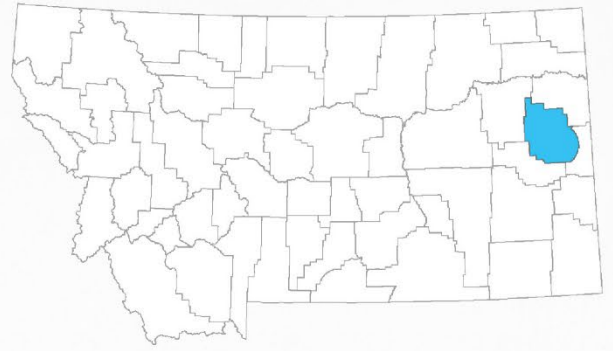


DAWSON COUNTY

Multi-Hazard Mitigation Plan



2022

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Executive Summary

Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Mitigation actions may be implemented before, during or after an event; however, they are most successful when based on a long-term plan developed before a disaster occurs.

The hazard mitigation planning process involves two main elements:

- Hazard profiles that include an assessment of community risks and vulnerabilities.
- A mitigation strategy that identifies actions to reduce or eliminate the impact of hazards on the community.

A list of priority hazards was developed through historic data analysis and public input. Key issues for each priority hazard are listed below.

Severe Summer Storm Key Issues

Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region. Not all key facilities have NOAA weather radios. Several sirens in the county are aging and in need of replacement.

In the past, the county saw many new temporary residents living in mobile homes/RVs due to energy-related growth in the nearby Bakken region. Residents in temporary housing often have satellite dishes (no local television) and out-of-state cell phones, which makes them difficult to reach through traditional notification channels. While this continues to be a concern, notification systems, such as IPAWS, continue to improve.

The schools do not have adequate safe rooms. Students currently would go to the basements of most facilities, but there is not enough space for all students.

The unused grain elevator in Richey has loose tin siding that can blow off during heavy wind events. Options are currently being evaluated to remove the tin and/or structure.

Hazardous Materials Release Key Issues

The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas.

The closest state hazardous materials response team is in Billings, which is approximately 220 miles from Glendive and 260 miles from Richey.

The county continues its efforts with BNSF about receiving periodic reports about the hazardous materials being transported through the county.

County emergency management authorities are not always consulted prior to approval of new facilities containing hazardous materials, and efforts will continue to ensure transparency.

Flood Key Issues

Dawson County has many existing properties, a majority of them private residences and commercial structures that are located in the floodplain. The estimated cost of relocating those

structures is over \$70 million. Floodplain management ordinances prohibit any future development in the floodplain area that is below the base flood elevation.

Flash flooding is the most common flood issue that presents a serious risk in the county and participating jurisdictions. Flash floods present a risk to human lives because they begin quickly, often with little warning.

The drainage creek between Dawson County High School and the football field regularly experiences high flows during rain events and periods of rapid snowmelt. The walls of the creek are being washed-out, which is causing the adjacent school parking lot to sink. Continued erosion of the creek walls will significantly damage the parking lot and may eventually damage the school structure.

While rare, ice jams along the Yellowstone River have the potential to flood low-lying surrounding areas and damage bridge crossings in the Glendive/West Glendive area. During ice jams and extreme flooding, Marsh Road floods trapping residents in the Cottonwood Grove neighborhood. The area is not conducive to levees or other water diversion methods. There is also concern that Penninger Park is eroding into the Yellowstone River.

The riverbank by the Glendive railroad bridge was stabilized within recent years to protect the bridge pilings; however, the concrete used to stabilize the bank is failing and will need to be repaired. The repairs are the responsibility of BNSF railroad.

Severe Winter Storm Key Issues

Residents do not always follow travel restrictions, which presents a hazard to themselves and first responders. Due to its location along Interstate 94, the county often has out-of-state travelers who are inexperienced with the weather conditions.

A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. The designated winter shelter in Glendive is Dawson County High School. Richey now has a designated winter shelter.

Drought Key Issues

Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole. A significant and prolonged drought could affect municipal water supplies.

Wildfire Key Issues

Wildfires are common in the county. Although local fire departments have excellent response capabilities and fuels in the county are generally of a low intensity, the potential remains for a large-scale wildfire in times of drought or windy conditions.

Landslide Key Issues

The southeast urban area of Glendive borders rugged badlands terrain that is considered to be highly susceptible to landslides. Growth may present future development pressures in the badlands area. There are additional isolated landslide areas within Glendive/West Glendive, primarily along the Yellowstone River and along County Road 303.

Terrorism and Violence Key Issues

The multiple energy storage and distribution facilities located throughout the county may be a potential target for terrorism, although a specific threat has not been identified. Terrorism and violence are an ongoing concern, but it is very unlikely an event will occur in the county.

Chapter 1: Introduction

Hazard Mitigation Planning

Natural and human-caused hazards have a direct impact on residents and property in Dawson County. While it is impossible to eliminate most hazards, it is possible to mitigate their negative effects. Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Mitigation actions may be implemented before, during, or after an event; however, they are most successful when based on a long-term plan developed before a disaster occurs. Successful mitigation actions must be practical, cost-effective, politically acceptable and supported by a sound planning process.

The plan is organized into five chapters:

Chapter 1: Introduction

General plan overview

Chapter 2: Study Area Background

Background information about each participating jurisdiction and identification of key facilities

Chapter 3: Hazard Risks and Vulnerabilities

Hazard profiles, assessment of risks and vulnerabilities, identification of key issues and potential action items

Chapter 4: Mitigation Strategy

Identification of goals and action items to mitigate risks of hazards in the community

Chapter 5: Plan Maintenance

Procedures for monitoring, evaluating and updating the plan

Purpose

The purpose of the plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural and human-caused hazards. The Federal Emergency Management Agency (FEMA) identifies the primary benefits of hazard mitigation planning as:

- Identifying actions for risk reduction that are agreed upon by stakeholders and the public.
- Focusing resources on the greatest risks and vulnerabilities.
- Building partnerships by involving citizens, organizations and businesses.
- Increasing education and awareness of threats and hazards, as well as their risks.
- Communication priorities to state and federal officials.
- Aligning risk reduction with other community objectives.

The plan includes a risk and vulnerability assessment that residents, organizations, local governments and other interested participants can utilize when planning for hazards. The plan also includes an evaluation of mitigation projects that will assist each adopting jurisdiction in reducing risk and preventing loss from future hazard events.

Additionally, all participating jurisdictions are eligible to apply for funds through FEMA’s Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC) program and Flood Mitigation Assistance (FMA) program to finance the implementation of mitigation projects.

Authority

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000, provides legal basis for state, local and Tribal governments to reduce risks from natural hazards through mitigation planning. All state, local and Tribal governments are required to have an approved Multi-Hazard Mitigation Plan to receive funding for certain types of non-emergency disaster assistance, including mitigation projects.

This plan is an update of Dawson County’s 2014 Pre-Disaster Mitigation Plan. Hazard mitigation plans are required by FEMA to be updated every five years to maintain the jurisdiction’s eligibility for grant funding.

Jurisdictions that participated in the planning process and are adopting the plan by the official method of approval based on legal authority are listed in Table 1. To be eligible for future funds through the Building Resilient Infrastructure and Communities (BRIC) program, and the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) programs, jurisdictions must either adopt the plan and participate in the planning process or be sponsored by a jurisdiction that has done so. Adoption documentation can be found in Appendix B: Plan Adoption.

Table 1 Adopting Jurisdictions

Jurisdiction	Adoption Date
Dawson County	April 5, 2022
City of Glendive	July 5, 2022
Town of Richey	May 10, 2022

Acknowledgments

Numerous elected officials, city and county staff and members of the public participated in the planning process. The project would not have been possible without the assistance of Planning Team members and members of the public who participated in public meetings.

The project was primarily funded with a grant awarded through FEMA, administered by the Montana Department of Military Affairs – Disaster and Emergency Services Division (DES). Guidance from state and FEMA staff was instrumental in completing the project.

The Planning Process

FEMA identifies four essential steps to the hazard mitigation planning process:

- **Resource organization:** Involving interested community members, and reaching out to critical stakeholders and those with technical expertise required during the planning process.
- **Risk assessment:** Identifying hazard characteristics and potential consequences, including effects on key facilities.
- **Development of mitigation strategies:** Determining priorities and ways to minimize effects of identified hazards.
- **Plan implementation and progress monitoring:** Implementing the plan brings it to life and periodic monitoring ensures the plan remains relevant as conditions change.

The success of the plan and implementation of action items is dependent on public participation during all four steps of the planning process. Public involvement for the plan included planning team meetings, public meetings, and a community survey. Local planning documents were also reviewed and incorporated into the document when necessary. Detailed information about the planning process can be found in Appendix A: Plan Process.

Planning Teams and Jurisdiction Participation

The Steering Committee

Hazard mitigation planning enhances collaboration and support among diverse parties whose interests can be affected by hazard losses. In 2021, a steering committee was formed to oversee all phases of the plan.

The Steering Committee, with representatives from each participating jurisdiction, provided extensive contributions to the information included in this plan. The planning process was based on Section 322 requirements of the Disaster Mitigation Act of 2000 (DMA 2000) and supporting guidance documents developed by FEMA.

Table 2 Steering Committee Membership

Name	Title	Committee Position	Agency/Organization
Mary Jo Gehmert	Emergency Management Coordinator	Planning Team Member	Dawson County
Dennis Zander	Commissioner	Jurisdiction Representative	Dawson County
Jerry Jimison	Mayor	Jurisdiction Representative	Glendive
Joanie Lenz	Clerk	Jurisdiction Representative	Town of Richey
Forrest Sanderson	Contracted Planner/Floodplain Administrator	Stakeholder	Dawson County
Stephen Schreibeis	Superintendent	Stakeholder	Glendive Public Schools

Rhett Coon	Facilities Director	Stakeholder	Glendive Public Schools
Laureen Murphree	Interim Director	Stakeholder	Dawson County Health Department
Valerie Meiers	PHEP Coordinator	Stakeholder	Dawson County Health Department
Todd Opp	Safety Officer	Stakeholder	Glendive Medical Center
Patrick Gilchrist	Meteorologist	Stakeholder	NWS Glasgow
Frank Ceane	Director	Stakeholder	Glendive Public Works
John Hickman	Chief	Stakeholder	Glendive PD
Doug Byron	Chair	Stakeholder	City/County Planning Board
Mike Dryden	Member	Stakeholder	City/County Planning Board
Dave Hrubes	Member	Stakeholder	City/County Planning Board
Jim Kutzler	Member	Stakeholder	City/County Planning Board
Greg Burbach	Member	Stakeholder	City/County Planning Board
Todd Eckert	Member	Stakeholder	City/County Planning Board
Gerald Reichert	Member	Stakeholder	City/County Planning Board
Mike Dryden	Member	Stakeholder	City/County Planning Board
Clayton Walker	Member	Stakeholder	City/County Planning Board

Representatives not only attended the meetings, but also participated by gathering appropriate data and historical information, identified new mitigation strategies, updated past mitigation strategies, and participated in other efforts.

Coordination with Agencies, Partners, and Stakeholders

The following agencies and partners were instrumental in the update process:

- Federal Emergency Management Agency (How-to Guides)
- National Weather Service (hazard profile)
- National Climate Data Center (hazard profile)
- Montana Disaster and Emergency Services (GIS data, flood data)
- Dawson County/City of Glendive Planning Board (validate mitigation strategies)
- Dawson County Health Department (validate mitigation strategies)
- Assessor (property data)
- Glendive Medical Center (validate hazards and mitigation strategies)
- Glendive Public Schools (validate hazards and mitigation strategies)
- Glendive Public Works (validate hazards and mitigation strategies)
- Glendive Police Department (validate hazards and mitigation strategies)
- Town of Richey (validate hazards and mitigation strategies)
- CHS (validate hazards and mitigation strategies)

- MDOT (validate hazards and mitigation strategies)
- Dawson County Departments (Emergency Operations Plans, histories, mitigation actions, public input, GIS, transportation, property and infrastructure)

Neighboring counties (Richland County, McCone County, and Wibaux County) were granted access to the Plan for review and feedback. Additionally, hazard mitigation plans for the adjacent counties were reviewed to determine region-wide risks and mitigation opportunities. Notably, although each county plan serves as a standalone mitigation plan, the contract to update the mitigation plan covered all four counties (Dawson County, Richland County, McCone County, and Wibaux County), so synergies and regional considerations were prominent in the plan development process.

Local Jurisdiction Plan Participation

Local Outreach Meetings

The Core Planning Team worked with individual jurisdictions and planning partners in order to provide one-on-one guidance and support. Local outreach meetings occurred with participating jurisdiction.

Mitigation Workshop

A workshop was held on June 15, 2021 to identify hazards and update and consider new mitigation strategies.



2021 DAWSON COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE:

LOCAL JURISDICTIONAL WORKSHOP REGISTRATION SITE

Please register below.

What: Register today and bring your local planning team to our mitigation workshop. This in-person workshop will give your local planning team an opportunity to work with Dawson County Emergency Management to identify local hazards and areas of concern, review previously identified mitigation actions, develop future mitigation projects, prioritize mitigation projects moving forward and update your jurisdiction's section of the 2021 Dawson County Multi-Jurisdictional Hazard Mitigation Plan.

Why: Participating in updates to the mitigation plan is a FEMA requirement to be eligible for federal disaster funding before and after disasters. By bringing your local planning team to this workshop, you will be completing that requirement.

Who Should Attend: This workshop should be attended by **EVERY** jurisdiction within Dawson County. Recommended attendees include: Municipal Administration/Management | Elected Officials | Fire & Law Enforcement | Floodplain Administrator | Legal | Parks & Recreation | Planning/Community Development/GIS | Public Works/Transportation (Roads & Bridges) | Sanitation/Storm Water Management | School Districts & College | Treasurer/Tax Assessor

WHEN & WHERE THE WORKSHOP WILL TAKE PLACE:

- Hazard Mitigation Planning Workshop | **Tuesday, June 15, 2021 (10:00 a.m.-12:00 p.m.)** | 2200 N. Merrill Ave., Fairgrounds Complex Bldg #2, Glendive, Mt 59330

For registration assistance please contact:
 Mary Jo Gehmert, Dawson County Emergency Management Coordinator, at gehmermj@dawsoncountymontana.com or 406.377.2566
 Daiko Abe, Consultant at daiko.abe@i-e-consulting.com or 847.565.8791

Mitigation Workshop Registration

* Indicates required field

Name *

First Last

E-mail *

Phone Number *

SAVE THE DATE and REGISTER

**Dawson County, MT
2021 Hazard Mitigation Plan (HMP) Update
Local Jurisdiction Workshop**

**Tuesday, June 15, 2021
10:00 AM - 12:00 PM**

2200 N. Merrill Ave.
Fairgrounds Complex, Bldg #2
Glendive, Mt 59330

Bring your local planning team to our mitigation workshop. This **in-person** workshop will give your local planning team an opportunity to work with the Hazard Mitigation Planning team to identify local hazards and areas of concern, review previously identified mitigation actions, develop future mitigation projects, prioritize mitigation projects moving forward and update your jurisdiction's section of the 2021 Dawson County Mitigation Plan.

Why: Participating in updates to the mitigation plan is a FEMA Requirement to be eligible for some federal disaster funding before and after disasters. By bringing your local planning team to this workshop, you will be completing that requirement.

Who: This workshop is for every jurisdiction within Dawson County. Recommended attendees include:

- Administration/Management
- Elected Officials
- Fire & Law Enforcement
- Floodplain Administrator
- Legal
- Parks & Recreation
- Planning/Community Development/GIS
- Public Works/Transportation (Roads & Bridges)
- Sanitation/Storm Water Management/Utility Districts
- School Districts & College
- Treasurer/Tax Assessor

Click the link to register here: <http://www.isc-registration.com/dawson.html>

Sample Workshop Agenda:

The purpose of this meeting is to engage and collect information from the individual jurisdictions of Dawson County.

- Mitigation Overview
- Risk Summary/Risk Assessment Findings
- Jurisdiction Hazard Summary Activity and Breakout Session
- Review Ongoing Mitigation Actions/Projects
- Identify New Mitigation Actions



Dawson County Hazard Mitigation Plan Update 2021

Dawson County, Montana

Date: June 15, 2020

10 am - 12 pm

2200 N. Merrill Ave.,

Fairgrounds Complex Bldg #2, Glendive, Mt 59330

Workshop Agenda

Introductions

Mitigation Overview

Risk Summary/Risk Assessment

Jurisdiction/Agency Hazard Summary Worksheet

Review Ongoing Mitigation Actions/Projects

Identify New Mitigation Actions

New Mitigation Actions

Each participating jurisdiction was required to consider and submit at least one new mitigation action as part of the 2021 update.

Table 3 Plan Participation

Jurisdiction	Attended at least one meeting	Represented at Mitigation Workshop	Met with Core Planning Team	Submitted at least One New Mitigation Action	Reviewed Past Mitigation Actions
Dawson County	Yes	Yes	Yes	Yes	Yes
City of Glendive	Yes	Yes	Yes	Yes	Yes
Town of Richey	Yes	Yes	Yes	Yes	Yes

Public Involvement

Broad public participation in the planning process helps ensure that diverse points of view about the planning area’s needs are considered and addressed. The public must have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (44 CFR, Section 201.6(b)(1)). The following section details the public outreach strategy, including a combination of in-person and virtual methods.

Dawson County Hazard Mitigation Questionnaire

In accordance with best practices as outlined in CPG 101 and the Local Hazard Mitigation Guide, this public-private effort engaged the whole community as part of its public outreach strategy, reaching citizens and key stakeholders across all jurisdictions via a combination of in-person and virtual methods. Elements of virtual public outreach included the 2021 Dawson County Preparedness Survey (<http://dawson.preparedness.alchemer.com/s3/>), and social media engagement through mediums like Facebook.

The 2021 survey included 31 questions and concluded with mitigation and preparedness resources for the public. The survey was shared electronically with the option of a hard copy survey upon request. 14 total residents participated. On average, residents spent 12 minutes to complete the questionnaire. The survey and related public outreach invitations were shared through multiple sources including:

- Facebook
- Individual jurisdiction social media and e-mail lists
- Press release

Dawson County Hazard Mitigation Public Meeting

In conjunction with the County Planning Board Meeting on October 14, 2021, which is a public meeting, the planning team reviewed the County’s most prevalent hazards and received public comment and feedback regarding new and past mitigation projects.

Dawson County Hazard Mitigation Public Review

After the draft plan was completed, a link to the plan was placed on the Dawson County website.

The draft plan remained on the website until the FEMA-approved and formally adopted Plan was made available. Upon formal adoption of the Plan, the public engagement strategy shifted toward continual engagement of the public by soliciting and offering the public an opportunity and forum to provide input regarding known hazards and risks, and implementation of identified mitigation strategies.

Throughout the plan development process, public and stakeholder input was incorporated into the Plan.

How Public Input was Incorporated into the Plan

When asked to what degree of emphasis the public would expect their jurisdiction to mitigate hazards, these hazards received the highest percentages of “high priority” in the survey:

- Wildfires (44%)
- Power Failure (44%)
- Crop Failure (44%)
- Severe Winter Weather (33%)

Open-ended responses by the public offered greater insight to the damages experienced while residing in Dawson County.

These, and related findings, helped the planning team determine meaningful mitigation projects. For example, some communities recognized the importance of creating greater resiliency and redundancy to mitigate power failure. Public input also validated the County’s plans to utilize social media as a mechanism to inform and educate the public.

Existing Plans and Studies

The following plans, studies and reports were used to inform this plan. A brief description of how the documents were used is provided.

2014 Dawson County Multi-Hazard Mitigation Plan

- Risk Assessment and Hazards
- Past Mitigation Projects

2018 State of Montana Multi-Hazard Mitigation Plan

- Risk Assessment and Hazards

Glendive-Dawson County 2016 Growth Policy

- Geographic and Historic Overview
- Growth Policy Updates
- Natural and Cultural Resources
- Current Land Use and Future Land Use
- Wildland-Urban Interface
- Integration of the 2014 Dawson County Multi-Hazard Mitigation Plan into the 2016 Growth Policy

Dawson County, City of Glendive, and Town of Richey Subdivision Regulations, 2010

- County, City and Town regulations as it pertains to hazards

Glendive Floodplain Regulations, 2014

- Flood-related regulations

Dawson County Floodplain and Floodway Management Regulations, 1998

- Flood-related regulations

Dawson County Community Wildfire Protection and Pre-Disaster Mitigation Plan, 2005

- Wildfire hazard information and risk

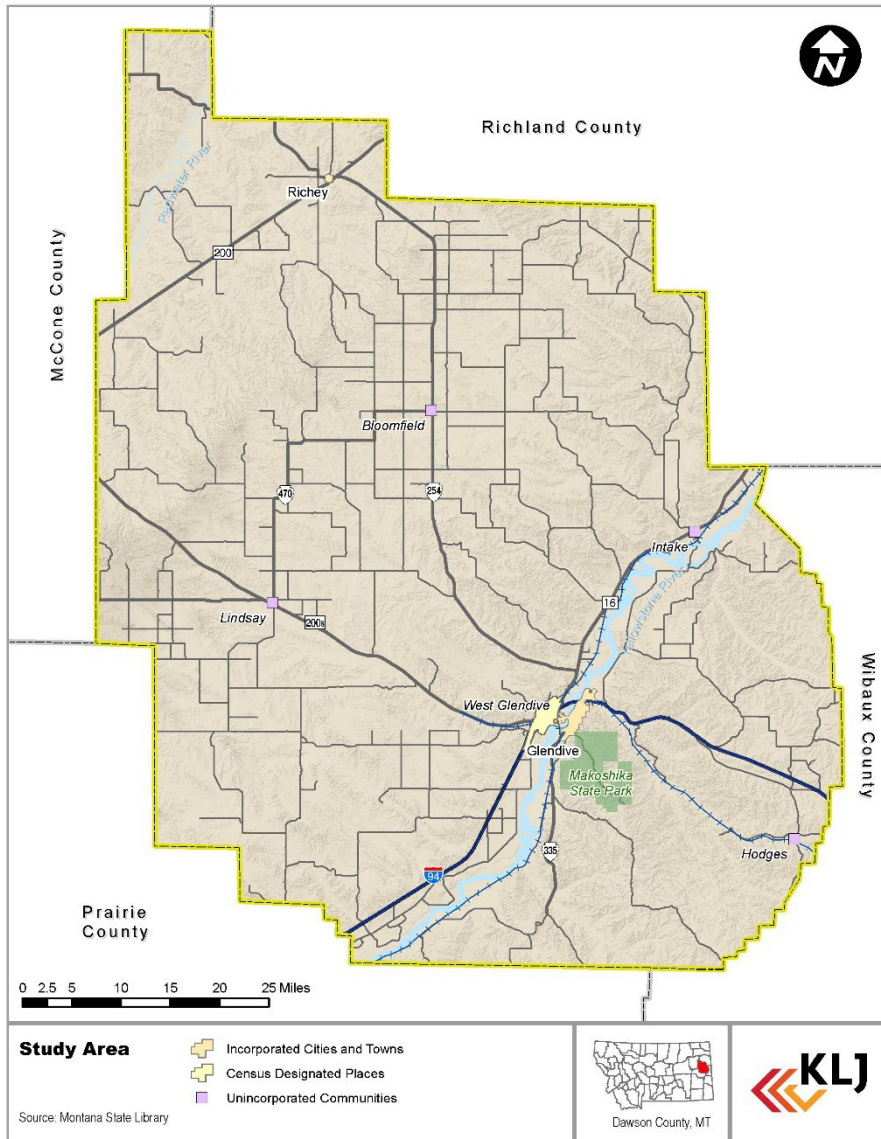
Chapter 2: Study Area Background

Jurisdictional Information

Dawson County was formed in 1869 when it split from Big Horn County, which formerly covered the eastern third of Montana. Dawson County originally covered all of northeastern Montana, but it lost territory as new counties were formed and eventually reached its contemporary boundaries in 1919. The county was named after Major Andrew Dawson, who managed the Fort Benton trading post for the American Fur Company from 1856 to 1864. The incorporated communities in the county are the City of Glendive (the county seat) and the Town of Richey.

