:

11-04-14 Combine fire in sunflower field



(Source: Emmons County Record [website](#))

04-24-14 Linton Fire Department responded to a prairie fire located about four miles east of Linton. A controlled burn was called in on April 23rd. The fire was extinguished due to forecast high winds. A small area of pasture burned, and no injuries reported.

04-23-14 Linton Fire Department responded to a prairie fire at the Marvin Wolf Farm (5 miles south of Linton). A controlled burn from March 28th flared up. No injuries reported.

04-22-14 Linton Fire Department responded to a fire in a harvested cornfield 12 miles northwest of Linton. A pickup muffler ignited the corn stubble. Due to increased winds, the fire spread quickly to the northwest and resulted in 24-30 acres burned.

04-21-14 Linton Fire Department responded to a fire on the farm of Gary Mosset (8 miles southwest of Linton). A hay grinder overheated and ignited the surrounding grass and loose hay. A small area burned and was extinguished quickly. Minimal damage and no injuries were reported.

03-28-14 Linton Fire Department responded to a prairie fire at the Marvin Wolf farm (5 miles south of Linton). Controlled burn got out of control. No injuries, and 20 acres burned.

03-26-14 Linton Fire Department responded to a fire in a cornfield (13 miles east and 1 mile north of Linton) caused by a combine. The combine sustained damage and a small area of corn around the machine.

11-04-13 Strasburg Fire Department responded to a combine fire (4 miles north of Strasburg) which caught fire in a sunflower field. Combine destroyed.

08-14-13 Strasburg Fire Department responded to a combined fire southeast of Strasburg. Combined damaged; however, the fire was stopped from spreading to another field.

06-11-13 Linton Fire Department responded to a baler fire 10 miles northeast of Linton. Fire contained to baler which was a total loss.

05-14-13 Several fire departments (Linton, Hague, Strasburg, Hazelton, Braddock, Napoleon, Steele, Pollock) responded to a fire 3 miles east of Temvik caused by a disc striking a rock in a corn field which was exacerbated dry conditions and high winds. Approximately 350-400 acres burned.



(Source: Emmons County Record [website](#))

Year	Date of Fire	Fire Location	Fire Cause	Fire Size (acres)	Structure & Bale Loss
2009	7/11/2009	3 Miles East of Linton	Garbage Pit	3	
2009	5/28/2009	10 Miles East of Linton	Burning Weeds	5	
2009	5/10/2009	West of Linton	Set	40	
2009	5/7/2009	2 Miles South & 7 Miles West of Linton	Wiring & Hay		
2009	5/4/2009	South of Strasburg		150	
2009	4/21/2009	West of Linton	Garbage Pit	40	
2009	4/17/2009	Rural Linton	Baler	60	
2008	11/2/2008	3 miles west of Linton	Combine		
2008	9/2/2008	Hazelton	Unknown		
2008	8/28/2008	Rural Linton	Lightning		
2008	8/7/2008	Braddock	Baler	50	
2008	7/9/2008	3 South Linton	Lightning		15 Bales
2008	6/29/2008	Rural Linton	Fireworks	1	
2008	3/28/2008	10 Miles North of Linton	Wiring	0	
2008	3/17/2008	Rural Linton	Lightning	12	
2008	9/10/2008	4 Miles South of Weigh Station on Highway 83	Lightning	1	
2007	10/31/2007	Rural Linton	Combine	30	
2007	9/12/2007	Rural Linton	Hay Grinder		250 Bales
2007	9/6/2007	Rural Linton	Lightning		200 Bales
2007	8/16/2007	Rural Linton		25	
2007	8/13/2007	13 Miles West of Linton	Unknown	20	
2007	8/4/2007	Rural Linton	Baler	12	
2007	8/1/2007	7 Miles West & 7 Miles North of Linton	Lightning	3	
2007	7/28/2007	Rural Linton	Garbage Pit		33 Bales
2007	7/25/2007	8 Miles East & 2 Miles North of Linton	Swather	15	
2007	6/23/2007	Rural Linton	Lightning		100 Bales
2007	5/13/2007	6 Miles North-East of Linton	Controlled Got Away	6	
2007	3/23/2007	5 Miles North, 2 1/2 Miles East & 1/2 Mile North of Hague	Controlled Burn Spread Wind	80	
2006	6/28/2006	2 miles northeast of Linton	Lightning	2	
2006	8/4/2006	14 miles west of Temvik	Lightning	1	
2006	8/4/2006	8 miles west of Temvik	Lightning	3	
2006	8/4/2006	9 miles southwest of Linton	Lightning	50	