A general map of the county, including major features and neighboring jurisdictions, is shown in Figure 1. Highways are the major transportation corridors, and Interstate 94 travels through Glendive and the southeast portion of the county. The Yellowstone Valley Railroad (YSVR) and Burlington Northern Santa Fe Railroad (BNSF) also travel through Glendive and the eastern portion of the county.

Figure 1 County Profile



West Glendive is a Census-Designated Place located adjacent to Glendive. Other unincorporated communities in the county are included primarily as reference points. Lindsay has approximately 15 homes, Bloomfield has approximately three homes, and Intake and Hodges are no longer active entities.

Population and Demographics

General demographic information for Dawson County, incorporated communities and Montana is shown in Table 2. The county has a population density that is significantly lower than the state and has a slightly higher proportion of residents aged 65 and older. Nearly all county residents classify themselves as White not Hispanic, were born in the United States and speak English as a primary language. The county's median household income is above the statewide median and the poverty rate is lower.

Approximately half of the county’s residents live in Glendive, and the city shares a similar demographic profile as the county. Richey is much smaller than Glendive and its demographic profile is somewhat unique in the county; it has a significantly higher median income and lower poverty level than the county and city. The 2020 census indicates the populations for Dawson County is 8,940.

Table 4 Population Demographics

	Dawson County	City of Glendive	Town of Richey	Montana
Population	8,940	4,873	164	1,084,225
Persons under 5 years	5.6	8.7	4.8	5.7
Persons under 18 years	21.4	21.5	19.9	21.4
Persons 65 years and over	20.4	18.5	17.7	19.3
White not Hispanic	94.5%	93.2%	89.8	88.9
Hispanic or Latino	3.0%	2.4%	5.4%	4.1%
Black or African American	0.5%	1.4%	0.0%	0.6%
American Indian and Alaska Native	2.4%	3.4%	0.0%	6.7%
Asian	0.6%	0.0%	3.8%	0.9%
Native Hawaiian/Pacific Islander	0%	0.0%	0.0%	0.1%
Two or more races	2.0%	0.9%	3.2%	2.8%
Foreign born	1.7%	1.3	7%	2.2%
Language other than English spoken at home	1.2%	1.2%	7.7%	4.2%
High school graduates, age 25+	93%	90.9%	93.4%	93.6%
Median household income	\$58,596	\$49,141	\$60,000	\$54,970
Persons below poverty level	10.8%	11.4%	10.8%	12.4%
Source: US Census Bureau; 2020 total population, age and race/ethnicity estimates (county and state); ACS 2019 for Glendive and Richey				

Population peaked in Dawson County in 1910 following the 1909 passage of the Enlarged Homestead Act, and again during the oil boom of the late 1960s through early 1980s.

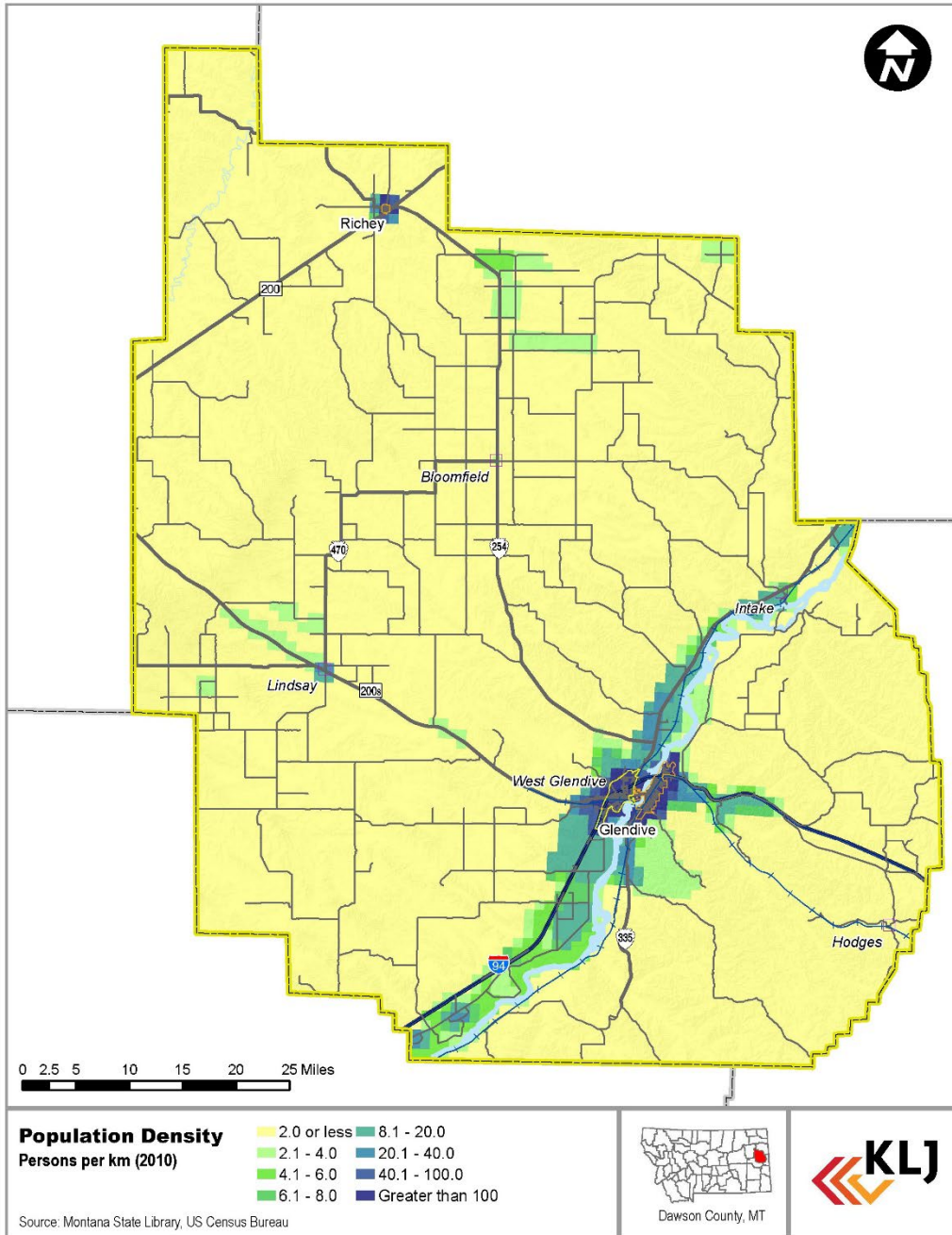
Table 5 Population Change

Jurisdiction	2000	2010	2020
Richey	189	177	164
Glendive	4,729	4,935	4,873
Dawson County	9,059	8,966	8,940

Sources: U.S. Bureau of the Census

Population density is shown in Figure 2. A majority of the county’s population is located along the Yellowstone River, including the incorporated community of Glendive and the unincorporated community of West Glendive. Much of the county is very low density, with two or less persons per square kilometer.

Figure 2 Population Density



Climate and Weather

Dawson County is in the West-Central Semi-Arid Prairies ecoregion as defined by Omernik. The ecoregion has a dry mid-latitude climate, marked by warm summers and cold winters. Aggregated weather statistics for the county are shown in Table 4. Weather extremes in the county are shown in Table 5.

Table 6 Dawson County Aggregated Weather Statistics

	Temperature (°F)		Precipitation (In.)	Snow Fall (In.)
	Avg Daily Max	Avg Daily Min	Avg Monthly	Avg Monthly
Jan	26.4	4.0	0.44	5.8
Feb	31.3	7.7	0.37	4.6
Mar	43.3	19.1	0.65	5.6
Apr	60.1	33.0	1.17	1.9
May	71.2	43.7	2.08	0.4
Jun	80.0	53.0	3.08	0.0
Jul	89.0	58.8	1.80	0.0
Aug	87.8	56.0	1.38	0.0
Sep	75.6	44.8	1.20	0.1
Oct	62.2	33.8	0.85	1.1
Nov	43.4	20.9	0.45	3.6
Dec	30.9	9.6	0.45	5.4
Ann	58.4	32.0	13.94	28.6

Source: NWS Cooperative Network Weather Station, Glendive (High Plains Regional Climate Center); 1893 - 2013

Table 7 Dawson County Weather Extremes, 1893-2020

Daily		
Highest Max Temperature	117 °F	7/20/1893
Lowest Max Temperature	-30 °F	1/11/1912
Highest Min Temperature	82 °F	7/27/1931
Lowest Min Temperature	-50 °F	2/16/1936
Highest Daily Precipitation	5.70"	8/5/1916
Highest Daily Snowfall	13.0"	3/20/1894
Annual		
Wettest Year	21.12"	1906
Driest Year	5.34"	1934
Hottest Average Annual Temperature	50.2°	6/28/1905
Coldest Average Annual Temperature	39.5°	1950, 1904
Greatest Annual Snowfall	75"	1895-1896
Least Annual Snowfall	10.1"	1984-1985

Source: NWS Cooperative Network Weather Station, Glendive

Economy

The agriculture industry in the county is summarized in Table 6. Spring wheat is the most common crop. Cattle and calves make up almost the entirety of the county’s livestock industry.

Table 8 Dawson County Agriculture Summary

Crop (2020)	Acres Harvested	Production
Spring wheat (excluding durum)	195,500	6,628,000 bu
Peas, dry edible	19,200	394,000 cwt
Oats	970	31,700 bu
Livestock (2020)	Inventory	
Cattle and calves	23,500	
Sheep and lambs	1,900	
Source: USDA National Agricultural Statistics Service, 2020		

The top non-farm industries in the county are shown in Table 7. Health Care and Social Assistance, tied to the Glendive Medical Center, leads the county in average employment. Transportation and Warehousing leads the county in average weekly wages. It is important to note that this information is an estimate based on limited surveys and may not give an exact representation of employment levels for different industries. The information is most useful for making relative comparisons between industry sectors.

Table 9 Dawson County Non-Farm Industries by Employment, 2019

Industry Sector	Estimate Employees
Education, Health Care and Social Assistance	1,181
Retail Trade	434
Arts, entertainment, recreation, accommodations, and food services	463
Transportation and Warehousing	544
Wholesale Trade	75
Construction	402
Manufacturing	128
Note: 2019 estimates	
Source: Census ACS 2019	

Property Values and Key Facilities

Assessed values for properties in Dawson County are shown in Table 8. Residential properties are the highest valued structure category in all jurisdictions by a wide margin. Farmsteads, which include houses and surrounding outbuildings, also have a significant value in the county. Structure values are used in subsequent sections to estimate potential vulnerabilities to applicable hazards. Land values may not be as important in most analyses because it is unlikely that most hazard events would significantly damage the land itself.

Table 10 Dawson County Assessed Values

	Dawson County		Glendive		Richey	
Land Use	Structure	Land	Structure	Land	Structure	Land
Residential & Other Property Types	\$416,180,560	\$57,611,331	\$357,705,348	\$46,604,320	\$4,142,534	\$459,914
Exempt*	\$43,862,129	\$19,775,310	\$33,697,962	\$3,966,277	\$780,465	\$75,948
Farmstead	\$57,303,928	\$42,657,519	\$12,151,108	\$3,497,402	\$5,393,100	\$2,652,045
Agricultural	\$0	\$24,680	\$0	\$0	\$0	\$0
Commercial	\$17,980,739	\$1,886,637	\$8,535,180	\$931,919	\$0	\$0
Vacant	\$537,213,942	\$247,776,024	\$1,221,925	\$3,920,021	\$10,321,989	\$4,151,988
Total	\$1,072,541,298	\$369,731,501	\$413,311,523	\$58,919,939	\$20,638,088	\$7,339,895
All Property Types: Apartment Urban, Apartment Rural, Agricultural - Rural, Centrally Assessed Non-Value Property, Exempt Property, Partial Exempt, Farmstead - Rural, Improved Property - Rural, Improved Property - Urban, Industrial - Rural, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Vacant Land - Rural, Vacant Land - Urban, and Blanks Residential & Others includes: Apartment Urban, Apartment Rural, Improved Property - Rural, Improved Property - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, and Blanks Commercial: Industrial - Rural and Centrally Assessed Non-Value Property						
Source: Montana 2021 Tax Assessor Reports						

An important element to hazard mitigation planning is to determine key facilities that may need special consideration during the preparation of mitigation action items and the risk assessment. Key facilities fall into several categories:

- Facilities that are essential to the health and welfare of the entire population, and may become especially important following hazard events. Examples include hospitals, emergency operations centers, police and fire stations, and community shelters.
- Utility systems whose disruption would have a significant impact. Examples include lift stations, wells, water treatment facilities and electrical distribution “choke points.”
- Facilities containing a high density of population, especially those containing vulnerable populations. Examples include schools, retirement homes and large employers.
- Significant hazardous materials facilities, including facilities producing or housing hazardous materials on-site.
- Facilities that are a key element to the local economy, and could cause significant economic damage if their function was disrupted.
- Historic, cultural and natural resource areas that are important to the community.

Key facilities for Dawson County are listed in Table 9. The planning team reviewed the key facilities list in the previous plan and made necessary updates. The facilities are discussed in applicable sections throughout the document.

Table 11 Key Facilities in Dawson County

Facility	Location	Reason for Inclusion
Albertsons Grocery	Glendive	Essential Facility
Armory	Glendive	Essential Facility; Primary

		EOC
BCG/Daycares/Adult Daycares/Mental Health Facility	Various	Vulnerable Populations
Bell Street Bridge	Glendive	Critical Infrastructure; Walking Bridge; Historic
Big Sky Food	Richey	Essential Facility
BNSF Railyard/Fuel Unloading Facilities	Glendive	Economic Asset, Hazardous Materials
Bridges (Interstate 94, Railroad)	Glendive	Critical Infrastructure
Cenex Pipeline	Various	Hazardous Materials
City Hall/Fire/Ambulance	Glendive	Essential Facility
Dawson Community Airport	Glendive	Essential Facility
Dawson Community College	Glendive	Economic Asset, Vulnerable Populations
Dawson County Courthouse/EOC	Glendive	Essential Facility
Dawson County Law Enforcement Center	Glendive	Essential Facility, Vulnerable Populations
Eastern Montana Veterans' Home	Glendive	Vulnerable Populations
Glendive Medical Center, Heritage Assisted Living Center	Glendive	Essential Facility, Vulnerable Populations
Grandview Retirement Home		Essential Facility, Vulnerable Populations (37 residents)
KGLE & KXGN	Glendive	Essential Facility
Levees	West Glendive	Critical Infrastructure
MDU Turbines	Rural	Economic Importance
Richey Fire Hall/Ambulance	Richey	Essential Facility
Schools	4 in Glendive, 2 in Richey, 1 in Lindsay, 1 in Bloomfield, 1 north of Glendive, 1 west of Glendive	Economic Asset, Vulnerable Populations
Sewer system	All Communities	Critical Infrastructure
Towne Street Bridge		Critical Infrastructure
Truck Stop	Rural	Economic Asset, Essential Facility
WAPA junction substation	Rural	Critical Infrastructure
Water plant and distribution system	Glendive	Critical Infrastructure
West Glendive Fire Hall	West Glendive	Essential Facility

Chapter 3: Hazard Profiles and Vulnerabilities

Hazards Overview

Dawson County is subject to numerous natural and human-caused hazards. Many hazards are capable of creating significant levels of damage and having a negative effect on the people, properties, and the economy.

Table 10 lists federal disaster and emergency declarations for Dawson County from 1990 to 2020. While the county may not have been the epicenter of the listed events, it experienced enough of an impact to be included within the declaration boundary.

Table 12 Dawson County Presidential Disaster and Emergency Declarations, 1990-2020

Date	Declaration	Hazard(s)	Damages*
Jan. 20, 2020 & continuing	EM 3476	COVID-19	TBD
Jan. 20, 2020 & continuing	DR 4508	COVID-19	\$44,351,610
March 1, 2014 – March 16, 2014	DR 4172	Ice Jams and Flooding	\$1,925,935.20
May 19, 2013 – June 3, 2013	DR 4127	Flood	\$2,774,452.64
April 4, 2011 - July 22, 2011	DR 1996	Flood, Severe Storm	\$37,459,869
August 29 - October 1, 2005	EM 3253	Hurricane Katrina Evacuation [^]	\$119,960
March 1, 1997 - August 6, 1997	DR 1183	Flood, Severe Storm	N/A
1986	FEMA-761-DR-MT		\$1,996,384
*Damages include public and individual Federal assistance over entire disaster area			
[^] 38 states were included in disaster declaration to supplement local efforts to help Hurricane Katrina evacuees			
Source: FEMA, 2021			

The Spatial Hazards Events and Losses Database for the United States (SHELDUS), maintained by Arizona State University, contains aggregated information from the National Climatic Data Center’s monthly storm data publications. The data includes every reported storm event that caused a fatality or property/crop damage. Table 11 shows summarized SHELDUS statistics for Dawson County. This information does not include every storm event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy on the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events. Detailed information regarding storm events can be found in each corresponding hazard profile.

Table 13 Summary of Dawson County Natural Hazard Events, 1960-2020

Severe Summer Storm	79 events
Severe Winter Storm	22 events
Flood	14 events
Wildfire	1 event
Note: All natural hazard events that caused reported damages or injuries/fatalities	
Source: SHELDUS, 2021	

Additional hazard statistics for recent years are provided from the NOAA National Climatic Data Center’s Storm Data and Unusual Weather Phenomena database. The Storm Data and Unusual Weather Phenomenon database provides a comprehensive list of weather events and provides greater narrative description than SHELDUS.

The 2018 Montana Multi-Hazard Mitigation Plan served as the basis for selecting the hazards that are profiled in this chapter. Earthquake and volcanic eruption are featured in the statewide plan and not profiled in this document due to the limited risk found in the county.

Profiled natural hazards:

- Drought
- Flood
- Landslide
- Severe Summer Storm
- Severe Winter Storm
- Wildfire

Profiled human-caused/technological hazards:

- Communicable Disease
- Hazardous Materials Release
- Terrorism and Violence

Natural hazards are listed first, followed by human-caused/technological hazards. Each profiled hazard includes the following information:

- **Hazard Profile:** Definition of the hazard and general overview.
- **Location:** Location is the geographic areas within the planning area that are affected by the hazard.
- **Extent:** Extent is the strength or magnitude of the hazard
- **Local Risk and Probability:** Previous occurrences and specific risk for the jurisdiction.
- **Vulnerabilities:** Vulnerability analysis of population, key facilities and property.
- **Existing Capabilities:** Current actions taken by the jurisdiction to address the hazard.
- **Key Issues:** The primary issues that affect the jurisdiction and the basis for determining action items.
- **Potential Action Items:** A preliminary list of action items to address key issues. These items are refined and prioritized in the mitigation strategy section of the plan.

The profiles include an analysis of the probability and impact of each event to determine overall hazard risk.

Drought

Overall Risk:	Medium (all jurisdictions)
Probability:	Medium (Significant hazard event is likely to occur within 25 years)
Magnitude:	Medium
Seasonal Pattern:	None
Duration:	Months/Years
Speed of Onset:	Slow
Identified Impacts:	Agricultural loss (crops, livestock)
	Economic loss
	Increased wildfire potential
	Loss of potable water
	Pest infestation

Hazard Profile

Drought is generally defined as a deficiency of precipitation over an extended period. If severe enough, this deficiency has potential to reduce soil moisture and water below the minimum necessary for sustaining plant, animal and human life systems. It is a normal, recurrent phenomenon that takes place in nearly all climate zones. Droughts appear gradually, and it is often difficult to pinpoint their beginning and end. Droughts can last multiple years, and even persist over decades. Significant droughts in the Northern Great Plains region over the previous 100 years are shown below.

- 1917-1923
- 1929-1940
- 1958-1961
- 1976-1977
- 1980-1981
- 1988-1992
- 2000-2008
- 2017-2018
- 2020-2021

Droughts are often measured by impacts, most notably agricultural damage and municipal water supplies shortage. The impacts are highly variable based on time of year, amount of stored water in the soil and meteorological factors such as temperature, humidity and wind. Impacts are also greatly affected by human factors such as local water demand and water management practices.

The drought cycle often begins long before any impacts. A typical drought may begin with limited winter snowfall. This might be followed by below average precipitation in the spring. The initial impact would be a lack of normal spring greening, resulting in fire danger and presenting a challenge for the livestock industry. Spring planting plans may be affected next, which would impact farmers as well as agriculture-related businesses. These effects would be compounded if the drought extended through the summer. Extended drought would affect water-related

recreational opportunities, hydro-electric power production and municipal water supplies.

Grasshopper populations also tend to increase during dry cycles. Grasshoppers present a threat to crops and rangeland, and they can cause catastrophic damage in a short period of time.

Location

The entire county can be impacted by drought.

Extent

The United States Drought Monitor has a map that identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental or economic effects. D0 areas are not in a drought but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal.

Table 14 National Integrated Drought Information System Alerts for Droughts

Alert	Criteria	Palmer Drought Index
D0 Abnormally Dry	Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered.	-1.0 to -1.9
D1 Moderate Drought	Some damage to crops, pastures, streams, reservoirs, or wells low, some water shortages developing or imminent, and voluntary water-use restrictions requested.	-2.0 to -2.9
D2 Severe Drought	Crop or pasture losses are likely, water shortages common and water restrictions imposed.	-3.0 to -3.9
D3 Extreme Drought	Major crop and pasture losses with widespread water shortages or restrictions.	-4.0 to -4.9
D4 Exceptional Drought	Exceptional and widespread crop and pasture loss, shortages of water in reservoirs, streams, and wells creating water emergencies.	-5.0 or less

Source: U.S. Drought Monitor Classification Scheme, from the United States Drought Monitor

The Palmer Drought Severity Index (PDSI) developed by Wayne Palmer in 1965, measures drought severity using temperature, precipitation and soil moisture. The PDSI has become the "semi-official" drought index as it is standardized across various climates. The index uses zero as normal and assigns a number between 6 and -6, with dry periods having negative numbers and wet periods expressed using positive numbers (NDMC 2006)

Table 15 Palmer Drought Severity Index (NDMC 2006)

4.0 or more	Extremely wet
3.0 to 3.99	Very wet
2.0 to 2.99	Moderately wet
1.0 to 1.99	Slightly wet
0.5 to 0.99	Incipient wet spell
0.49 to -0.49	Near normal

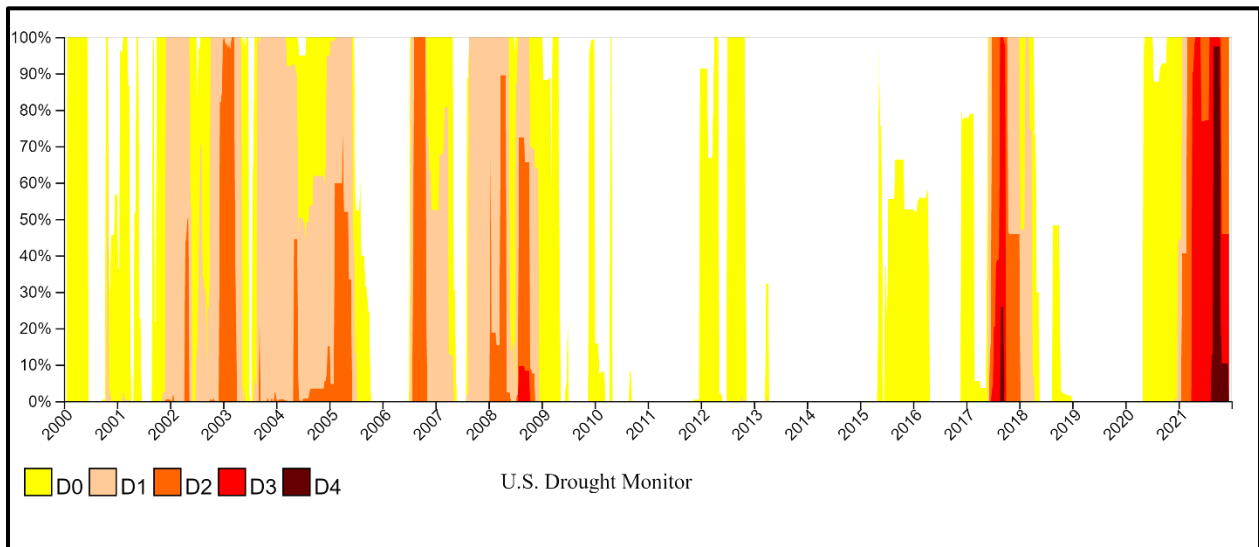
-0.5 to -0.99	Incipient dry spell
-1.0 to -1.99	Mild drought
-2.0 to -2.99	Moderate drought
-3.0 to -3.99	Severe drought
-4.0 or less	Extreme drought

Damage can also be measured by damage to the agriculture industry including reduced rangeland productivity, forced reduction of foundation stock, reduced grazing availability on public lands, cost of acquiring supplemental feed or finding new pasture, disruption of reproduction cycles, high cost/unavailability of water for livestock, and wildfire threat to rangeland, increased fuel and labor costs associated with replanting second crops, and reduced revenues to main street businesses in agricultural communities.

Local Risk and Probability

It is difficult to predict when a drought will appear. Historic trends show that wetter-than-normal periods tend to alternate with drier-than-normal periods; however, numerous factors beyond rainfall contribute to drought status. In response, scientists have developed several indices that assimilate data regarding rainfall, snowpack, streamflow and other water supply indicators. The indices are aggregated by the National Drought Mitigation Center at University of Nebraska – Lincoln (UNL). UNL developed the US Drought Monitor, which reports drought status on a weekly basis. Up-to-date information is available at <http://droughtmonitor.unl.edu/>.

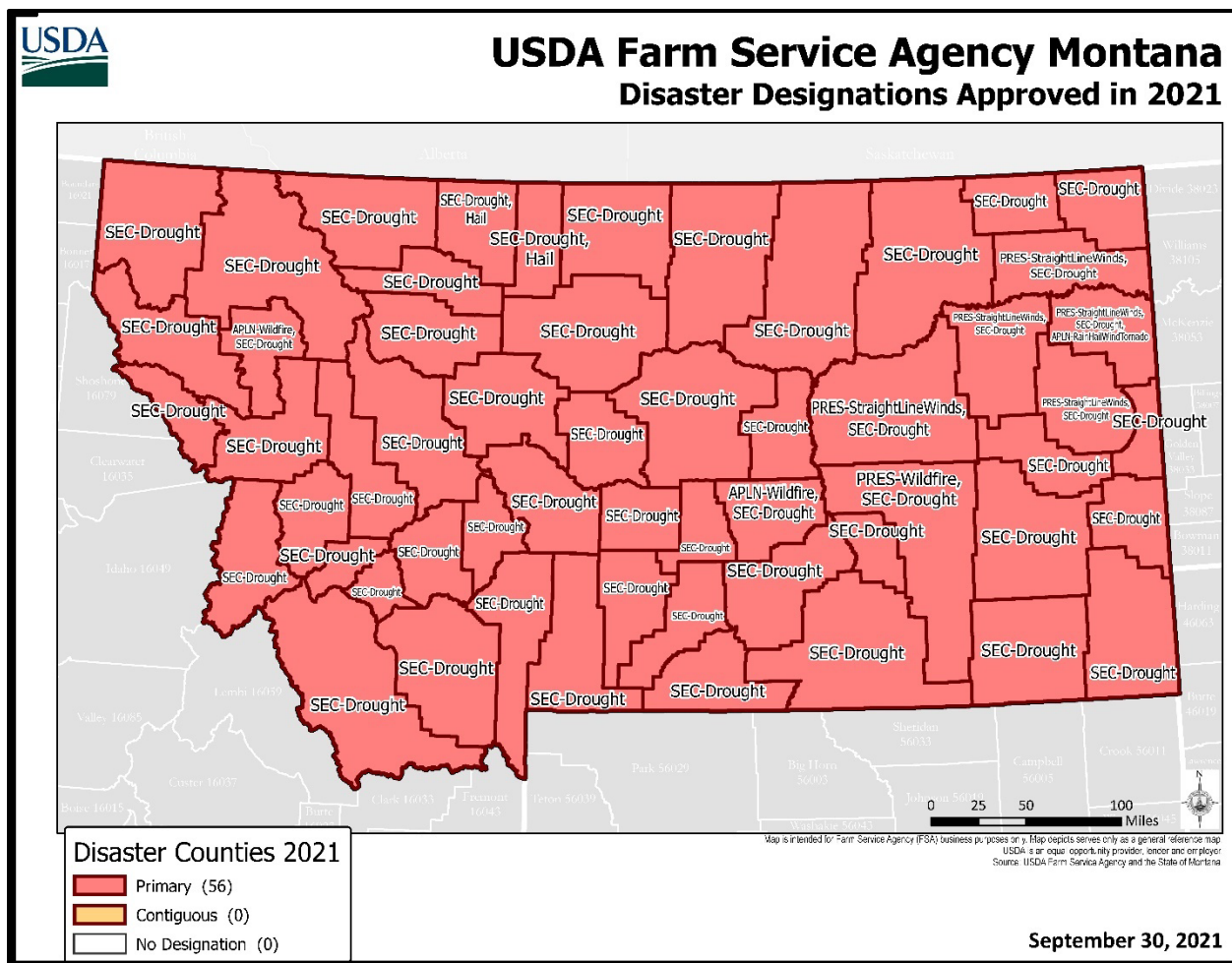
Figure 3 Dawson County Historical Drought Conditions, 2010 to 2021



Source: <https://www.drought.gov/states/montana/county/dawson>

It is important to note there is no apparent pattern of drought impacts, as 2018, 2008, 2004 and 1990 (large impact years) were followed and/or preceded by years with minimal drought. Drought conditions will return to the county at some point in the future, but it is impossible to confidently predict the exact timing and severity of these events.

Figure 4 Montana Drought Declaration, 2021



According to the National Weather Service, the average annual precipitation in Glendive is 13.94 inches. The lowest annual precipitation recorded since 1893 is 4.26 inches in 1905.

Vulnerabilities

Population

Drought has no direct impact on human life, but it greatly increases the risk of wildfire, which is a potentially life-threatening hazard. Drought accompanied by high temperatures can increase the threat of heat-related illness for persons who spend a significant amount of time outdoors or do not have adequately-cooled homes. The temperature in Dawson County reached 117 degrees Fahrenheit in July of 1893, which ties Medicine Lake for the hottest temperature ever recorded in the state.

Elderly persons are at increased risk of heat-related illness. Approximately 8,940 people live in the county, 20.4% of which are 65 years of age or older. One recorded fatality in SHELDUS was attributed to an extreme heat event in 2018.

Prolonged drought could also affect municipal water supplies. Bottled water could be brought in as an emergency measure, but a lack of household water could create health and sanitation issues for residents. There is no history of significant municipal water shortage in the county.

Key Facilities

No key facility in Dawson County is physically impacted by drought.

Property

Drought has no direct impact on structures, but it can have a significant economic impact on agriculture and related industries.

The drought that lasted throughout the 1930s produced the greatest yield reduction for crops within the county; however, modern farming practices make it unlikely that an equivalent drought would produce such dramatic yield decreases. In the event of a prolonged drought, it can be assumed that harvested acreage would decrease as wheat production becomes less viable, which would amplify the drought’s economic impact on farmers.

Table 16 Drought Crop Impacts in Dawson County

Year	Spring Wheat Yield (bu/acre)	Spring Wheat (acres harvested)
2021	8.8	129,300
Year	Spring Wheat Yield (bu/acre)	Spring Wheat (acres harvested)
2008	25	144,000
1988	9	50,000
1980	14	103,800
1959	8.4	73,300
1934	3.5	53,000

Source: USDA National Agricultural Statistics Service

It is more difficult to measure direct economic loss for livestock producers. Cattle and calves numbers regularly fluctuate based on a wide number of factors. Dawson County has had an average inventory of 45,429 head since 2000 according to the USDA National Agricultural Statistics Service. Although producers generally reduce their herds in times of prolonged drought, cattle numbers in Dawson County have seemingly not been significantly impacted by past droughts. The biggest drought year in recent history was 2021. There were 23,500 head recorded for 2021. However, there were 23,500 head in 2020; 24,000 head in 2019; 24,500 head in 2018; 25,500 head in 2017; 25,500 in 2016; and 25,500 head in 2015. It is not entirely plausible that drought influenced the reduced number of cattle given these trends.

Livestock numbers, however, do not show the complete picture of drought impacts on livestock producers. There are other less measurable impacts from drought, including:

- Reduced rangeland productivity
- Forced reduction of foundation stock
- Reduced grazing availability on public lands
- Cost of acquiring supplemental feed or finding new pasture
- Disruption of reproduction cycles
- High cost/unavailability of water for livestock

- Wildfire threat to rangeland

Beyond agricultural impacts, there is also a greater threat of structure damage in a drought-affected area, as drought increases the risk of wildfire and may create water shortages that inhibit adequate fire response.

Existing Capabilities

The county's Emergency Operations Plan has a drought section that addresses drought emergency procedures.

The USDA Farm Service Agency and Montana State University Extension both have a field office located in Glendive. Both offices offer seminars and general education relating to drought management best practices. The USDA Farm Service Agency field office assists with the distribution of drought indemnity payments to agricultural producers.

Future Development/Trends and Impact on Hazard

The impact of future development on the drought hazard would be through limiting groundwater resources. The Montana DEQ carefully monitors and regulates public water systems, the impact of future development with respect to drought is considered low.

Key Issues and Potential Action Items

Key Issue: Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole.

- *Potential Action Item:* Encourage coordination among water suppliers, water managers and water users.
- *Potential Action Item:* Continue supporting the USDA Farm Service Agency and Montana State University Extension and provide assistance as needed to local farmers and ranchers.

Key Issue: A significant and prolonged drought could affect municipal water supplies.

- *Potential Action Item:* Educate residents in town about water saving techniques to help preserve municipal water supplies.

Flood

Overall Risk:	High (county, Glendive), Low (Richey)
Probability:	Medium (county, Glendive), Low (Richey) (Significant hazard event is likely to occur within 25 years)
Magnitude:	High (county, Glendive), Low (Richey)
Seasonal Pattern:	March - October
Duration:	One week
Speed of Onset:	Varies depending on type of flood event
Identified Impacts:	Agricultural loss (crops, livestock)
	Blocked roads
	Economic loss
	Human loss and injuries
	Increased stress on medical services
	Localized evacuation
	Permanent loss of businesses
	Power loss
	Property damage or loss
	Release of hazardous materials
	School closure

Hazard Profile

Floods are part of the Earth’s natural hydrologic cycle. The cycle circulates water throughout the environment and maintains a balance between water in the air, on the surface and in the ground. A flood occurs when the hydrologic cycle becomes temporarily out of balance. Primary causes of flooding include heavy rain/flash flooding, rapid snowmelt/ice jams and increased seasonal moisture. Flooding can occur in riverine zones or flat areas that lack adequate drainage.

Typical insurance policies do not cover flood damages, so FEMA created the National Flood Insurance Program (NFIP) to provide flood insurance for property owners. Participation in the NFIP is based on an agreement between communities and FEMA. The NFIP makes flood insurance available to residents in communities that adopt and enforce floodplain management ordinances and follow other basic requirements.

A Flood Insurance Rate Map (FIRM) is created to determine flood insurance rates for each participating community. The FIRM identifies Special Flood Hazard Areas (SFHA) that have a one percent annual chance of flooding. These areas are commonly referred to as the 100-year floodplain. Areas outside of the SFHA are considered to be in the Non-Special Flood Hazard Area (NSFHA). Structures in the NSFHA may still be at risk from flooding, as one in every four floods occurs in an NSFHA. Flood insurance is required for all property owners who acquire a loan from a federally regulated, supervised or insured financial institution for the acquisition or improvement

of land, facilities or structures located within SFHA.

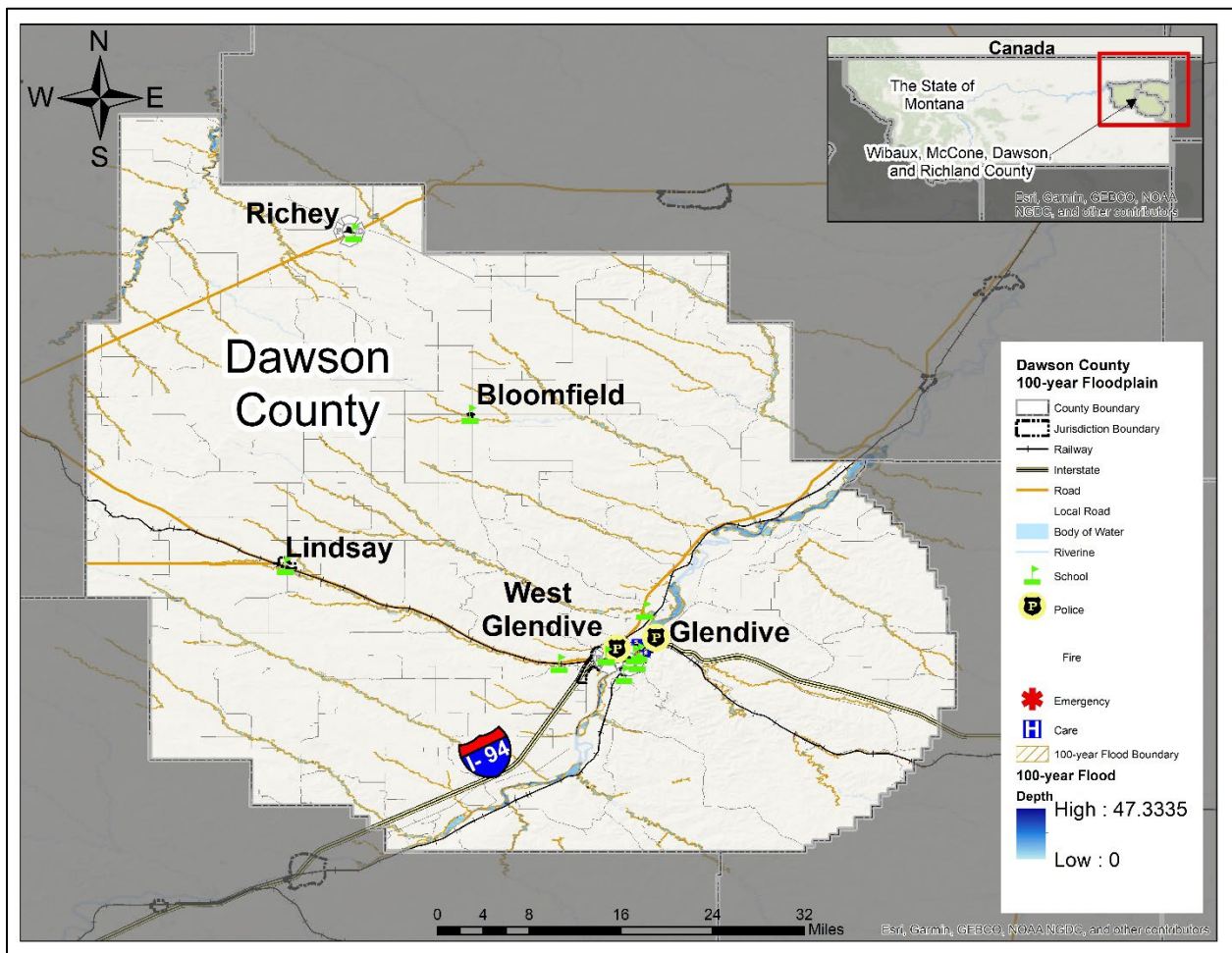
Location

The Yellowstone River, which travels through Glendive and the southeast portion of the county, is the primary flooding hazard in the area. The Redwater River travels through the northwest portion of the county but impacts from the river are limited due to the area’s low population density.

Extent

The state measures the magnitude of a flood in terms of severity; how much precipitation occurred and under what conditions, how many evacuations were required, and level of response necessary. Terms used to convey a flood’s magnitude are 100-year flood and 500-year flood. A 100-year flood has a 1% chance of occurring in any given year and a 500-year flood has a .2% chance.

Figure 5 100-year Floodplain



Local Risk and Probability

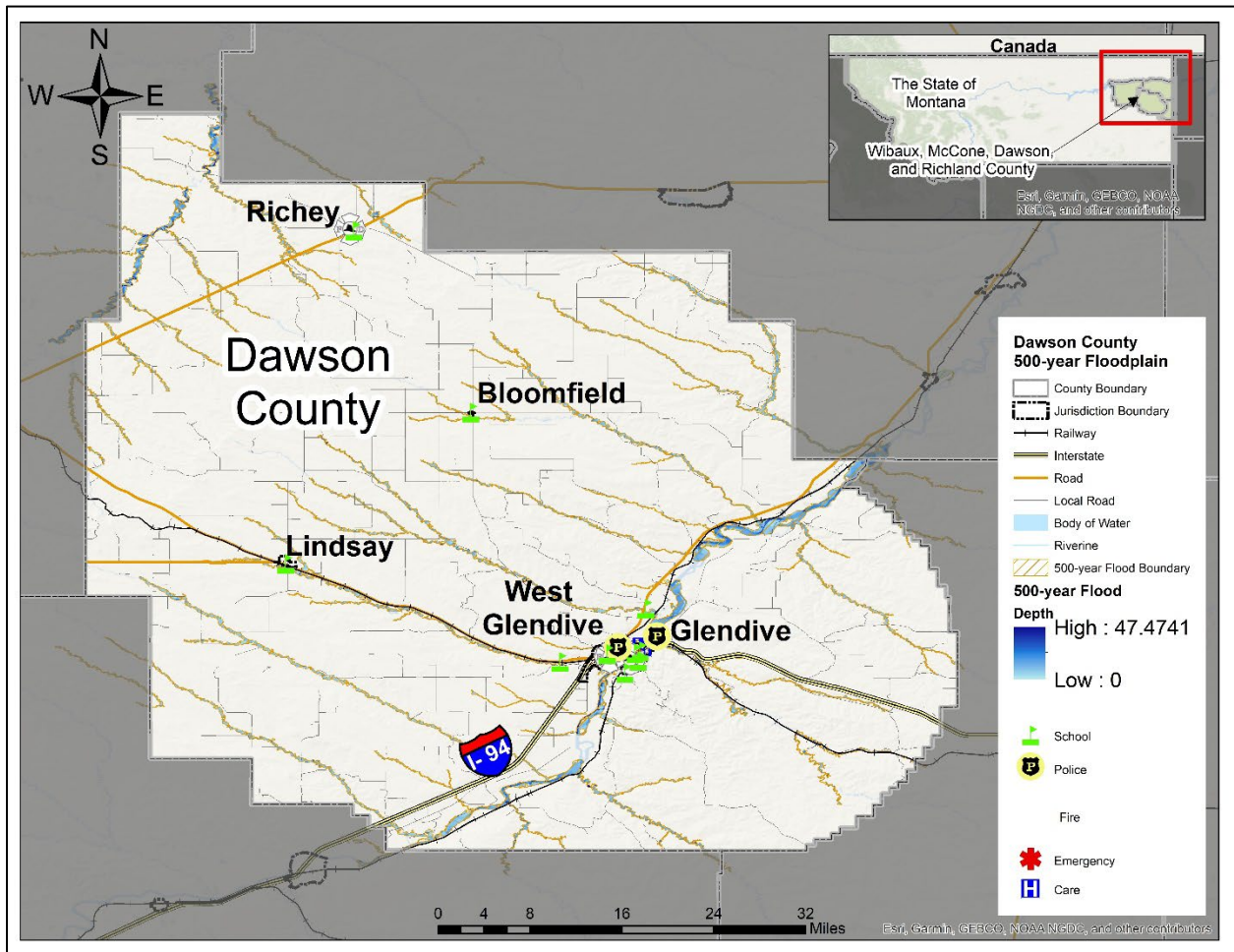
Riverine flooding in the county is most commonly caused by heavy rain/flash flooding, snow melt/ice jams and increased seasonal moisture.

Flash flooding is a significant hazard for the county. Flash flooding can present a risk to people and property due to its rapid onset, often with little or no warning. Flash flooding can overwhelm

drainage systems and cause roads to flood. People in low-lying areas who do not seek high ground can be swept away if a fast-moving current develops. Flash flooding centered around Glendive and West Glendive can temporarily overburden the Yellowstone River and cause localized riverine flooding.

Snow melt/ice jams are common in the county during the spring months. Ice jams are generally caused by prolonged cold periods followed by a rapid increase in temperatures. According to the state Multi-Hazard Mitigation Plan, Montana leads the nation with the most reported ice jams with 4,514, and Glendive has the eighteenth most in the state.

Figure 6 500-year Floodplain



The US Army Corps of Engineers (USACE) Cold Regions Research and Engineering Laboratory (CRREL) monitors the gaging station on the Yellowstone River near Glendive. According to USACE CRREL there have been multiple ice jams (excluding duplicate reports) near Glendive since 1932. A Floodplain Management Plan created by USACE in 2002 noted that 16 deaths have occurred in Dawson County due to ice jam flood events.

The most recent ice jam occurred in March 2020, however, the most recent ice jam with notable property damage occurred in March of 2014. A Glendive Area ice jam resulted in water and ice flowing onto the nearby Marsh Road taking out several power poles. Other reported impacts

included the removal of at least one 1,000-gallon propane tank from its base and water and ice impacting Toepke Park Baseball Complex. Other recent ice jams in the Glendive area occurred in 2018, 2014, 2009, 2003, 1998, 1997, 1996 and 1994.



Ice jam flooding along the Yellowstone River near Glendive.
Source: Dawson County 2005 PDM Plan

Table 17 Ice Jams

City	River	Jam date	Jam type	Damages
Glendive	Yellowstone River	03/02/2020	Breakup	-
Glendive	Yellowstone River	03/20/2019	Break-up	-
Glendive	Yellowstone River	03/23/2018	Break-up	-
Glendive	Yellowstone River	03/10/2017	Unknown	-
Glendive	Yellowstone River	03/12/2015	Break-up	-
Glendive	Yellowstone River	03/10/2014	Break-up	evacuated trailer park, helicopter rescue, power lost to 30 homes
Glendive	Yellowstone River	12/28/2011	Unknown	-
Glendive	Yellowstone River	03/14/2011	Break-up	-
Glendive	Yellowstone River	03/20/2009	Break-up	Unknown
Glendive	Griffith Creek	05/13/2007	Unknown	-
Glendive	Griffith Creek	03/08/2004	Unknown	-
Glendive	Yellowstone River	12/01/2003	Unknown	-
Glendive	Griffith Creek	03/17/2003	Unknown	-
Glendive	Yellowstone River	03/17/2003	Unknown	-
Glendive	Yellowstone River	03/16/2003	Break-up	-
Glendive	Yellowstone River	03/09/1998	Break-up	Lowland flooding
Glendive	Griffith Creek	03/08/1997	Unknown	-
Glendive	Yellowstone River	02/18/1997	-	-
Glendive	Yellowstone River	02/11/1996	Break-up	Flooding
Glendive	Yellowstone River	03/05/1994	-	Dike nearly overtopped, 60 cattle died
West Glendive	Yellowstone River	12/29/1992	-	-
Glendive	Yellowstone River	02/21/1982	-	-
Glendive	Yellowstone River	03/15/1972	-	Severe flooding
Glendive	Yellowstone River	01/01/1969	-	Highway, sewage pump sta., oil well supply flooded
Glendive	Yellowstone River	01/01/1962	Break-up	Pier cracked
West Glendive	Yellowstone River	03/19/1959	Break-up	\$25K USD
Glendive	Yellowstone River	04/01/1943	Break-up	Severe flooding affecting

				farmers
Glendive	Yellowstone River	01/01/1936	-	-
Glendive	Yellowstone River	01/07/1934	-	-
Glendive	Yellowstone River	03/23/1932	-	-
Glendive	Yellowstone River	04/01/1904	Unknown	-

Source: <https://icejam.sec.usace.army.mil/>

Another notable ice jam occurred in March 2011. An ice jam was reported on the Yellowstone River at the Interstate 94 bridge north of Glendive. Reported impacts were primarily lowland flooding in surrounding agricultural lands, and equipment such as tractors and cars had to be moved to higher ground. The Buffalo Rapids pumphouse was flooded and incurred \$400,000 worth of damage. Flood waters did not encroach into the Glendive and West Glendive urban area.