2006	6/21/2006	Prairie fire near mm 40 on Hwy 1804 in Emmons Co.	Undetermined	600	
2006	6/22/2006	near 19th Ave SE & 88th St in Emmons Co. Approx. 8 miles east of Strasburg	Equipment	35	
2006	7/7/2006	one mile north of Strasburg	Smoking	150	
2006	8/4/2006	9 miles southwest of Linton	Lightning	50	
2006	8/14/2006	11 South 4 west 2 south of Steele to assist Braddock Fire Dept	Equipment	150	
2006	6/29/2006	South west of Glencoe Church in Emmons County	Lightning	1	
2006	8/4/2006	12 mi W Emmons County of Napoleon	Lightning	5	
2006	10/31/2006	6 Miles East of Linton	Lightning		265 Bales
2006	9/4/2006	Rural Linton	Exhaust Lawn Mower		56 Bales
2006	8/22/2006	12 Miles East & 1 Mile South of Linton			33 Bales
2006	8/4/2006	4 Miles South & 6 Miles West of Hazelton	Baler	400	
2006	8/2/2006	Rural Linton	Combine	15	
2006	7/30/2006	13 Miles North & 3 Miles East of Linton	Combine	80	
2006	7/26/2006	9 Miles East of Linton	Lightning		
2006	7/22/2006	8 Miles West & 3 Miles South of Linton	Lightning	3	
2006	7/6/2006	8 Miles South of Linton	Garbage Pit	200	
2006	6/28/2006	Mile 7 on Highway 83		15	
2006	6/23/2006	Rural Linton	Lightning	3	
2006	6/21/2006	13 Miles West & 8 Miles North of Linton		600	
2006	5/27/2006	10 Miles West & 3 Miles South of Linton	Lightning	15	
2006	5/27/2006	13 Miles West of Linton	Lightning	5	
2006	4/26/2006	14 Miles East of Temvik	Combine	15	
2006	4/20/2006	6 Miles West of Hazelton	Baler	8	
2006	4/5/2006	12 Miles East of Temvik	Combine	15	
2006	4/3/2006	7 Miles North-East of Linton	Garbage	20	
2006	3/25/2006	Linton	Grease in Kitchen		
2006	1/18/2006	8 Miles North & 6 Miles South-West of Linton	Controlled Burn Got Away	5	
2006	8/20/2006	1 Block South of Main Street, Hague	Electrical Box Short		1 House

2006	8/12/2006	1 Mile South, 1 Mile West, then South of Hague	Lightning	5	
2006	8/4/2006	1 Mile East, 1 Mile North & 1/2 Mile East of Hague	Lightning Drought Wind	15	
2006	6/28/2006	3 Miles North on Highway 83	Equipment Drought Wind	60	
2006	5/26/2006	2 Miles South & 1.5 Miles West of Hague	Lightning Dry Conditions	35	
2005	11/10/2005	South Edge of Linton			
2005	10/26/2005	East Edge of Linton			
2005	10/14/2005	2 Miles South & 14 Miles West of Linton		15	
2005	9/2/2005	5 Miles South & 8 Miles West of Linton		15	
2005	8/5/2005	3 Miles South & 1/2 Mile East of Linton	Lightning	8	
2005	8/3/2005	3 Miles South & 1/2 Mile East of Linton	Lightning	10	
2005	7/25/2005	712 Hickory Avenue			
2005	7/2/2005	South East of Hazelton		30	
2005	4/7/2005	1 Mile South of Temvik	Lightning	10	
2005	3/24/2005	Church Parking Lot	Mouse Nest on Manifold		
2005	2/19/2005	413 3rd Street Northeast Linton	Candle		
2005	1/22/2005	1 Mile West of Linton	Controlled Burn		
2005	8/26/2005	McIntosh & Emmons County line West of H. Dockter Farm	Equipment	1	
2004	9/19/2004	2 Miles East & 1 Mile North of Hague	Lightning		
2004	5/8/2004	Rice Lake - Highway 83	Rekindle Dry Conditions	1.5	
2004	5/7/2004	Rice Lake - Highway 83	Campfire Hot Ember	1.5	
2004	4/30/2004	1 Mile West & 4 Miles North of Hague	Controlled Burn Spread	60	
2003	04/(9-12)/2013	Lake Oahe Bottoms (grasslands fire)	Unattended Campfire	5000	
2002	8/16/2002	Main Street - Hague	Wind Short Circuit Arc		2 Lost , 2 Damaged
2002	7/2/2002	NW of Linton (prairie)	Lightning	2000	

2002	5/21/2002	3 Miles South of Zeeland	Undetermined		6 Storage Bldgs
2001	7/9/2001	8 Miles East of Hague	Equipment		
1991	05/(11-12)/1991	Lake Oahe Bottoms (brush and reeds)		500	

Windstorm

Frequency	Highly Likely (Nearly 100% probability in the next year)
Severity	Limited (10-25% of jurisdiction affected)
Risk Class	B
Seasonal Pattern	None
Duration	Hours/Days
Speed of Onset	No warning
Location	Countywide

Description

The National Weather Service defines wind as:

“The horizontal motion of the air past a given point. Winds begin with differences in air pressures. Pressure that's higher at one place than another sets up a force pushing from the high toward the low pressure. The greater the difference in pressures, the stronger the force. The distance between the area of high pressure and the area of low pressure also determines how fast the moving air is accelerated. Meteorologists refer to the force that starts the wind flowing as the "pressure gradient force." High and low pressure are relative. There's no set number that divides high and low pressure. Wind is used to describe the prevailing direction from which the wind is blowing with the speed given usually in miles per hour or knots.” (Source: National Weather Service Glossary [website](#))