A major flood event in 2011 occurred due to increased seasonal moisture. Rainfall across the area in May 2011 was 300 to 600 percent of normal, which caused flooding impacts throughout the county. Many gravel roads near the Yellowstone River became impassable, and the Barry Street underpass in Glendive was inundated with four to five feet of water. The river stage at the Glendive monitoring station reached 56.38 feet (2.88 feet above flood stage). Additionally, several small creeks and streams throughout the county that fed into the Yellowstone River were out of their banks.

During ice jams and extreme flooding, Marsh Road floods trapping residents in the Cottonwood Grove neighborhood. The area is not conducive to levees or other water diversion methods. There is also concern that Penninger Park is eroding into the Yellowstone River.

Dawson County and the City of Glendive are both NFIP participants. NFIP participation for each jurisdiction is summarized in Table 16. Flood insurance claims in the county have been minimal. There are no repetitive loss properties.

Table 18 NFIP Participation in Dawson County

Jurisdiction	Policies in Force	Total Coverage	Insurance Claims Since 1978	Total Paid Since 1978	Floodplain Administrator	Enforced Floodplain Management Ordinances
Dawson County (unincorporated areas)	4	\$1,676,500	0	\$0	Yes	Yes
City of Glendive	5	\$711,300	5	\$11,739	Yes	Yes
Note: Policy and claim information as of 9-30-2021						
Source: NFIP, 2021						

FIRMs (Flood Insurance Rate Maps) are available for a majority of the area along the Yellowstone River, including the Glendive and West Glendive area. The FIRM in Glendive is effective as of 1980 and in West Glendive as of 1999. The rest of the county is not officially mapped. Hazus-MH software from FEMA uses topography to estimate the floodplain for areas that do not have a FIRM. The information is based solely on computer model estimates and does not consider flood events or detailed localized surveys. Richey is not in a flood hazard area.

Figure 7 depicts potential damages from a 500-year flood event. As shown on the map, the Glendive flood hazard area is along low-lying areas at the western portion of the town. The

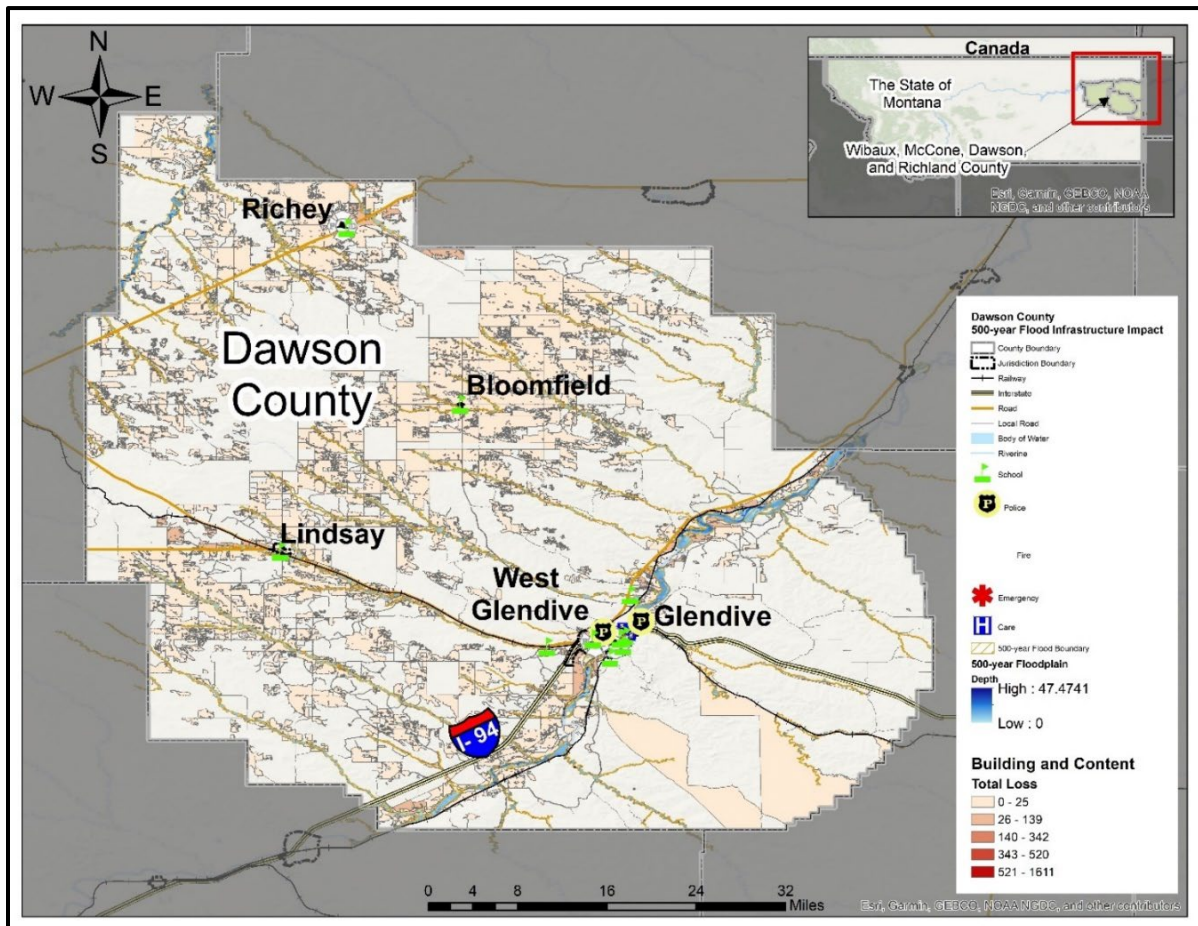
southwest area of Glendive has the greatest mapped flood risk. Dikes along the Yellowstone River significantly reduce the flood risk for West Glendive.

As shown in Table 17, the SHELUDS database reports 14 flood events in Dawson County between 1960 and 2020. Six of the events occurred in June, five in March and one each in February, August and September. This information does not include every flood event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy on the county level. SHELUDS statistics are most useful for comparing relative occurrences of storm events.

Table 19 Flood Events in Dawson County, 1960-2020

Events*	14
Annual Probability	23.3%
Injuries**	0.08
Fatalities**	0
Damages**	\$3,605,808.90
Source: SHELUDS, 2021	
*Events causing recorded injuries/fatalities or damages	
**Total taken from entire disaster area and divided by number of affected counties	

Figure 7 500-year Flood Impact



The NOAA National Climatic Data Center's Storm Data and Unusual Weather Phenomena database provides more detailed information about storm events in the county. There were 9 flood events reported in the county between May 2013 and September 2019 (excluding duplicate same-day reports). These events featured the following as the primary contributing element(s):

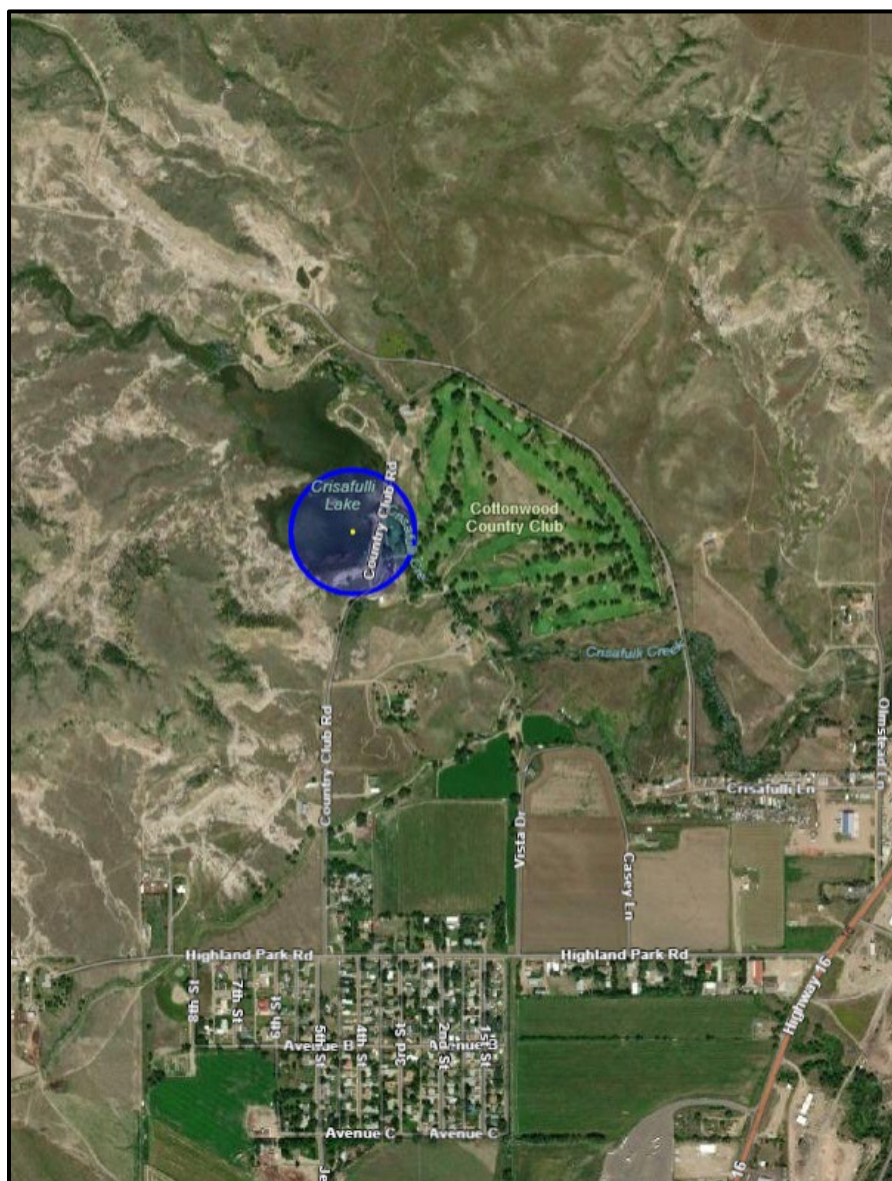
- 6 featured heavy rain/flash flooding
- 3 featured an ice jam/rapid snowmelt

Dams and Levees

Dams

There is one high hazard dam in Dawson County, which is located on Crisafulli Lake and owned by Cottonwood Country Club. It is an earth dam with storage capacity of 133 acre/feet.

Figure 8 High Hazard Dam



Levees

There are two major levees in Dawson County as depicted in the figure below: 1) The Glendive - Yellowstone Right Bank (RB) non-federal levee system; and 2) The West Glendive Left Bank (LB) levee system.

Figure 9 Levee Systems



Figure 10 Glendive Levee System Impact Area



The Glendive - Yellowstone Right Bank (RB) non-federal levee system is located along the right bank of the Yellowstone River near the City of Glendive, Montana in Dawson County in eastern Montana. The levee system consists of 0.9 miles of earthen levee that operates in conjunction with railroad embankments. The levee ties off to the BNSF railroad embankment on both the upstream and downstream ends. The embankments for Highway 335 and the BNSF Railroad are associated features of the levee system and aid in the level of protection provided by the levee system. This project also includes necessary drainage structures to convey drainage from the protected area, rock protection on the channel and levee slopes in areas susceptible to erosion, and sod growth on levee slopes. The levee height averages 6 feet, with a crest width of 10 feet and side slopes of 1 Vertical: 3 Horizontal.

The Glendive - Yellowstone RB levee was a county-authorized levee built in 1957 and raised 4 feet in 1969 after an ice jam overtopping event. The levee was accepted into the PL84-99 Rehabilitation and Inspection Program in 2000. The non-federal sponsor responsible for operations and maintenance is the Cottonwood Grove Levee Association.

Table 20 Glendive Levee Impacts

Population	Buildings	Property Value
62	37	6.05 million

Source: National Levee Database: <https://levees.sec.usace.army.mil>

and crushed rock surfacing on levee crowns, ramps and turnouts. Construction of the federally constructed project was completed in 1959. The non-federal sponsor responsible for operations and maintenance of the levee system is the Dawson County Board of Commissioners.

Table 21 West Glendive Levee Impact

Population	Buildings	Property Value
681	231	\$49 million

Source: National Levee Database: <https://levees.sec.usace.army.mil>

Vulnerabilities

Population

Vulnerable populations can be determined by analyzing the intersections of floodplains and census blocks. Population is taken from 2010 census block statistics (2020 Census data was not available during the update).

The vulnerable population figures in rural areas of the county are a very rough estimate. Many census blocks, especially in rural areas, are hundreds of acres and only partially bisected by the floodplain. This makes it difficult to get a precise measurement of the amount of residents living in a floodplain.

- 5,484 residents in rural Dawson County live in a census block bisected by a floodplain.
- 686 residents in Glendive live in a census block bisected by a floodplain.
- 226 residents in West Glendive live in a census block bisected by a floodplain.
- There is a large trailer park directly behind the west Glendive Levee that is considered to be in FEMA’s regulatory floodplain.

It is important to note that most of these residents most likely do not live in a specific floodplain area, but it is impossible to determine with certainty due to the large size of most census blocks in the county. Also note that this analysis does not differentiate between 100-year and 500-year floodplains due to the generally large size of census blocks.

This analysis focuses on residents living in floodplain areas, but all people who travel through the county are vulnerable to flooding due to the road hazards that are common during flood events.

Key Facilities

Only a few key facilities within the county are located within a floodplain. The key facilities located within the 100-year floodplain are:

- Assembly of God Church (shelter)

The key facilities located within the 500-year floodplain are:

- Washington Elementary
- Dawson County High School and athletic fields

In addition to these structures, several bridges and one railroad bridge also cross the Yellowstone River and could be damaged during a severe flood event. In October 2013, the US Army Corps of Engineers issued a draft report for a flood study of the Yellowstone River at Glendive. The report indicated that a 250-year flood event would necessitate precautionary closure of the

Interstate 94 bridge at Glendive, and a 500-year flood event would inundate the bridge. Facilities not specifically listed in FEMA-designated floodplain may also be at risk from localized flash flooding events or from prolonged erosion from flood events.

Property

Property losses in the county can be estimated by utilizing FEMA FIRMs, Hazus-MH modeled floodplains and property value data compiled by the tax assessor data. Values for properties within the 100-year floodplain are shown in Table 20. It is important to note that many properties are partially bisected by the floodplain, but it is not possible to determine how many actual structures are within the hazard area. All properties that are bisected by the floodplain are included in the analysis.

Table 22 Dawson County Properties within 100-Year Flood Hazard Area

Dawson County				
Land Use	Number of Properties	Total Value (Land & Structures)	Properties with Structures	Structure Value
Residential & Other Property Types	147	\$15,526,389	101	\$14,198,203
Exempt*	125	\$3,382,922	0	\$0
Farmstead	227	\$30,880,872	223	\$17,627,260
Agricultural	1	\$24,680	0	\$0
Commercial	2	\$186,201	0	\$0
Vacant	725	\$29,021,056	0	\$0
Total	1,227	75,144,539	364	33,225,898
Glendive				
Land Use	Number of Properties	Total Value (Land & Structures)	Properties with Structures	Structure Value
Residential & Other Property Types	68	\$11,721,057	66	\$10,920,661
Exempt*	1	\$11,587	0	\$0
Farmstead	20	\$5,727,458	19	\$4,254,090
Agricultural	0	\$0	0	\$0
Commercial	1	\$113,952	0	\$0
Vacant	14	\$157,382	0	\$0
Total	104	\$17,731,436	85	\$15,174,751
Richey				
Land Use	Number of Properties	Total Value (Land & Structures)	Properties with Structures	Structure Value
Residential & Other Property Types	0	\$0	0	\$0

Exempt*	0	\$0	0	\$0
Farmstead	11	\$1,680,001	11	\$1,224,110
Agricultural	0	\$0	0	\$0
Commercial	0	\$0	0	\$0
Vacant	1	\$111,370	0	\$0
Total	12	\$1,791,371	11	\$1,224,110
All Property Types: Apartment Urban, Apartment Rural, Agricultural - Rural, Centrally Assessed Non-Value Property, Exempt Property, Partial Exempt, Farmstead - Rural, Improved Property - Rural, Improved Property - Urban, Industrial - Rural , Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Vacant Land - Rural, Vacant Land - Urban, and Blanks				
Spatial Analysis, Montana 2021 Tax Assessor Data, https://svc.mt.gov/msl/mtcadastral				

The Corps of Engineers draft flood report from October 2013 indicates that expected annual flood damages in the Glendive area are \$1,243,570, with 75 percent of the damages occurring in West Glendive. Expected annual damages are the monetary value of physical damages and non-physical losses that can occur in any given year. They are computed by considering the magnitude of damages and the annual chance of occurrence.

A 2002 Corps of Engineers study estimated it would cost approximately \$10 to \$12 million to relocate existing properties out of the floodplain in Glendive. When considering the inflated cost of real estate in the city, it is estimated the current cost would be over \$70 million.

There are 4 NFIP policies-in-force in rural areas of the county with a total coverage of \$1,676,500, and 5 NFIP policies-in-force for properties in Glendive with a total coverage of \$711,300. The Corps of Engineers draft flood report from October 2013 indicates that there are 58 residential structures in the Glendive floodplain, so the amount of NFIP insured properties will most likely increase in the future as new mortgages are placed on these structures due to changes in ownership or refinancing. There are no projected growth areas within a floodplain.

HAZUS

HAZUS-MH Aggregate Loss Analysis HAZUS-MH was used to estimate the damages for a **100-year flood event** in Dawson County.

100-Year HAZUS Study

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 15 households (or 44 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood.

Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1.43 million dollars. 48% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 43.63% of the total loss.

Table 23 Building-Related Economic Loss Estimates (Millions of Dollars): 100-year Flood

	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	.67	0.07	.02	.00	.76
	Content	0.31	0.27	.04	.04	.66
	Inventory	0.00	.01	.01	.00	.01
	Subtotal	0.97	.35	.07	.05	1.43
Business Interruption						
	Income	.00	.28	.00	.02	.31
	Relocation	.19	.16	.00	.00	.35
	Rental Income	.04	.12	.00	.00	.16
	Wage	.00	.45	.00	.06	.51
	Subtotal	.23	1.01	.00	.08	1.32
All	Total	1.20	1.36	.07	.13	2.76

Table 24 Expected Damage to Essential Facilities 100-year Flood

	Total	# of Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Emergency Operations Center	1	0	0	0
Fire Stations	3	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	12	0	0	0

500-Year HAZUS Study

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 28 households (or 84 of people) will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses

associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 3.16 million dollars. 45% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 41.26% of the total loss.

Table 25 Building-Related Economic Loss Estimates (Millions of Dollars): 500-year Flood

	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	1.27	.20	.04	.02	1.52
	Content	.69	.69	.07	.14	1.59
	Inventory	0.00	.03	.01	.00	.05
	Subtotal	1.96	.91	.12	.16	3.16
Business Interruption						
	Income	.00	.51	.00	.05	.56
	Relocation	.31	.31	.00	.00	.63
	Rental Income	.10	.23	.00	.00	.33
	Wage	.00	.81	.00	.27	1.08
	Subtotal	.41	1.86	.00	.32	2.60
All	Total	2.38	2.78	.12	.48	5.76

Table 26 Expected Damage to Essential Facilities 500-year Flood

	Total	# of Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Emergency Operations Center	1	0	0	0
Fire Stations	3	0	0	0
Hospitals	1	0	0	0
Police Stations	3	0	0	0
Schools	12	0	0	0

Existing Capabilities

The Corps of Engineers is currently studying the flood risk in the Glendive/West Glendive area. The study will result in a more detailed understanding of the area’s flood risk, along with specific recommendations to mitigate the impact of flood events.

Street drainage within Glendive and Richey is generally adequate, although some low-lying roads are occasionally inundated with water following a heavy rain event.

Glendive and the county have a floodplain administrator and floodplain ordinances that are actively enforced. The floodplain administrator also provides educational materials about floodproofing techniques, living in a floodplain and NFIP facts and myths. This information is available on the county’s website.

Future Development/Trends and Impact on Hazard Risk

There are major constraints to the future growth of the City of Glendive and West Glendive area. The Yellowstone River and the associated floodplain limit growth along the western boundary of the City.

Floodplain: According to the 2016 Growth Policy, the Yellowstone River and associated floodplain border the western edge of Glendive and present a significant limitation to development.

The 1994 flood was due to the break-up of a major ice jam upstream from the community and the wave of water, debris, and ice rushing through the city. All other events were due to ice jam formation in the reach downstream from the current Interstate 94 Bridge. The 1969, 1986, and 1994 ice jam floods all came within 0.5- to 1.5-feet of overtopping the West Glendive levee. The West Glendive Levee was constructed in 1959 to protect the West Glendive area from flooding. In 1978, the U.S. Department of Housing and Urban Development, Federal Insurance Administration, published Flood Hazard Boundary Maps for the unincorporated areas of Dawson County. In 1980, the U.S. Federal Emergency Management Service (FEMA) developed Flood Insurance Rate Maps (FIRM) for the City of Glendive. The study that accompanied the FIRMs found that the West Glendive Levee would not provide adequate protection from ice jams, and as a result, most of the City on the west side of the River was included in the 100-year floodplain.

Dawson County and the City of Glendive each have floodplain regulations. Dawson County utilizes the 1978 Flood Hazard Boundary Maps as the official floodplain maps. The City of Glendive uses the 1980 FIRMs as the official floodplain maps. These maps can be viewed at the FEMA Map Service Center (www.msc.fema.gov). Since these maps were created, there have been multiple floodplain studies by various entities. Dawson County and the City of Glendive will work together to determine how the study will affect the regulated floodplain. The growth policy may need to be updated if the regulated floodplain is modified.

Key Issues and Potential Action Items

Key Issue: Several existing properties are located in the floodplain; a majority of the properties are private residences and commercial structures. The estimated costs of relocating those structures is over \$70 million. Floodplain management ordinances prohibit any future development in the floodplain area that is below the base flood elevation.

- *Potential Action Item:* Utilize the results and recommendations from the ongoing Corps of Engineers flood study in Glendive to pursue mitigation projects that reduce the flood risk for the community. A report was issued in October 2013.
- *Potential Action Item:* Conduct NFIP community workshops to provide information and incentives for property owners to acquire flood insurance or install floodproofing.
- *Potential Action Item:* Achieve certification with the Community Rating System (CRS). The CRS rewards communities that exceed minimum NFIP requirements. A benefit of CRS participation is discounted flood insurance premiums for policyholders.
- *Potential Action Item:* Incorporate procedures for tracking high water marks following a major flood event into the county's Emergency Operations Plan. This will help to better assess flood risk for areas near the Yellowstone River.