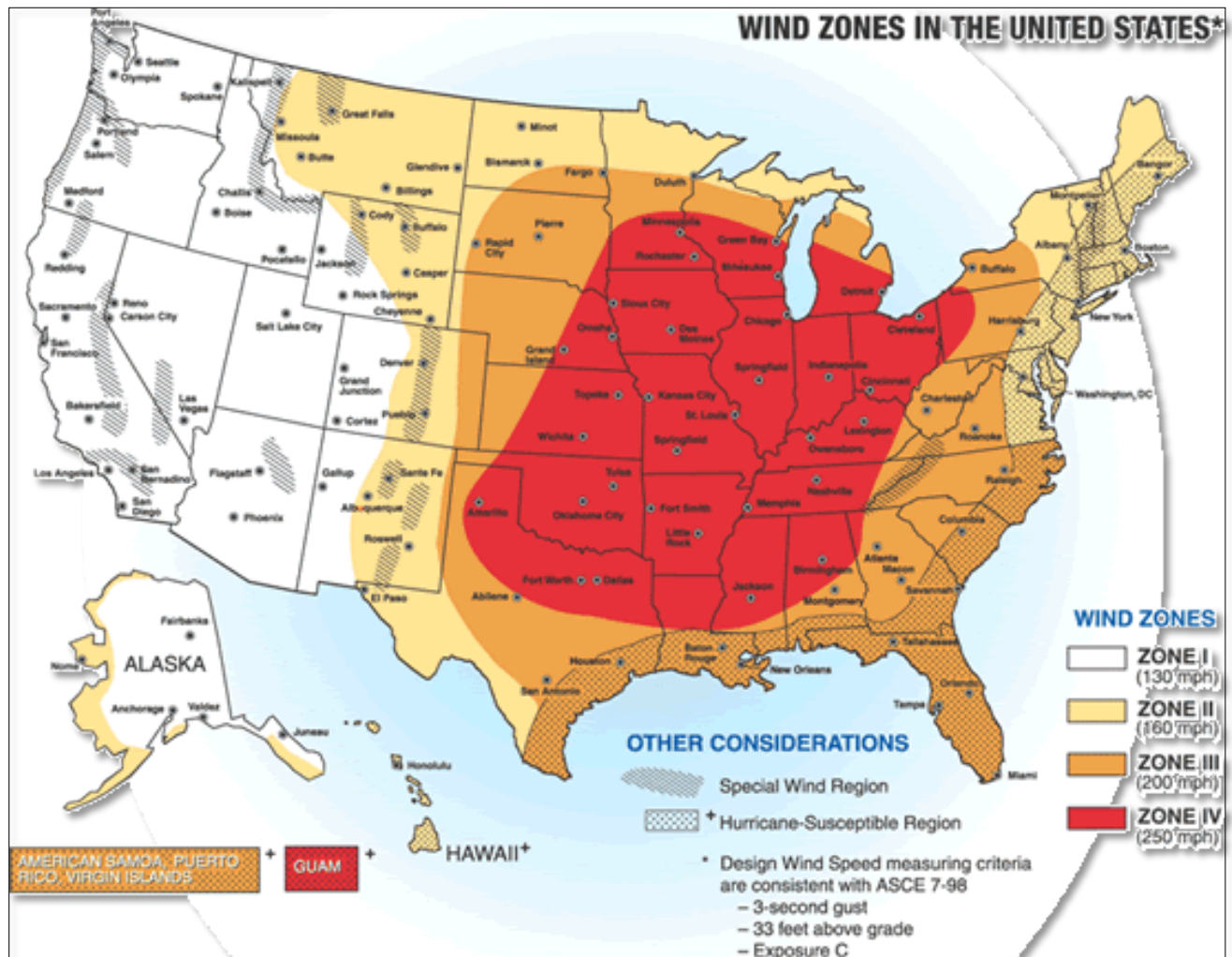
The Federal Emergency Management Agency recognizes Wind Zones in the United States. North Dakota is primarily in Zone II (160 mph) with a southeast portion in Zone III (200 mph). Emmons County is within the Zone III designation.

Windstorm Vulnerability

County	Social Vuln. Rating	# of Events (2000- 2003)	Property Damages	Annual Property Damages	Total Building Exposure (\$000)	Pop. Density	Livestock Exposure	Crop Exposure	Crop Insurance Payments (2003- 2012)	Crop Losses (2003- 2012)	Annual Crop Losses	Vuln. Score	Overall Vulnerability Ranking
Emmons	10	23	\$25,000	\$1,923	\$395,022	2.4	\$34,225,000	\$86,729,000	\$2,105,337	\$2,365,547	\$236,555	28	Moderate

Source: State of North Dakota Multi-Hazard Mitigation Plan, February 2014

United States Wind Zones



Source: Federal Emergency Management Agency, Wind Zones [website](#)