Key Issue: Flash flooding is the most common flood issue that presents a serious risk in the county and town. Flash floods present a risk to human lives because they begin quickly, often

with little warning.

- *Potential Action Item:* Develop a rapid warning system to warn residents in low-lying areas of flash flood. The county’s existing Reverse 911 system may be a viable option for targeted rapid warning.
- *Potential Action Item:* Educate residents about safety during flood conditions, including the dangers of driving on flooded roads.
- *Potential Action Item:* Address undersized culverts and explore improved drainage solutions.

Key Issue: The drainage creek between Dawson County High School and the football field regularly experiences high flows during rain events and periods of rapid snowmelt. The walls of the creek are being washed-out, which is causing the adjacent school parking lot to sink. Continued erosion of the creek walls will significantly damage the parking lot and may eventually damage the school structure.

- *Potential Action Item:* Analyze possibility of structural solutions (detention pond, infiltration basin, diversion) to reduce stream volume prior to entering school area.
- *Potential Action Item:* Construct levee to protect school parking lot from stream overflow.
- *Potential Action Item:* Promote the use of stormwater management techniques such as permeable pavement and rain gardens to reduce stormwater runoff citywide.

Key Issue: While rare, ice jams along the Yellowstone River have the potential to flood low-lying surrounding areas and damage bridge crossings in the Glendive/West Glendive area.

- *Potential Action Item:* Construct ice control structure upstream of Glendive to minimize risk of ice jams to people and property.
- *Potential Action Item:* Install Yellowstone River gauge upstream of Glendive.

Key Issue: The riverbank by the Glendive railroad bridge was stabilized within recent years to protect the bridge pilings; however, the concrete used to stabilize the bank is failing and will need to be repaired. The repairs are the responsibility of the BNSF railroad.

- *Potential Action Item:* Work with the railroad to ensure the bank stabilization project remains a priority for BNSF.

Landslide

Overall Risk:	Low (isolated locations)
Probability:	Low (Significant hazard event is likely to occur within 100 years)
Magnitude:	Low
Seasonal Pattern:	None
Duration:	A few minutes to six hours
Speed of Onset:	Varies
Identified Impacts:	Agricultural loss (crops, livestock)

	Economic loss
	Human loss and injuries
	Increased stress on medical services
	Infrastructure loss
	Property damage or loss

Hazard Profile

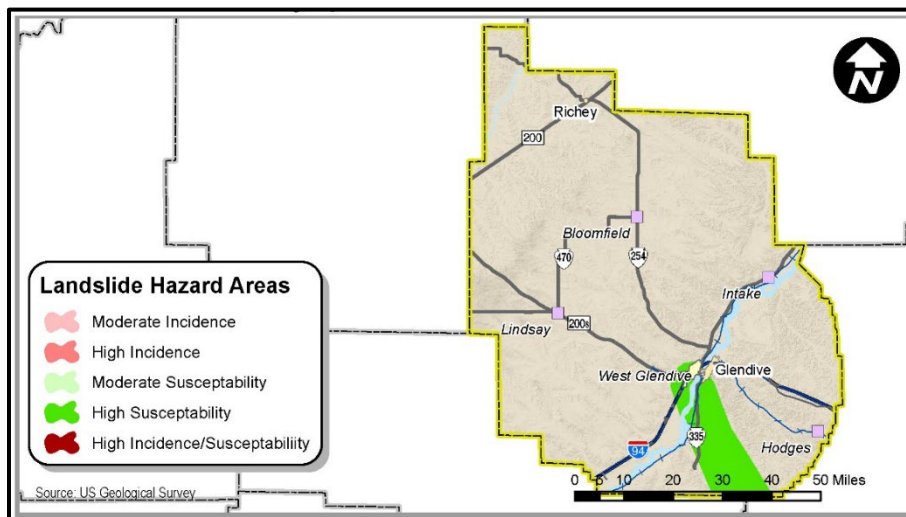
Landslides include all types of gravity-caused mass movements of earth material, ranging from rock falls, slumps, rock slides, mud slides and debris flows. Precipitation, topography, geology and human activities can all trigger landslides. Landslides can be a slow, creeping phenomenon, or they can occur quickly when triggered by a secondary event such as an earthquake.

Landslides have a history of causing damage in Montana. The Hebgen Lake Earthquake in 1959 triggered the largest landslide in Montana history; nearly 1.25 miles of the Madison River and Highway 287 were buried to depths as great as 394 feet. Slow, creeping landslides can also cause significant impacts, most commonly in the form of damaged roads and other critical infrastructure.

Location

Dawson County has a low risk for landslides. The county is not in a landslide hazard area; however, the southeast portion of the county has an area that is considered a high susceptibility zone for landslides. Susceptibility is defined as the probable degree of response of the areal rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. Incidence is a history of previous events. The area is generally defined by the badlands in and surrounding Makoshika State Park, and is directly adjacent to the Glendive/West Glendive area.

Figure 12 Landslide Hazard Area



Extent

Soil type, steepness, and previous disturbance or movement of the earth in a specific area are factors that influence landslides. Soil type is a key indicator for landslide potential and is used by

geologists and geotechnical engineers to determine soil stability for construction standards. The magnitude of potential landslides in the defined hazard areas is low.

Local Risk and Probability

There is no history of a landslide causing significant damage in Dawson County. However, landslides do occur. In October 2021, access to Makoshika State Park beyond Cains Campground was closed due to a recent landslide. The slide area was located a half mile south of Cains Campground. A large amount of dirt and rock gave way, and some of it settled over the main road. The hill along County Road 303 also experienced a landslide in the spring of 2020. Statewide landslide hazard areas are shown in Figure 13.



Vulnerabilities

Population

Vulnerable population can be determined by analyzing 2010 US Census blocks that intersect the hazard area (2020 Census data was not available at the time of the update). Proportional estimates are used to determine population for census blocks that only partially bisect the hazard area. Using this method of analysis, approximately 350 residents live within the high susceptibility landslide area in the county. The urbanized areas of Glendive/West Glendive are not included in the final total; however, there are certain areas (such as several structures along the Yellowstone River) that are vulnerable to landslide.

Key Facilities

No key facilities are located within the high susceptibility-high incidence landslide hazard area.

Property

Roadways in locations such as Makoshika State Park and County Road 303 are susceptible to landslides. There are certain structures along the Yellowstone River that are vulnerable to landslide.

Existing Capabilities

The rugged badlands terrain generally precludes development in the county's high susceptibility landslide zone.

Future Development/Trends and Impact on Hazard Risk

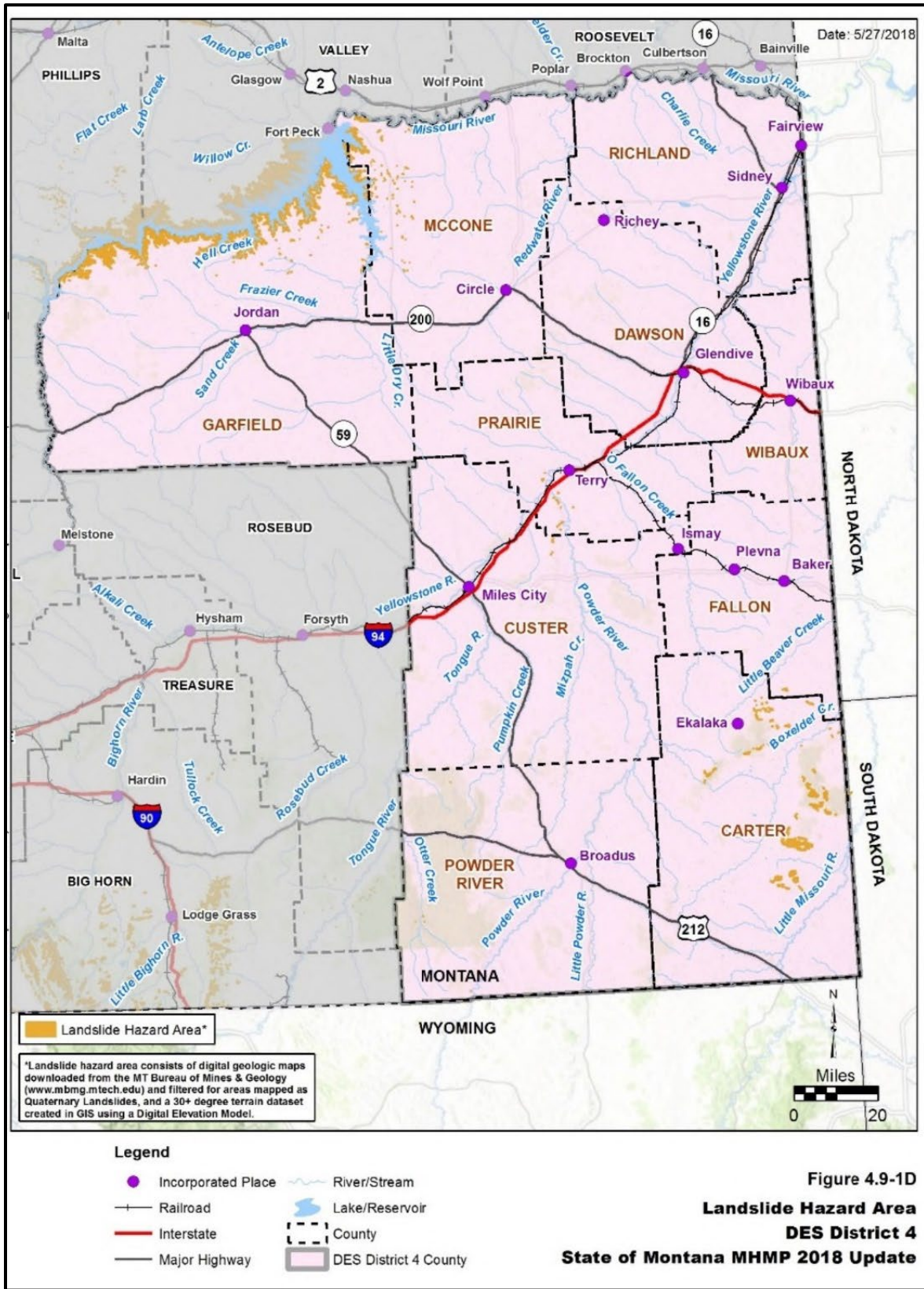
The Growth Policy recently defined steep slope/landslide areas in order to create development restrictions in those areas.

Key Issues and Potential Action Items

Key Issue: The southeast urban area of Glendive borders rugged badlands terrain that is considered to be highly susceptible to landslides. Growth may present future development pressures in the badlands area. There are additional isolated landslide areas within Glendive/West Glendive, primarily along the Yellowstone River.

- *Potential Action Item:* Compile a detailed inventory of critical facilities infrastructure that are vulnerable to landslides.

Figure 13 Regional Hazard Areas



Severe Summer Storm

Overall Risk:	High (all jurisdictions)
Probability:	High (Significant hazard event is likely to occur annually)
Magnitude:	Medium
Seasonal Pattern:	May - October
Duration:	A few minutes to six hours
Speed of Onset:	Quick
Identified Impacts:	Agricultural loss (crops, livestock)
	Economic loss
	Human loss and injuries
	Increased stress on medical services
	Permanent loss of businesses
	Power loss
	Property damage or loss
	Release of hazardous materials

Hazard Profile

Severe summer storms are a common occurrence throughout the world. Summer storms with the most severity are generally associated with frontal systems. Cold air is denser than warm air, and as a cold front approaches a warm air mass, the warm air is rapidly lifted into the troposphere, creating an unstable situation. Four severe summer storm elements that pose the greatest risk to life and property are tornadoes, wind, hail and lightning.

Tornadoes are the most destructive weather phenomenon on earth. They can produce winds ranging from 65 mph to more than 300 mph, and pose severe danger to life and property. Peak tornado season is from June to August, and most occur during evening hours. Tornadoes typically travel from southwest to northeast at a speed between 30 and 70 mph, and are generally on the ground for less than 10 minutes; however, tornado characteristics are highly unpredictable and can change rapidly.

Most tornado fatalities are caused by flying debris. Wind, hail and scud clouds may mask the presence of a tornado and associated debris, which makes a public warning system critical for preventing loss of life and injuries.

Straight line winds are a common element of severe summer storms, and typically responsible for most damage associated with the storms. Strong winds often form on the leading edge of severe storms. A downburst can occur when air is carried into a storm’s updraft and cools rapidly. Cold air is denser than warm air, so during warm days a downburst can develop as cold air rushes down to the surface. Downbursts with a diameter of less than 2.5 miles are called microbursts, and those with a diameter greater than 2.5 miles are called macrobursts. They can extend for

hundreds of miles and support wind gusts greater than 100 mph.

Hail presents a hazard for property, crops, livestock and occasionally human life. Hail events range from an area of a few acres up to hundreds of square miles, although small events are most common. Hailstones can fall to the surface at more than 100 mph, and reach more than seven inches in diameter; however, most hailstones do not exceed two inches in diameter. Hailstones with a diameter of at least 0.75 inches are considered to be severe. Hail rarely causes human fatalities, but hailstones larger than 0.5 inches can pose significant danger.

Lightning strikes pose multiple threats to life and property. A lightning strike can electrocute humans and animals, vaporize materials, cause fire and cause an electrical surge that may damage equipment. Human deaths from lightning strikes are somewhat uncommon. According to the National Weather Service, there were 29 recorded lightning fatalities in Montana from 1959-2016. Livestock deaths and property damage are the most common lightning-related threats in Montana.

In addition to these four elements, heavy rain is often associated with severe summer storms, which can lead to a flooding hazard.

Location

The entire county is exposed to the risk of tornadoes, wind, hail and lightning. Dawson is in eastern Montana where dry thunderstorms is more common. Dry thunderstorms produce huge amounts of lightning strikes.

Extent

The magnitude of severe weather is measured by the severity of the event and the resulting damage.

Tornadoes were originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale, introduced in 1971, based on a relationship between the Beaufort Wind Scales (B-Scales) (measure of wind intensity) and the Mach number scale (measure of relative speed). The Fujita Scale is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure. The F-Scale categorizes each tornado by intensity and area. The scale is divided into six categories, F0 (Gale) to F5 (Incredible). The table below explains each of the F-Scale categories.

Enhanced Fujita (EF) Scale

On February 1, 2007, the National Weather Service adopted “Enhanced Fujita (EF) Scale”. The EF Scale evaluates and categorizes tornado events by intensity. Both the original Fujita Scale and the EF Scale estimate the intensity of a tornado (3-second gust speed) based on the magnitude of damage. The original scale had a lack of damage indicators and with the increasing standards for buildings, rating of tornadoes was becoming inconsistent. The EF Scale evaluates tornado damage with a set of 28 indicators (see NOAA website). Each indicator is a structure with a typical damage description for each magnitude of a tornado.

Table 27 Fujita vs. Enhanced Fujita Scale

FUJITA SCALE	DERIVED EF SCALE	OPERATIONAL EF SCALE
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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	158-206	162-209	3	138-167	3	136-165
4	207-260	210-261	4	168-199	4	166-200
5	261-318	262-317	5	200-234	5	Over 200

Source: National Oceanic and Atmospheric Administration

Local Risk and Probability

Severe summer storm events are common in Dawson County, with wind and hail being the most frequently reported events. On June 10, 2021, a major severe weather event caused prolonged power outage when McCone Electric experienced severe damage to their substations. The Town of Richey was unable to pump water and treat the water for over 24 hours. Tornadoes are rare, but as shown in Figure 16 on the following page, they do have a history in the area. The most impactful tornado event in the area was an EF3 that traveled through Wibaux County in July of 1983. It caused two injuries and one fatality. While there is no history of a tornado causing injuries or fatalities in Dawson County, the potential for a tornado exists; the impact would be devastating if a large tornado were to directly strike a populated area.

Figure 14 Historical Probability of a Tornado Event in the United States

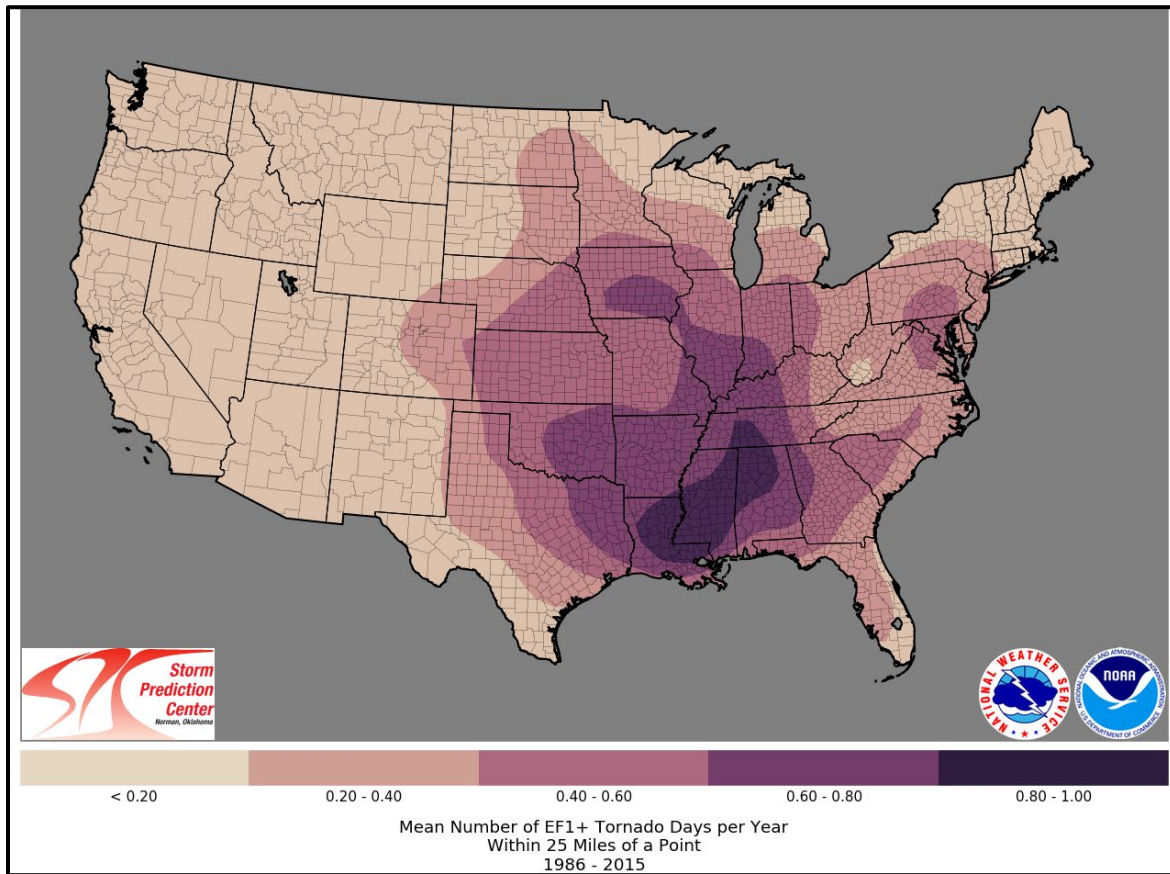


Figure 15 Average Annual Tornadoes per State

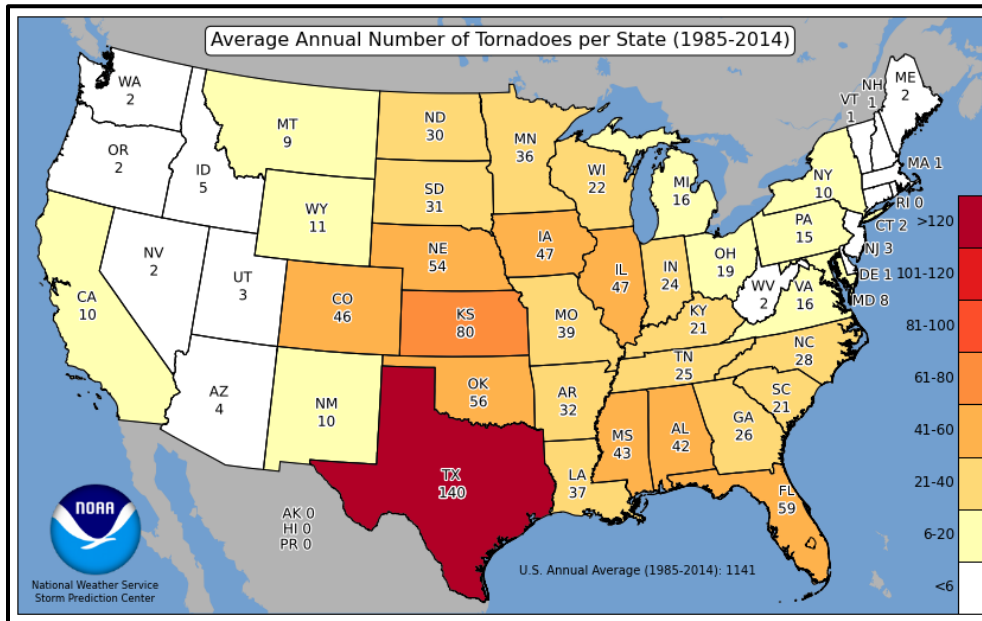
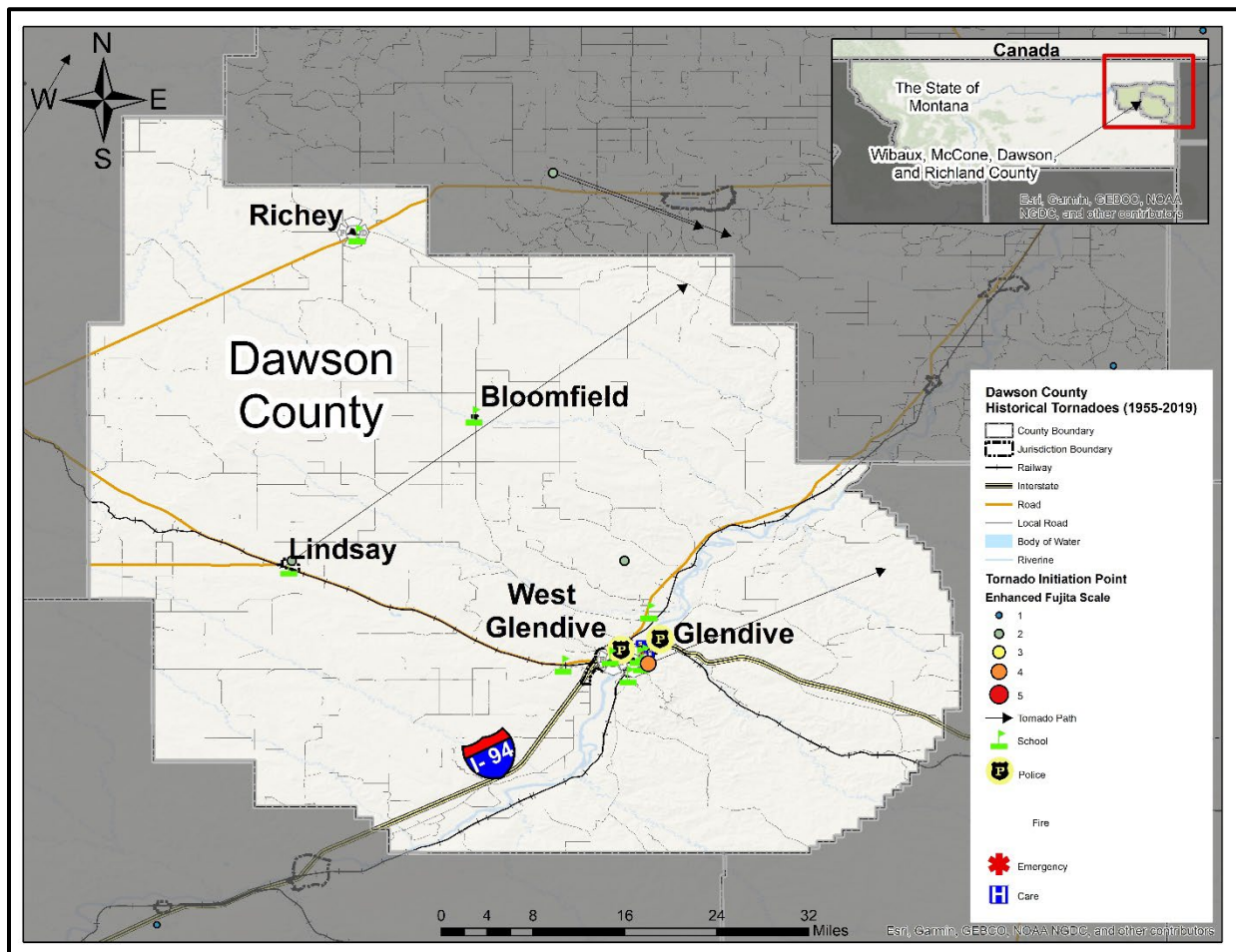


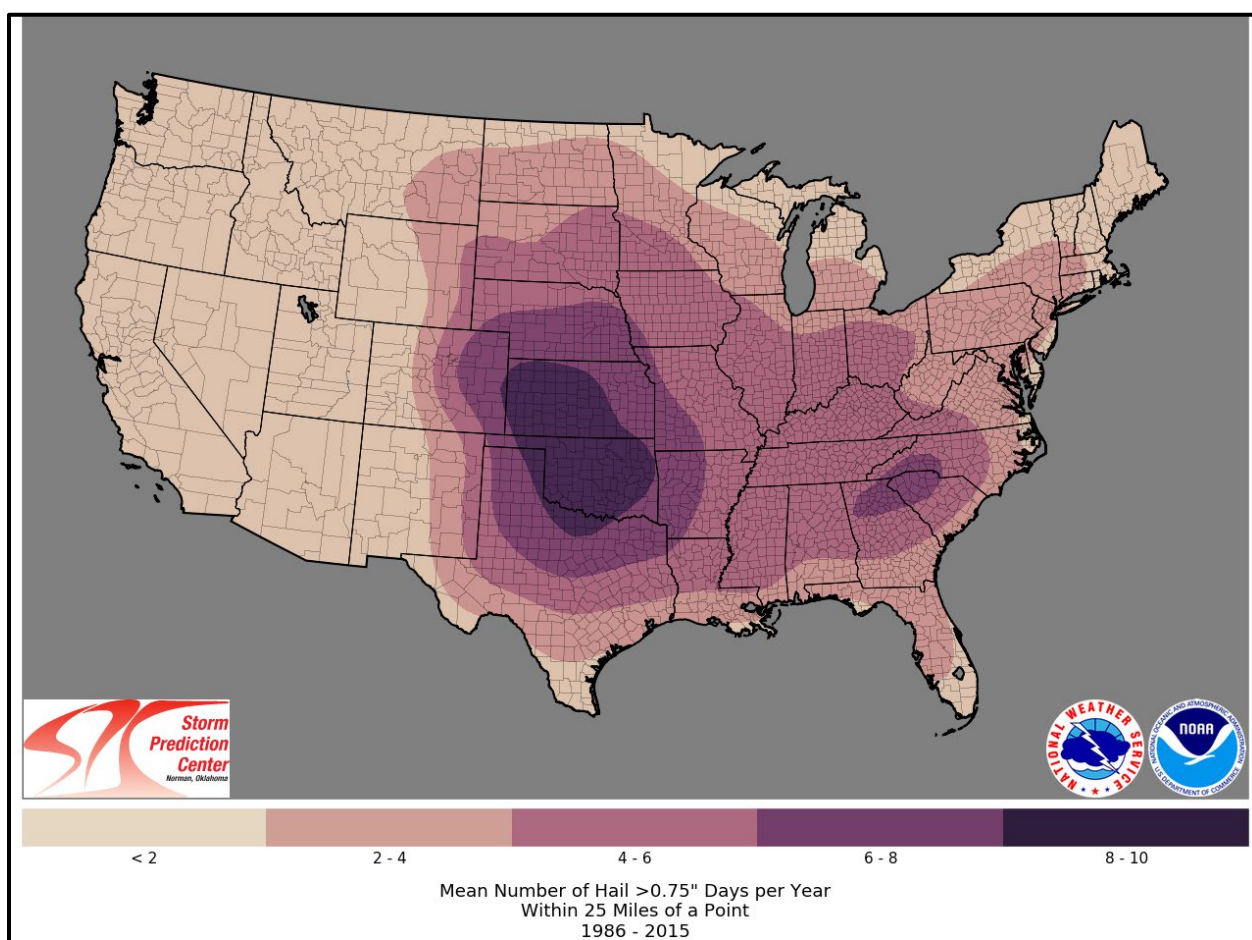
Figure 16 Dawson County Tornado History



Even though hail and wind events are somewhat common in Dawson County, the county has relatively few of these events when compared to other parts of the country. A severe hail event is defined as a storm producing hailstones at least 0.75 inches in diameter. Historical probability of a severe hail event in the United States is shown in Figure 17. The northern Great Plains, including Dawson County, has generally fewer hail events than states in the southern half of the region. According to the National Weather Service Storm Prediction Center, the largest hailstone recorded in Dawson County is 4.0 inches in diameter, which has occurred in both June of 1999 and August of 1975.

Common impacts from hail in the county include broken windows, damaged shingles, dented or broken gutters, and damaged vehicles. Heavy hail events can also injure livestock and destroy crops.

Figure 17 Historical Probability of a Severe Hail Event in the United States



A severe wind event is defined as gusts of at least 50 kts or 58 mph. Historical probability of a severe wind event in the United States is shown in Figure 18. While the northern Great Plains is generally considered a windy region, severe wind events are most common in the eastern half of the United States. It is important to remember when looking at hail and wind events that areas with higher population densities or more complex spotter networks may produce more event reports. This is especially true when looking at older data (pre-1995).

Common impacts from heavy winds in the county include broken trees and limbs, damaged agricultural structures, and damaged power poles. In July 2015 a “macroburst” wind event, with a magnitude of 104 kts. (120 mph), struck Glendive creating damage to many homes and businesses in the city. Impacts included downed trees and power lines, damaged shingles, dented or broken gutters, and damaged vehicles. Total property damage due to this event, as reported by the NCEM Storm Event Database, was estimated at \$2,500,000.

Figure 18 Historical Probability of a Severe Wind Event in the United States

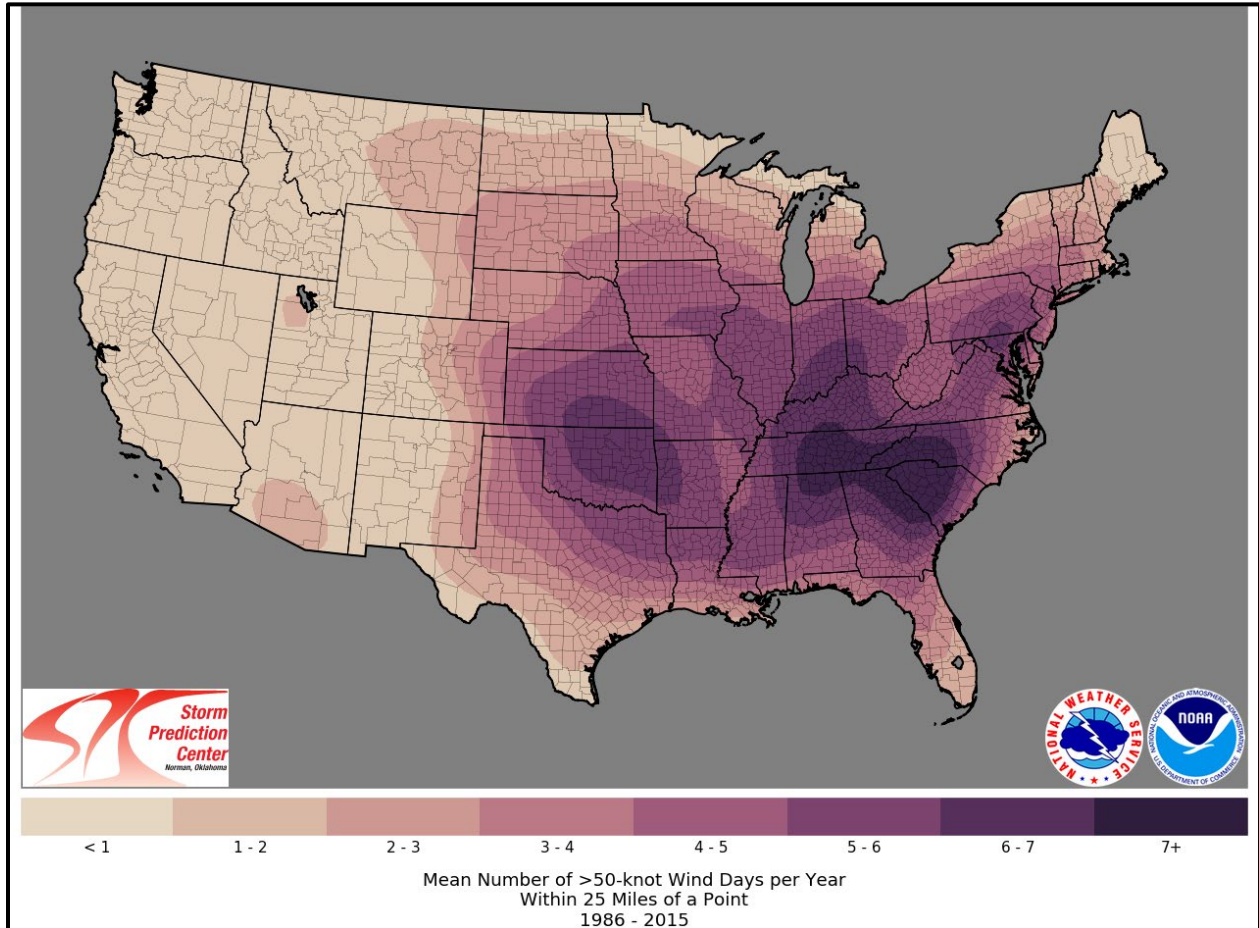


Figure 19 Historical Wind Events

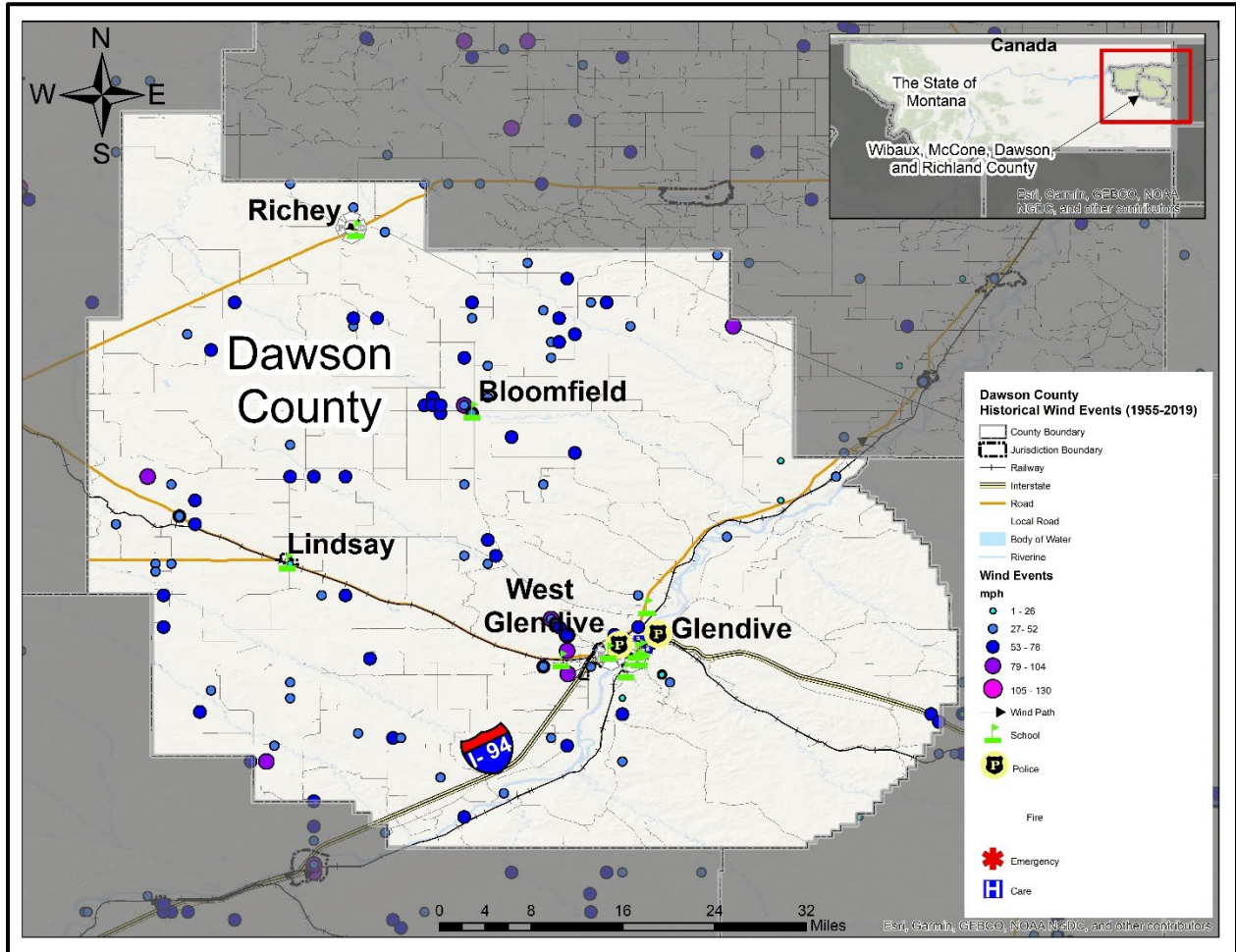
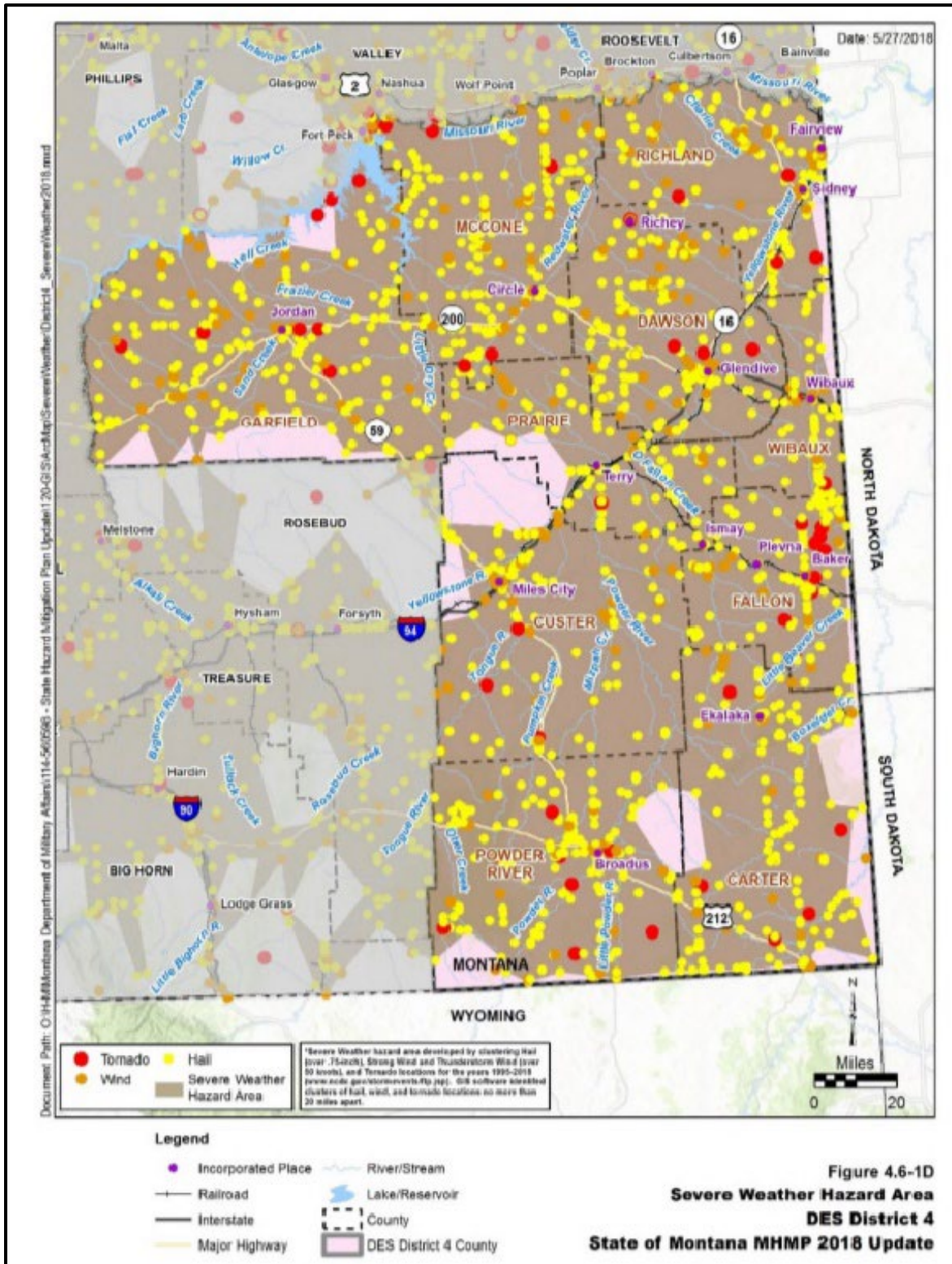


Figure 20 Montana District 4 Severe Summer Activity Map



Source: 2018 Montana State HMGP

A summary of Dawson County’s severe summer storm events in the SHELDUS database is shown in Table 27. There is generally more than one severe summer storm event per year that causes reported injuries/fatalities or property/crop damage. Fifty-two of the summer storm events reported wind as a contributing factor, 39 reported hail, four reported lightning and four reported tornado. Some events include multiple hazards (i.e. wind, lightning). This information does not include every summer storm event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy at the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events.

Table 28 Severe Summer Storm Events in Dawson County, 1960-2020

Events*	79
Annual Probability	133.9%
Injuries**	6.09
Fatalities**	0.67
Damages**	\$16,381,129
Source: SHELDUS	
*Events causing recorded injuries/fatalities or damages	
**Total taken from entire disaster area and divided by number of affected counties	

The NOAA National Climatic Data Center’s Storm Data and Unusual Weather Phenomena database provides more information about storm events in the county. According to the NCDC Storm Event Database, there were 81 summer storm events reported in the county between May 2013 and September 2020 (excluding duplicate same-day reports). These events featured the following as the primary contributing element(s):

- 22 featured hail (over 0.75 inches in diameter)
- 49 featured thunderstorm winds/high winds (over 52 kts)
- 6 featured heavy rain/flash flooding/lightning
- 2 featured a tornado/funnel cloud
- 1 featured extreme heat

Hail, wind and heavy rain are all very common in the county, occurring multiple times per year.

Vulnerabilities

Population

The entire population is vulnerable to a severe summer storm event. Residents living in homes without a basement are particularly vulnerable to tornado and wind events. Examples include residents living in mobile homes, recreational vehicles or traditional homes without basements. Mobile home/RV parks in the county are typically at capacity. There are no crew camp facilities presently in the county, but they are possible in the future due to the area’s proximity to the Bakken region.

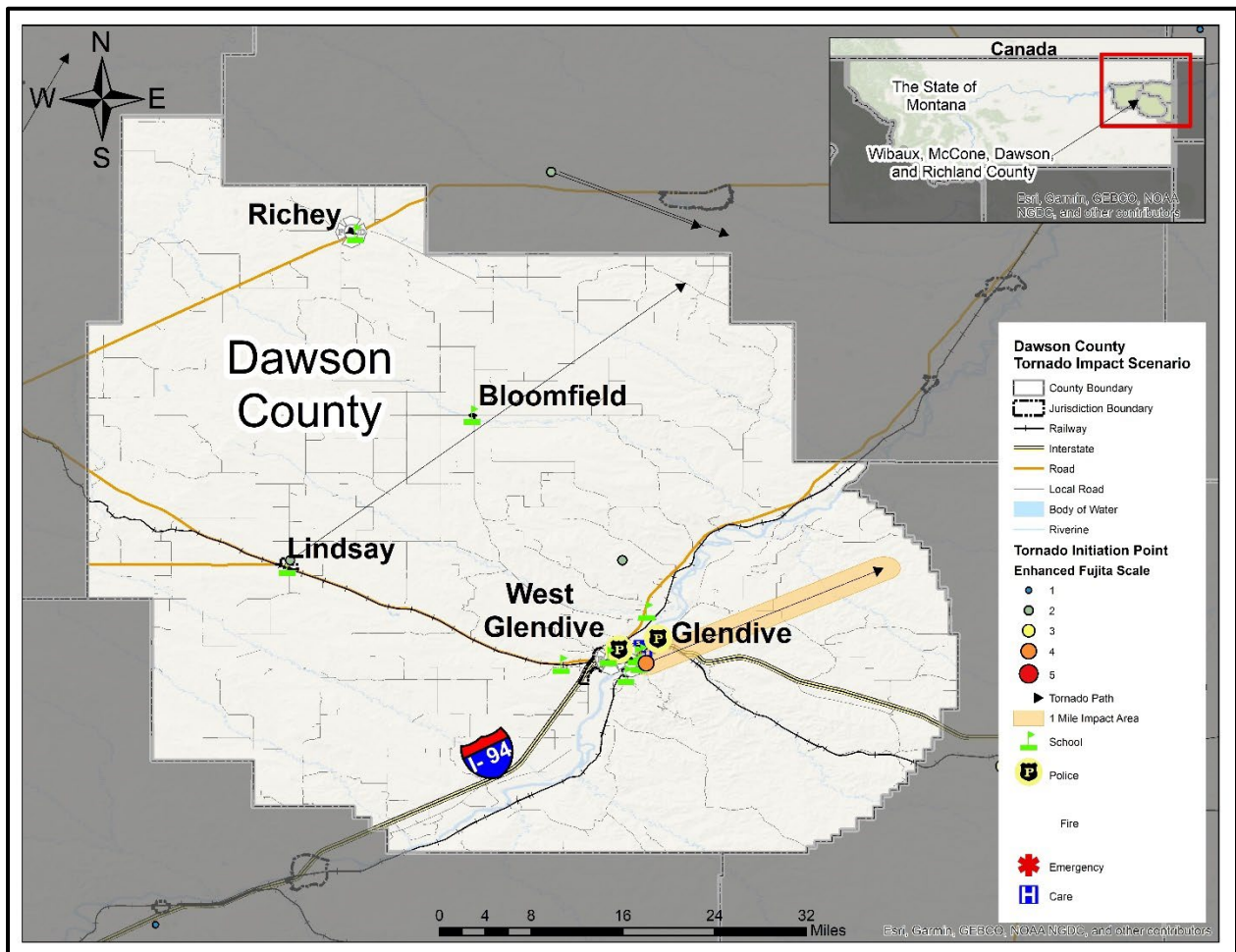
Key Facilities

All key facilities are vulnerable to a severe summer storm event. Facilities that have an increased vulnerability include:

- Schools in the county (4 in Glendive, 2 in Richey, 1 in Lindsay, 1 in Bloomfield, 1 north of Glendive, 1 west of Glendive, Dawson Community College in Glendive). The schools have shelter-in-place procedures, but a tornado or heavy wind event would cause significant damage to the facilities and multiple fatalities.
- KGLE radio & KXGN television. A tornado or wind event that damaged the transmission equipment would limit the emergency notification capabilities of the county.
- Glendive Medical Center. The facility has a high density of vulnerable persons, and damage to it would severely limit the county’s medical service capabilities. Damage to the facility from a tornado would most likely be accompanied with damage to residences throughout the city, and an increased need for medical services.
- County Courthouse and City/Town Halls. The facilities are required for basic functions of government and replacements would be expensive.