Wind Zones	Areas Affected
Zone I (130 mph)	All of Washington, Oregon, California, Idaho, Utah, and Arizona. Western parts of Montana, Wyoming, Colorado and New Mexico. Most of Alaska except the east and south coastlines.
Zone II (160 mph)	Eastern parts of Montana, Wyoming, Colorado, New Mexico. Most of North Dakota. Northern parts of Minnesota, Wisconsin and Michigan. Western parts of South Dakota, Nebraska and Texas. All New England States. Eastern parts of New York, Pennsylvania, Maryland, and Virginia. Washington, DC.
Zone III (200 mph)	Areas of Minnesota, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, Kentucky, Pennsylvania, New York, Michigan, and Wisconsin. Most or all of Florida, Georgia, South Carolina, North Carolina, Virginia, West Virginia. All of American Samoa, Puerto Rico, and Virgin Islands.
Zone IV (250 mph)	Mid US including all of Iowa, Missouri, Arkansas, Illinois, Indiana, and Ohio and parts of adjoining states of Minnesota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, Louisiana, Mississippi, Alabama, Georgia, Tennessee, Kentucky, Pennsylvania, Michigan, and Wisconsin. Guam.
Special Wind Region	Isolated areas in the following states: Washington, Oregon, California, Idaho, Utah, Arizona, Montana, Wyoming, Colorado, New Mexico. The borders between Vermont and New Hampshire; between New York, Massachusetts and Connecticut; between Tennessee and North Carolina.
Hurricane Susceptible Region	Southern US coastline from Gulf Coast of Texas eastward to include entire state of Florida. East Coastline from Maine to Florida, including all of Massachusetts, Connecticut, Rhode Island, Delaware, and Washington DC. All of Hawaii, Guam, American Samoa, Puerto Rico and Virgin Islands.

Identified Impacts

- Blocked Roads
- Building Collapse
- Business Interruptions
- Delayed Emergency Response
- Downed Power Lines
- Downed Trees
- Evacuation (Localized)
- Explosion
- HAZMAT Release
- Increased Fire Potential
- Increased Public Safety Runs
- Livestock Injury/Death
- Loss of Economy
- Loss/Overcrowded Medical Facilities
- Loss of Power
- Mass Casualties
- Property Damage
- School Closure
- Wind Chill

History

<u>Location</u>	<u>County/Zone</u>	<u>St.</u>	<u>Date</u>	<u>Time</u>	<u>T.Z.</u>	<u>Type</u>	<u>Mag</u>	<u>Dth</u>	<u>Inj</u>	<u>PrD</u>	<u>CrD</u>
EMMONS (ZONE)	EMMONS (ZONE)	ND	01/15/2014	20:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/17/2012	21:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/07/2011	10:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	09/20/2011	03:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	05/31/2011	09:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/30/2011	13:00	CST-6	High Wind	52 kts. EG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/13/2011	09:00	CST-6	High Wind	35 kts. ES	0	0	20.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/26/2010	11:00	CST-6	High Wind	50 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	08/13/2010	00:00	CST-6	High Wind	55 kts. MG	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	06/18/2010	10:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	07/13/2009	23:55	CST-6	High Wind	52 kts. EG	0	0	5.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	10/26/2008	09:00	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	07/12/2008	11:47	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K

EMMONS (ZONE)	EMMONS (ZONE)	ND	05/01/2008	17:00	CST-6	High Wind	36 kts. MS	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/24/2008	17:45	CST-6	High Wind	35 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/09/2005	22:00	CST	High Wind	44 kts. MS	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/20/2004	09:00	CST	High Wind	48 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	12/11/2004	18:00	CST	High Wind	43 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/13/2004	12:58	CST	High Wind	53 kts. ES	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	03/10/2004	15:30	CST	High Wind	45 kts. MS	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/29/2002	08:00	CST	High Wind	47 kts. M	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/11/2002	13:00	CST	High Wind	53 kts. M	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/01/2001	10:00	CST	High Wind	34 kts. M	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	04/05/2000	08:30	CST	High Wind	62 kts. E	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	11/01/1999	02:30	CST	High Wind	53 kts.	0	0	0.00K	0.00K
EMMONS (ZONE)	EMMONS (ZONE)	ND	02/10/1996	10:00	CST	High Wind	50 kts.	0	0	0.00K	0.00K
Totals:								0	0	25.00K	0.00K

Source: National Oceanic and Atmospheric Administration National Climatic Data Center [Website](#) (01/1950 to 08/2014)

Attachments

Separate document.

Appendices

Separate document.

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