Property

Figure 21 Tornado Impact Scenario



It is difficult to predict potential damages due to the highly variable nature of tornado, wind, hail and lightning events. A severe storm, wind or hail event spanning a large portion of the county would have the potential to cause significant damage.

Exposed assets are presented in Table 28.

Table 29 Dawson County Severe Weather Damage Exposed Assets

Land Use	Dawson County		Glendive		Richey	
	Structure	Land	Structure	Land	Structure	Land
Residential & Other Property Types	\$416,180,560	\$57,611,331	\$357,705,348	\$46,604,320	\$4,142,534	\$459,914
Exempt*	\$43,862,129	\$19,775,310	\$33,697,962	\$3,966,277	\$780,465	\$75,948
Farmstead	\$57,303,928	\$42,657,519	\$12,151,108	\$3,497,402	\$5,393,100	\$2,652,045
Agricultural	\$0	\$24,680	\$0	\$0	\$0	\$0
Commercial	\$17,980,739	\$1,886,637	\$8,535,180	\$931,919	\$0	\$0
Vacant	\$537,213,942	\$247,776,024	\$1,221,925	\$3,920,021	\$10,321,989	\$4,151,988
Total	\$1,072,541,298	\$369,731,501	\$413,311,523	\$58,919,939	\$20,638,088	\$7,339,895
<p>All Property Types: Apartment Urban, Apartment Rural, Agricultural - Rural, Centrally Assessed Non-Value Property, Exempt Property, Partial Exempt, Farmstead - Rural, Improved Property - Rural, Improved Property - Urban, Industrial - Rural, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Vacant Land - Rural, Vacant Land - Urban, and Blanks</p> <p>Residential & Others includes: Apartment Urban, Apartment Rural, Improved Property - Rural, Improved Property - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, and Blanks</p> <p>Commercial: Industrial - Rural and Centrally Assessed Non-Value Property</p>						
Source: Montana 2021 Tax Assessor Reports						

Less disastrous hail and wind events are much more likely in the county. The SHELDUS database records 11 major storm events since 1960 where the damages were primarily due to hail. The average property damage for these hail events was \$24,399 and the average crop damage was \$31,801. The most common impacts from a hail event include property damage (roof, siding, windows), crop damage and livestock fatalities or injuries.

The SHELDUS database records 18 major storm events since 1960 where the damages were primarily due to wind. The average property damage for these wind events was \$94,041.56 and the average crop damage was \$17,811.28. The most common impacts from a wind event include property and tree damage.

Existing Capabilities

There are warning sirens in Glendive/West Glendive and Richey. The county operates a Reverse 911 system that functions as a warning system and the local radio and television station broadcast weather warnings.

The county participates in the National Weather Service’s StormReady Community Program. This means the county and city have taken a proactive approach to emergency preparedness.

Program requirements include the establishment of an emergency operations center, a multiple-

channel warning system, local weather monitoring and public education. The Emergency Manager conducts seasonal weather safety workshops.

Future Development/Trends and Impact on Hazard

The State of Montana has adopted the 2012 International Building Code (IBC). The IBC includes a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph.

Local building codes could be developed in highly vulnerable areas to require shatter-proof glass on critical facilities and/or facilities housing vulnerable populations, higher standards for tying down roofs, and/or other methods to mitigate impacts from severe summer storms.

Key Issues and Potential Action Items

Key Issue: Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.

- *Potential Action Item:* Offer information about weather-resistant building materials and best practices.
- *Potential Action Item:* Install and maintain surge protection on critical equipment.

Key Issue: Not all key facilities have NOAA weather radios.

- *Potential Action Item:* Conduct inventory of weather radios in key facilities and provide radios to facilities currently lacking the devices.

Key Issue: Several sirens in the county are aging and in need of replacement.

- *Potential Action Item:* Acquire replacement sirens where necessary and identify strategic locations for new sirens.

Key Issue: The county experienced temporary residents living in mobile homes/RVs due to energy-related growth in the nearby Bakken region. The county does not have any temporary workforce housing facilities, but they are a possibility in the future. Residents in temporary housing often have satellite dishes (no local television) and out-of-state cell phones, which makes them difficult to reach through traditional notification channels.

- *Potential Action Item:* As part of permitting process, require new mobile home/RV parks and workforce housing facilities of a certain size to have a safe room or sheltering plan.
- *Potential Action Item:* Evaluate siren coverage in mobile home/RV park areas and acquire new sirens to address deficiencies.

Key Issue: The schools do not have adequate safe rooms. Students currently would go to the basements of most facilities, but there is not enough space for all students.

- *Potential Action Item:* Create or identify adequate safe room(s) for schools and other public buildings where the public regularly gathers.

Key Issue: The unused grain elevator in Richey has loose tin siding that can blow off during heavy wind events. Options are currently being evaluated to remove the tin and/or structure.

- *Potential Action Item:* Continue the process to remove the hazard of loose tin from the unused grain elevator.

Severe Winter Storm

Overall Risk:	High (all jurisdictions)
Probability:	High (Significant hazard event is likely to occur annually)
Magnitude:	Medium
Seasonal Pattern:	October - April
Duration:	One to three days
Speed of Onset:	Quick, with a potential warning time of several days
Identified Impacts:	Agricultural loss (crops, livestock)
	Blocked roads
	Economic loss
	Exposure risks to people, pets, livestock and wildlife
	Freezing pipes
	Human loss and injuries
	Increased stress on medical services
	Power loss
	Property damage or loss
	School closure
	Vehicle accidents

Hazard Profile

Winter storms are a common occurrence in Montana, with the state experiencing on average three to four severe winter storms each year. Several hazard elements may be present during a winter storm: blizzards, heavy snow, ice storms and extreme cold. These elements can produce life-threatening situations and are a threat to people and property.

A blizzard is defined by the National Weather Service as a storm producing winds of 35 mph or more, with snow and/or blowing snow reducing visibility to less than 0.25 miles for at least three hours. A blizzard does not necessarily produce large amounts of snow, but heavy winds may result in large snow drifts. A closely related weather event known as a surface blizzard occurs when heavy winds blow snow that has already fallen. Both traditional and surface blizzards can reduce visibility, disrupting transportation and communication systems in the area.

Heavy snow is defined as six or more inches of snow in 12 hours, or eight or more inches of snow in 24 hours. Heavy snow can damage property and make roads impassable for extended periods. Broken branches may damage power lines and create road hazards if heavy snow occurs in autumn or late spring when leaves are on the trees.

An ice storm produces heavy and damaging accumulations of ice due to a combination of rain and below freezing surface temperatures. Accumulated ice can bring down trees and power lines and poses a threat to motorists, pedestrians and livestock.

Extreme cold is a common occurrence in Montana during the winter months. Cold temperatures are amplified when combined with wind, creating dangerous wind chills. Wind chill is how cold the temperature feels on the skin, so it only affects living organisms such as humans and livestock. Exposure to extreme cold temperatures and wind chill can damage tissue (frostbite) and lower the body's core temperature (hypothermia).

Location

The entire county is exposed to the risk of blizzards, heavy snow, ice storms and extreme cold.

Extent

- **Extreme Cold:** Extreme cold events typically occur in the winter months. The extent of extreme cold varies in terms of the Wind Chill Temperature and duration of the event.
- **Severe Winter Storms:** The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the county.

Local Risk and Probability

Severe winter storms are common in Dawson County. The NWS Cooperative Network weather station in Glendive records snowfall data. A general summary of aggregated snowfall information in Dawson County is shown below. Data is from the High Plains Regional Climate Center.

- The highest daily snowfall was 13.0 inches in March 1894.
- January has the highest average monthly snowfall, at 5.8 inches. March has the second highest average monthly snowfall, at 5.6 inches.
- The highest monthly snowfall was 26.0 inches in November 1964.
- The average annual snowfall is 28.6 inches.
- The highest annual snowfall was 75.0 inches between June 1895 and June 1896.
- The latest single day snowfall above 8 inches was 12 inches on May 20, 1908. The earliest single day snowfall above 10 inches was 12 inches on October 5, 2005.

Extreme cold temperatures are common in Montana and Dawson County is no exception. The coldest temperature recorded in the county since 1893 is -50 degrees F in February 1936. The lowest average high temperature for a month was 1.9 degrees F in February 1936. The common combination of cold temperatures and wind produces deadly wind chills that are present throughout much of the winter season.

A summary of the severe winter storm events in Dawson County from the SHELDUS database is shown in Table 29. A major winter storm that causes reported injuries/fatalities or property/crop damage occurs less than once a year. This information does not include every winter storm event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy on the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events.

Table 30 Winter Storm Events in Dawson County, 1960-2020

Events*	22
Annual Probability	41.5%
Injuries**	0.72
Fatalities**	1.32
Damages**^	\$2,745,211
Source: SHEL DUS	
*Events causing recorded injuries/fatalities or damages	
**Total taken from entire disaster area and divided by number of affected counties	

The NOAA National Climatic Data Center’s Storm Data and Unusual Weather Phenomena database provides more detailed information about storm events in the county. There were 76 winter storm events reported in the county between December 2006 and December 2020 (excluding duplicate same-day reports). Extreme wind chills, strong winds, freezing rain, and heavy snow are all common in the county.

Vulnerabilities

Population

A severe winter storm creates potential hazards for nearly all residents. Hazards include:

- Residents living in mobile homes, recreational vehicles, or poorly insulated homes may find it difficult to adequately heat their homes during cold temperature events. Mobile home parks in the county are typically at capacity.
- Wind, ice, heavy snow and cold temperatures can combine to create hazardous conditions and “trap” residents in their homes without heat or electricity. Elderly residents may be especially vulnerable to this hazard as they are more likely to have limited mobility, especially in the event of hazardous road conditions. Approximately 20 percent of residents in the county are 65 years of age or older; 18.5 percent of residents in Glendive are elderly, and 17.7 percent of residents are 65 and older in Richey.
- People who are required to travel on a daily basis face increased road hazards.
- Increased use of furnaces, personal heaters and fireplaces during a cold weather event elevates the risk of fire or carbon monoxide poisoning.
- Medical incidents and associated risks increase due to slips/falls on ice, overexertion or hypothermia.

Key Facilities

The following key facilities have increased vulnerability to a severe winter storm event:

- Fire Halls/Ambulance Centers. A winter storm event that “traps” fire and ambulance responders within the facility would severely limit the emergency response capability of the county and local jurisdictions.
- Schools. A severe winter storm event would most likely require closure of schools. A winter storm event that begins mid-day could present issues for students leaving school.
- Communications and electrical infrastructure are vulnerable to ice, snow and wind.
- Bridges/underpasses are hazardous for travelers during a winter storm event.
- Senior/assisted living facilities and medical centers. Power outages and loss of heating could impact elderly and populations that require assistance for daily living.

Property

It is difficult to estimate the impact of winter storms on property in the county. The most likely damages involve roof collapse due to heavy snow loads. A winter storm can also result in an increased risk of structure fires due to use of portable heaters and fireplaces during events that involve extremely cold temperatures.

A severe winter storm can also cause significant livestock fatalities. According to the 2017 Census of Agriculture (the most recent year available for market value data), the sales value of livestock (specifically cattle, which includes calves) in the county was \$31,206,000. Losses vary based on storm severity and duration, but losses to unprotected livestock can be significant following a major storm event.

The SHELATUS database records 22 major winter storm events since 1960. The average property damage for these events was \$87,554 and the average crop damage was \$37,229.

Existing Capabilities

Dawson County High School in Glendive is designated as an emergency shelter. Richey now has a designated emergency shelter.

The county Emergency Manager conducts winter safety workshops and broadcasts a public service announcement on the local radio station.

The county works with MDT on the acquisition of variable message boards to alert motorists of adverse road conditions.

Future Development/Trends and Impact on Hazard Risk

The State of Montana has adopted the 2012 International Building Code (IBC). The IBC includes a provision that buildings must be designed to withstand a snow load of 30 pounds per square foot minimum. Montana snow is generally dry and snow loads do not threaten roof collapse in most areas.

Key Issues and Potential Action Items

Key Issue: Residents do not always follow travel restrictions, which presents a hazard to themselves and first responders. Due to its location along Interstate 94, the county often has out-of-state travelers who are inexperienced with the weather conditions.

- *Potential Action Item:* Continue educating residents about winter storm safety.
- *Potential Action Item:* Work with MDT to determine additional strategic locations for variable message boards.
- *Potential Action Item:* Coordinate with MDT to identify strategic locations for constructing snow fences along county roads, especially near Richey.

Key Issue: A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. The designated emergency shelter in Glendive is Dawson County High School. Richey now has a designated emergency shelter.

- *Potential Action Item:* Identify residents in the county who need electricity for medical equipment and develop plan to transport them to the winter shelter in the event of a power outage.

- *Potential Action Item:* Promote winter shelters in Glendive and Richey so residents are aware of their availability during a winter storm event that is accompanied by power outage.
- *Potential Action Item:* Encourage utilities to install underground power lines when undergoing service upgrades.

Communicable Disease

Overall Risk:	Medium (all jurisdictions)
Probability:	Medium (Significant hazard event is likely to occur within 25 years)
Magnitude:	Medium
Seasonal Pattern:	None
Duration:	Varies
Speed of Onset:	Weeks to Months
Identified Impacts:	Agricultural loss (crops, livestock)
	Economic loss
	Human loss and injuries
	Increased stress on medical services
	Localized evacuation
	School closure
	Public Trust

Hazard Profile

A communicable disease is an illness caused by an infectious agent, such as bacteria, virus, fungi, parasites or toxin. Diseases are a threat to human, animal and plant populations. The causes and severity of diseases varies. Communicable diseases of particular concern are those that can lead to the loss of human life. A severe disease outbreak has potential for catastrophic effects on human populations and the economy.

There are numerous ways for communicable disease to spread among humans: physical contact with an infected person or surface, droplets spread from coughing or sneezing, bites from animals or insects carrying the disease (vectors), or airborne transmission of certain illnesses from an infected individual. With air travel readily available, illnesses that are not endemic to the region may be brought to the region, and therefore run at risk to be unrecognized. A widespread occurrence of disease in a community is called an epidemic. Epidemics may lead to quarantines, school and business closures, and stress on medical facilities, and possibly, mass casualties. A widespread epidemic (often countrywide or worldwide in scope) is referred to as a pandemic.

Elderly and young persons are generally the most susceptible to disease. Human communicable diseases include influenza, meningitis, pertussis (whooping cough), measles, rubella and tuberculosis. The most deadly pandemic in modern history was the 1918 influenza outbreak, which killed an estimated 50 to 100 million people (three to five percent of the world's population).

The 1918 pandemic was caused by the H1N1 influenza virus, which resurfaced in 2009 (referred to as the swine flu) and killed an estimated 300,000 to 600,000 people worldwide. Most recently the United States has been hit with SARS-CoV-2 (COVID-19). It was discovered in December 2019 in Wuhan, China. It is very contagious and has quickly spread around the world.

Animal and plant diseases can harm the economy through the loss of livestock and crops. Widespread plant and animal diseases can lead to food shortages. Livestock and animal diseases of concern in Montana include brucellosis, foot and mouth disease, highly pathogenic avian influenza and H1N1 swine flu. Some animal diseases may cause sickness in humans if proper precautions are not taken with infected animals

Location

The entire county is potentially vulnerable to a communicable disease incident.

Extent

The magnitude of diseases is determined by its transmission rates and virulence in the affected population. As evidenced by COVID-19, a global pandemic can have direct and indirect impacts that are far-reaching and disruptive. Animal and plant diseases are an economic threat to the county given its dependency on agriculture.

Local Risk and Probability

Populations throughout the world are susceptible to epidemics and pandemics, and Dawson County residents are no exception. The most recent and poignant example of a significant communicable disease incident is the COVID-19 pandemic.

COVID-19

The global public health emergency caused by the coronavirus unfolded rapidly and dramatically. The virus, which causes the COVID-19 disease, emerged in Wuhan, China, in late 2019. Since then, it spread to more than 200 countries and territories, including Montana in the spring of 2020. COVID-19 is a new virus in humans causing respiratory illness which can be spread from person-to-person and people can be asymptomatic. Genetic variants of SARS-CoV-2 have been emerging and circulating around the world throughout the COVID-19 pandemic and have been associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.

COVID-19 impacted the entire county, and the first case in Montana was identified in March of 2020. In an effort to limit the spread of the virus, public health and some local governments issued stay-at-home orders requiring residents to halt many nonessential activities. Since early spring of 2020, limited PPE was available for health care and emergency services agencies. Public health capabilities were challenged to keep pace with the community transmission as restrictions were relaxed. Every public health and medical organization, long-term care facility, business, and residents in the county have been impacted. A few considerations specific to the region include, but are not limited to: the ability of the virus to transfer, especially in rural areas, due to less restrictive policies; delay of medical care due to the pandemic overwhelming hospital systems and people being fearful of seeking care; increased reporting and evidence of the negative impacts on residents' mental health and well-being; the need for increased public information and education to garner greater confidence in the COVID-19 vaccine; and mass vaccination efforts, especially ensuring priority and at-risk groups receive the vaccine and ensuring an equitable process.

The global pandemic required many communities to address the need for extensive situational awareness and coordinated planning; increased coordination across all disciplines, including the philanthropic, business and schools community at an unprecedented scale; public information and warning; reopening strategies; public health orders; resource support; addressing essential staff limitations/shortages across key health and medical sectors during various phases of the pandemic; limited public health laboratory testing early in the pandemic; contact tracing and investigation; fatality management; medical countermeasure dispensing and administration, specifically vaccine planning and distribution; medical surge; ongoing resupply of PPE; and community and economic recovery.

Vulnerabilities

Population

Elderly and young persons are most at risk for communicable disease. About 20.4 percent of the county's residents are 65 years of age or older. About 5.6 percent of the county's residents are five years of age or younger. Those who are immunocompromised also present a higher vulnerability to communicable disease.

Potentially concentrated areas of vulnerable residents are the Grandview independent senior living facility, Heritage assisted living facility, and Eastern Montana Veterans' Home, all located in Glendive. There are also several schools located in the county:

- Bloomfield Elementary (Bloomfield, 4 students)
- Dawson County High School (Glendive, 351 students)
- Deer Creek Elementary (North of Glendive, 19 students)
- Jefferson Elementary (Glendive, 290 students)
- Lincoln Elementary (Glendive, 138 students)
- Lindsay Elementary (Lindsay, 12 students)
- Richey K-8 (Richey, 44 students)
- Richey High School (Richey, 28 students)
- Washington Middle School (Glendive, 641 students)

A pandemic influenza event similar to the 1918 outbreak could have a significant effect on the county as evidenced by the 2020 COVID-19 incident. The Center for Disease Control estimates the 1918 outbreak caused illness in 40 percent of the population; seven percent of those ill required hospitalization, and two percent of those ill died from the disease. In Dawson County this means approximately 3,700 residents would become ill, 259 would require hospitalization and 74 would die. Similarly, as of December 2021, there have been 1,866 cases of COVID-19 and 51 deaths.

It is important to note, however, that modern influenza vaccines can prevent against the development of pandemics. Modern vaccines are effective against several types of influenza, including H1N1, but the biggest issue is educating residents about the importance of being vaccinated. Vaccinations and treatment are available at the Glendive Medical Center.

Key Facilities

Schools have an increased vulnerability to communicable disease due to the high density of occupants.

The Glendive Medical Center, Heritage Assisted Living Center, Eastern Montana Veterans' Home and daycares have an increased vulnerability due to the high density and susceptibility of its occupants.

Property

An outbreak of communicable disease would not directly cause property damages.

Existing Capabilities

The Dawson County Health Department maintains an Emergency Operations Plan to respond to emergent public health needs.

The Glendive Medical Center is a 25-bed acute care hospital that provides a full range of medical services.

The medical center also operates the Gabert Clinic in Glendive, which provides a wide range of medical services including vaccinations.

The county maintains quarantine and evacuation procedures in the event of a disease outbreak.

The USDA Farm Service Agency and MSU Extension offices in Glendive offer technical assistance to farmers and ranchers for the prevention and treatment of agricultural diseases.

Future Development/Trends and Impact on Hazard Risk

Future development would not be directly impacted by disease, but any additional residents would be at risk for disease.

Key Issues and Potential Action Items

Key Issue: Human and agricultural disease have the potential to greatly impact the health and economy of the county. There are several concentrations of vulnerable populations in the area.

- *Potential Action Item:* Continue monitoring potential outbreaks and keep quarantine/evacuation procedures up-to-date.
- *Potential Action Item:* Educate residents about disease prevention.

Wildfire

Overall Risk:	Medium (all jurisdictions)
Probability:	Medium (Significant hazard event is likely to occur within 25 years)
Magnitude:	Medium
Seasonal Pattern:	April - October
Duration:	Hours - weeks
Speed of Onset:	Quick
Identified Impacts:	Agricultural loss (crops, livestock)
	Blocked roads
	Economic loss
	Explosion
	Hazardous materials release
	Human loss and injuries
	Increased stress on medical services
	Localized evacuation
	Property damage or loss
	Reduced air quality

Hazard Profile

A wildfire is an unplanned fire in a rural area. The term includes grass fires, forest fires and scrub fires, which can be caused by humans or be natural in origin. Wildfires are a natural part of the ecosystem and are necessary for replenishing nutrients in the soil and clearing dead brush. Fire suppression activities have disrupted this natural cycle, resulting in an excess of organic fuel in many rural areas.

The most common natural cause of wildfires is lightning. Human causes include unattended debris burning, equipment fires, discarded cigarettes and railroad sparks.

Three primary factors affect the occurrence and severity of wildfires: fuel, weather and topography. Grasslands, shrubs and forests are considered prime fuels for wildfires. Land in use for crop-based agriculture is not considered to be a significant fuel source due to the generally high moisture content of cultivated crops. Weather conditions of low humidity, wind and dryness also contribute to wildfires. Steep topography can increase the speed at which wildfires spread.

Wildfires are a threat to livestock, agricultural crops, wildlife, habitat, property, shelter belts and scenic and recreational areas. In addition to the direct threat of flames and heat, wildfires may also produce large amounts of smoke which can affect the air quality in the surrounding area and increase risk of transportation accidents.

The wildland-urban interface is another concern when discussing the wildfire hazard. A wildland-

urban interface occurs when structures are located close to natural vegetation. Fire can spread from the vegetation to the structures or vice-versa. The wildland-urban interface generally presents a significant threat along the edges of cities in areas with an abundance of natural vegetation. These areas often have special zoning regulations to mitigate the impact of wildfires in the wildland-urban interface.

Location

Wildfires occur every year in Montana because they are part of the normal vegetative cycle for forest and grasslands in the state. The entire county is susceptible to wildfires.

Extent

Wildfire losses are measured in terms of deaths, acres burned, and structures lost. The fire department responds to approximately 100 fires per year with an average size of 75 acres.

Local Risk and Probability

Wildfires are a common occurrence in Montana. The western half of the state generally experiences the most intense wildfires, but eastern Montana also has ideal fuel, weather and topography for wildfire generation. An incident of significance occurred on August 27, 2003, and burned 3,164 acres, and was caused by sparks from a trailer ramp. The top ignition sources are lightning, railroads, industrial activities, rural residents, power lines and highways/roads.

The 13 Anderson Fire Behavior Fuel Models provide a way to visually represent fire fuel potential. The models consider surface fuel components, size and type. Fuel model attributes are shown in Table 30 and fuel types in the county are shown in Figure 23. The most common fuels are Category 2 (Timber - grass and understory), Category 3 (Tall grass – 2.5 feet) and Category 8 (Closed timber litter). Category 2 and Category 3 fuels produce low intensity fires that spread quickly, and Category 8 fuels produce low intensity fires that spread slowly.

The Yellowstone River corridor in the county is dominated by crop-based agriculture, which is not considered to be a significant source of wildfire fuel. It is important to note that crops may be a source of wildfire fuel once they dry out in late summer or fall.

Wildfires in the county have the potential to cause substantial damage if they encroach into the built environment. The wildland-urban interface is shown for Glendive/West Glendive and Richey in Figure 2. Both communities are primarily surrounded by agricultural lands or bordered by low-intensity grass fuels. The badlands of Makoshika State Park are along the southeast border of Glendive. The park contains isolated stands of pine/juniper, and the rough terrain makes equipment access difficult.

Figure 22 Regional Wildfire Hazard Areas

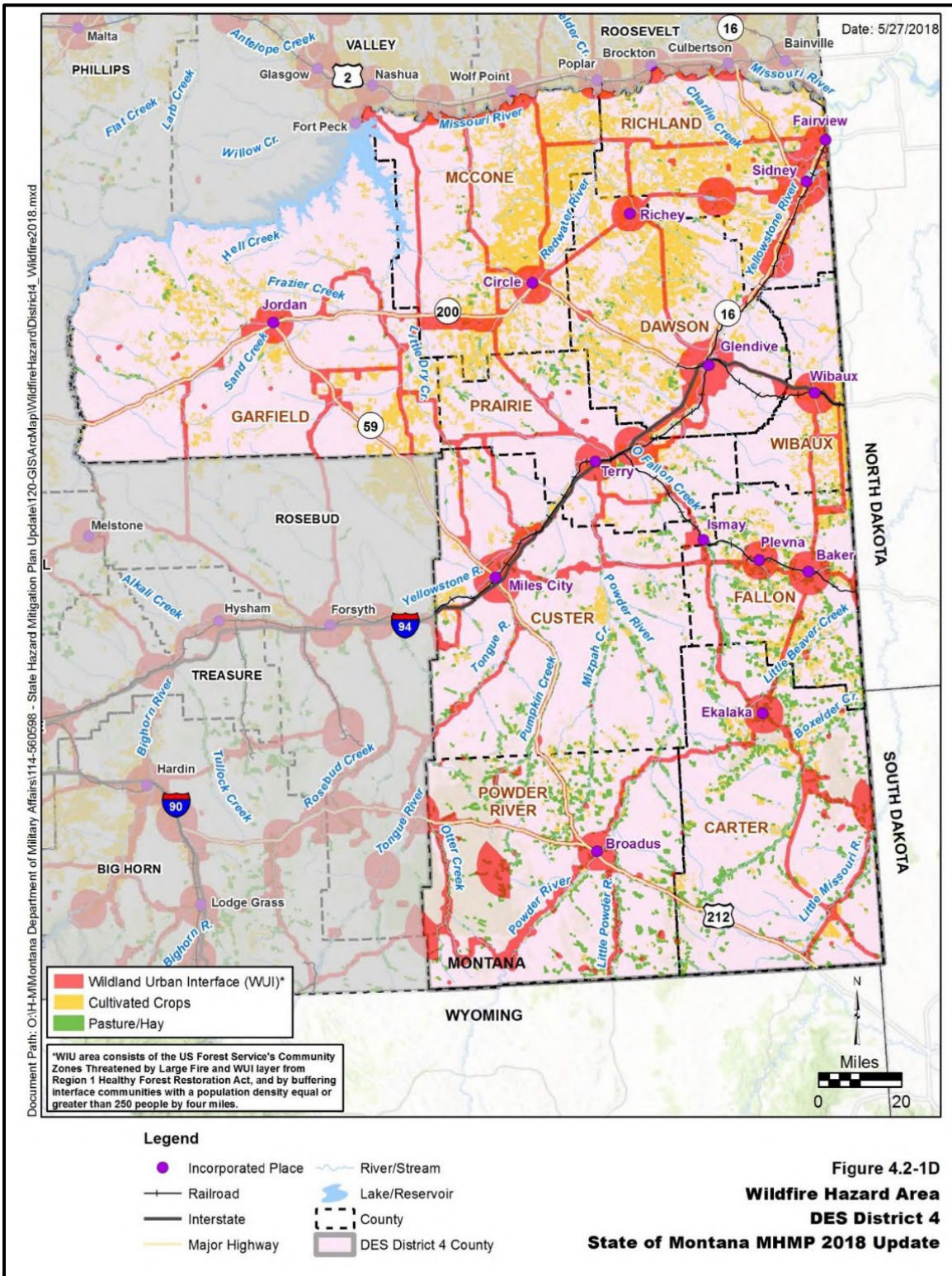


Table 31 Fuel Model Attributes

Fuel Model	Description	Intensity	Speed
Grass and grass-dominated			
1	Short grass (1 foot)	Very Low	Very High
2	Timber (grass and understory)	Low	High
3	Tall grass (2.5 feet)	Low	Very High
Chaparral and shrub fields			
4	Chaparral (6 feet)	Moderate	Very High
5	Brush (2 feet)	Low	Moderate
6	Dormant brush, hardwood slash	Low	High
7	Southern rough	Low	Moderate
Timber litter			
8	Closed timber litter	Low	Low
9	Hardwood litter	Low	Low
10	Timber (litter and understory)	Moderate	Low
Slash			
11	Light logging slash	Moderate	Low
12	Medium logging slash	Very High	Low
13	Heavy logging slash	Very High	Low

The general lack of high-intensity fuels throughout the county does not suggest that residents are free of risk, as even marginal fuels can produce uncontrollable wildfires when given the right mix of weather and topography.

Vulnerabilities

Population

Residents of non-urbanized areas are at a generally higher risk of wildfire. There are approximately 4,000 residents in Dawson County who live outside of Glendive or Richey in rural areas and are at risk for wildfire. Assuming approximately 25 percent of Glendive and Richey residents live along or near the wildland-urban interface, over 1,000 additional residents are at risk for wildfire.

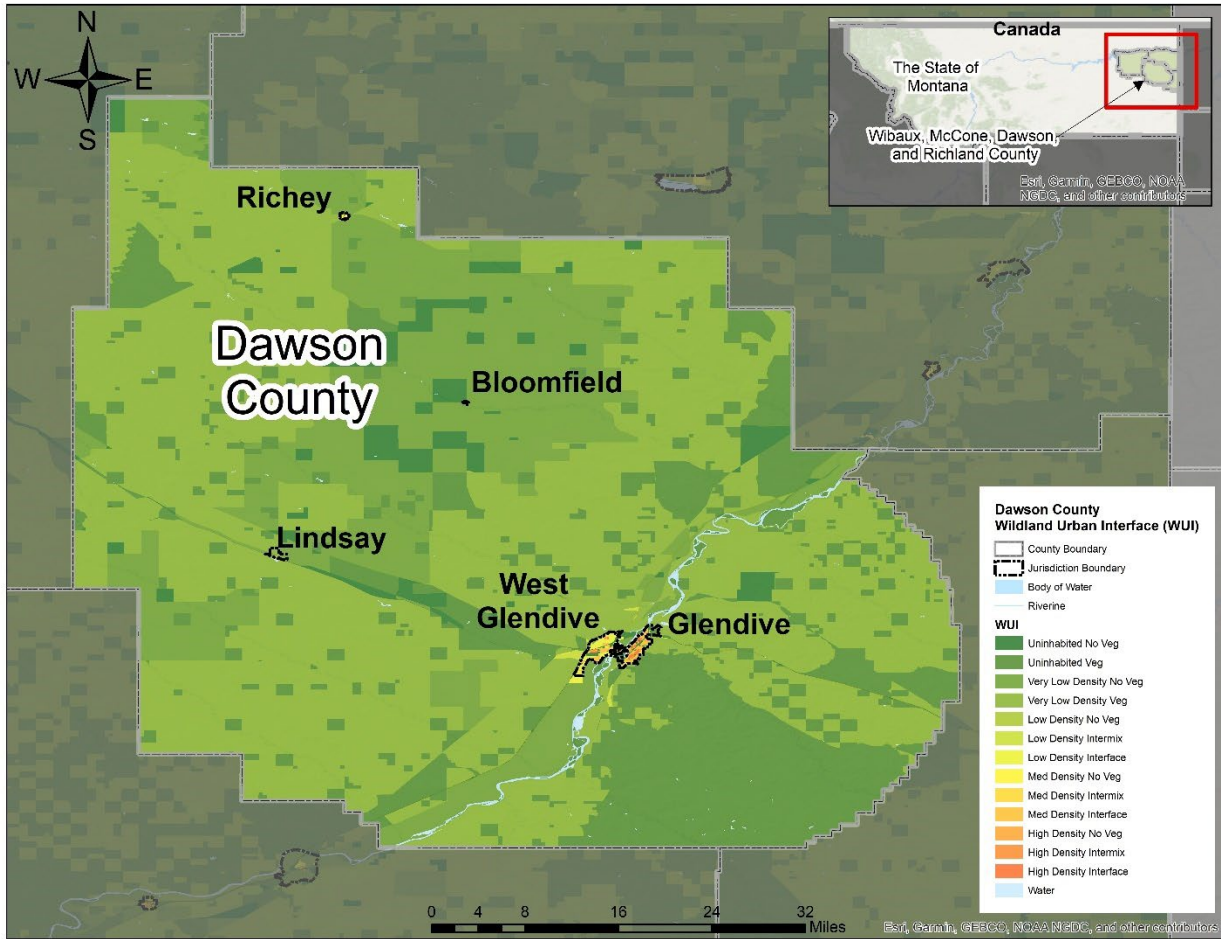
Key Facilities

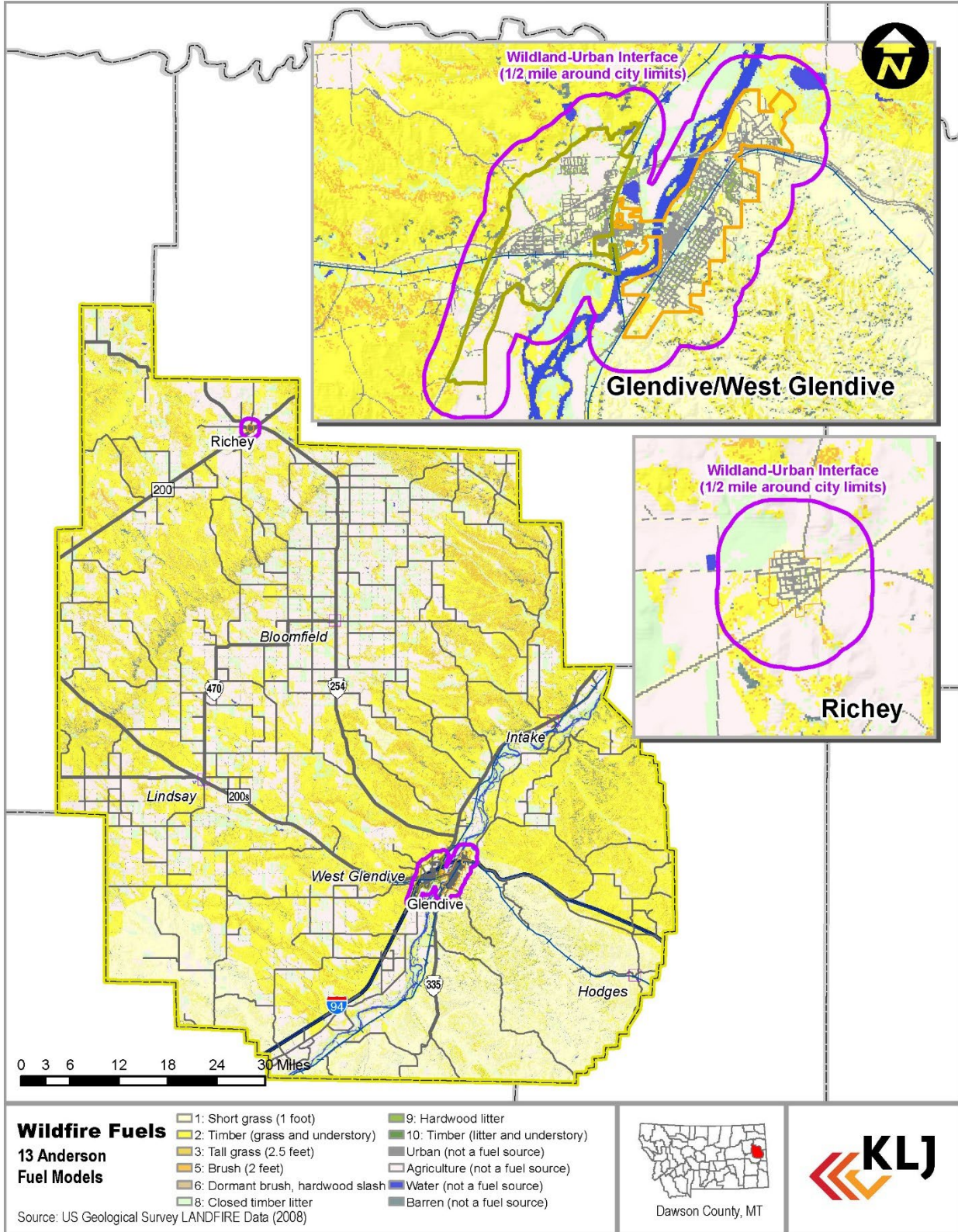
Nearly all of the county's key facilities are within urbanized areas of Glendive/West Glendive or Richey, which are considered defensible space for wildfire. There are several key facilities located along the edges of town near the wildland-urban interface. Facilities vulnerable to wildfire include:

- Dawson Community College
- Dawson Community Airport
- Dawson County Law Enforcement Center
- KGLE & KXGN
- MDU Turbines
- Power/Transmission Lines
- Truck Stops

A large wildfire in the Glendive/West Glendive or Richey area has potential to encroach into urban areas and damage additional facilities.

Figure 23 Dawson County Fuel Types





Property

According to the Fire and Aviation Management Bureau, the largest wildfire in eastern Montana since 2003 was a 121,600-acre fire in Bighorn County in 2006. This scenario considers a 120,000-acre wildfire that develops near Glendive or Richey. Two primary hazard areas are analyzed in this scenario: rural areas and the wildland-urban interface (the first ½ mile outside city limits, also including the first 100 yards within city limits). While a large wildfire would have the potential of damaging or destroying all structures in either Glendive or Richey, only structures on the edges of town are considered to have an increased vulnerability. Note that this analysis does not include exempt structures such as churches and public facilities.

In the scenario, it is also assumed that 100 percent of structures in the wildland-urban interface are damaged or destroyed. Dawson County is 1,549,446 acres, so a 120,000-acre wildfire would affect approximately eight percent of rural areas. The scenario is presented in Table 31. Farmstead/residential structures experience the greatest damages in all areas.

Table 32 Dawson County Wildfire Scenario Damage Estimates

Dawson			
Land Use	Structure	Land	Total
Residential & Other Property Types	\$308,702,748	\$44,778,498	\$353,481,246
Exempt*	\$21,773,599	\$5,548,651	\$27,322,250
Farmstead	\$870,390	\$215,122	\$1,085,512
Agricultural	\$0	\$0	\$0
Commercial	\$706,800	\$398,351	\$1,105,151
Vacant	\$1,177,205	\$4,668,343	\$5,845,548
Total	\$333,230,742	\$55,608,965	\$388,839,707

Glendive			
Land Use	Structure	Land	Total
Residential & Other Property Types	\$286,051,917	\$41,440,063	\$327,591,980
Exempt*	\$13,970,832	\$2,603,998	\$16,574,830
Farmstead	\$282,840	\$109,981	\$392,821
Agricultural	\$0	\$0	\$0
Commercial	\$706,800	\$257,414	\$964,214
Vacant	\$1,021,325	\$2,599,721	\$3,621,046
Total	\$302,033,714	\$47,011,177	\$349,144,891

Richey			
Land Use	Structure	Land	Total
Residential & Other Property Types	\$3,287,751	\$392,774	\$3,680,525
Exempt*	\$780,465	\$75,948	\$856,413
Farmstead	\$0	\$0	\$0
Agricultural	\$0	\$0	\$0
Commercial	\$0	\$0	\$0
Vacant	\$0	\$58,702	\$58,702
Total	\$4,068,216	\$527,424	\$4,595,640

All Property Types: Apartment Urban, Centrally Assessed Non-Value Property, Exempt Property, Partial Exempt, Farmstead - Rural, Improved Property - Rural, Improved Property - Urban, Industrial - Urban, Non-valued Property, Manufactured Home, Tribal Property, Vacant Land - Rural, Vacant Land - Urban, and Blanks
Residential & Others includes: - Apartment Urban, Improved Property - Rural, Improved Property -Urban, Non-valued Property, Manufactured Home, Tribal Property, and Blanks Commercial: Industrial - Urban, and Centrally Assessed Non-Value Property
Spatial Analysis, WUI, Montana 2021 Tax Assessor Data, https://svc.mt.gov/msl/mtcadastral

Existing Capabilities

The county has volunteer fire departments in Glendive, West Glendive and Richey. The departments have the training and experience necessary to address wildfires, along with mutual aid agreements with neighboring fire protection districts. The DNRC and BLM are also available for fire suppression equipment and personnel.

The county currently participates in Fire Prevention Week.

Dawson County subdivision regulations contain special standards for development within high fire hazard areas. Standards include a minimum number of entrance/exit routes, clear-rights-of-way, density limits, required defensible space and minimum water supply available for suppression.

The county has a burn ban ordinance that is actively enforced.

The county has fire weather danger signs in strategic locations.

Future Development/Trends and Impact on Hazard Risk

The WUI is a popular place to live. Regulating growth in these areas is a delicate balance between protecting private property rights and promoting public safety. The 2007 Montana Legislative session passed a bill specific to wildfire and the WUI that reduces the impact of wildfire and rangeland fire on future development. Senate Bill 51, which took effect on October 1, 2009, revised growth policy and subdivision law requiring the consideration of wildland fire. The law requires that growth policies include an evaluation of the potential for wildland fire, including whether or not there is need to delineate the WUI or adopt regulations that require defensible space around structures, adequate ingress and egress to and from structures to facilitate fire suppression activities, and/or adequate water supply for fire protection.

The Dawson County, City of Glendive, and Town of Richey Subdivision Regulations, adopted in 2010, include regulations pertaining to defensible space, access, and water supply. In addition, the City of Glendive has a Fire Code.

Key Issues and Potential Action Items

Key Issue: Wildfires are common in the county. Although local fire departments have excellent response capabilities, the potential remains for a large-scale wildfire in times of drought or windy conditions.

- *Potential Action Item:* Continue to maintain wildfire preparedness.
- *Potential Action Item:* Update the county’s Community Wildfire Protection Plan (CWPP) to provide a detailed assessment about the county’s wildfire risk and response capabilities.

- *Potential Action Item:* Create defensible space guidelines in the county’s subdivision regulations to address structures building near oil/gas wells or forested areas.

Hazardous Materials Release

Overall Risk:	High (all jurisdictions)
Probability:	High (Significant hazard event is likely to occur annually)
Magnitude:	Medium
Seasonal Pattern:	None
Duration:	1-10 hours
Speed of Onset:	Quick
Identified Impacts:	Agricultural loss (crops, livestock)
	Economic loss
	Human loss and injuries
	Increased stress on medical services
	Localized evacuation
	Loss of income for displaced workers
	Loss of power
	Permanent loss of business
Structure collapse	

Hazard Profile

A hazardous material is any substance that has the potential to cause harm to humans, animals or the environment, either by itself or through interaction with other factors. Multiple federal agencies are responsible for regulating hazardous materials, including the US Environmental Protection Agency (EPA), US Occupational Safety and Health Administration (OSHA), US Department of Transportation (DOT) and US Nuclear Regulatory Commission (NRC).

Common hazardous materials are:

- Explosives
- Flammables and combustibles
- Oxidizers
- Organic peroxides
- Poisonous/infectious agents
- Radioactive substances/materials
- Corrosives

Hazardous materials incidents can occur at a fixed facility or while material is transported. Common hazardous materials incidents at fixed sites include the improper storage, treatment and disposal of hazardous waste at manufacturing and processing facilities. Transportation-related

hazardous materials incidents generally occur along major transportation routes such as highways, interstates, pipelines and railroads. Common hazardous materials found in Montana include natural gas, anhydrous ammonia, and crude oil.

Natural gas is commonly used in Montana, often in its refined form of propane or butane. Propane and butane are generally transported as a liquid but will vaporize in the event of an unintended release (butane only vaporizes at temperatures above 32 degrees Fahrenheit). In their gaseous form they are both heavier than air, and generally remain close to the ground. Propane and butane are both highly flammable and present the risk of explosion. Exposure to propane and butane can also be a health hazard. Acute exposure can cause asphyxiation, respiratory irritation and physiological damage; however, these effects are most likely to occur in enclosed spaces or areas with poor ventilation.

Anhydrous ammonia is used in manufacturing, refrigeration and fertilizer. It is often stored and transported as a pressurized liquid, but it will vaporize under normal pressure. Anhydrous ammonia has explosive potential, but it requires extremely high temperatures to ignite. It generally only produces a significant health hazard when released in poorly ventilated areas, but when exposed to moisture it can cause a low-lying ammonia fog. Effects of acute anhydrous ammonia exposure include severe irritation to the eyes, respiratory tract, gastrointestinal tract and skin; severe repetitive exposure can cause permanent damage to these tissues. Anhydrous ammonia is not known to be carcinogenic.

Crude oil poses a significant risk due to its high flammability. It may release flammable vapors that increase the risk of explosion. Crude oil also poses several health risks. Exposure to crude oil can come from direct contact, inhalation or ingestion. Acute exposure to crude oil can cause direct effects such as skin irritation, breathing difficulty, headaches and nausea. Acute exposure may also lead to long-term complications such as lung, liver or kidney damage, and increased cancer risk.

Railroads and interstates/highways are increasingly being relied upon to transport crude oil from the Bakken region to refineries in the south or along the coasts. While both methods of transportation present a risk to people and property, the economics of crude oil transportation by rail creates an increased risk that is not present along interstates/highways. When crude oil is shipped by rail, it is often assembled into "unit trains" that contain more than 100 cars of the same substance. These unit trains contain an enormous concentration of crude oil, often nearly three million gallons per train.

Additionally, the safety of tank cars that commonly transport crude oil, called DOT-111 cars, has been called into question by the National Transportation Safety Board. These cars have been shown to have a high failure rate when trains derail. The Pipeline and Hazardous Materials Safety Administration has proposed new guidelines that phase out the use of DOT-111 cars, but regulations have not yet been put into place.

The combination of high volume and inadequate cars means that railroads could present a significant risk in the event of a derailment. Most towns in Montana were historically developed around the railroad, meaning that trains often travel in close proximity to large numbers of people and property.

Railroad hazardous materials incidents are rare; however, the results can be catastrophic when an incident occurs. On July 6, 2013 a train carrying 72 carloads of crude oil derailed in Lac-

Magantic, Quebec and resulted in 50 fatalities. The potential exists for large-scale events such as this in communities across North America, especially in areas near the Bakken formation where crude oil production and transport is high.

Location

Hazardous material incidents usually occur on major highways and railways, but fixed-facilities containing hazardous materials can pose a threat to residents in the county.

Extent

Hazardous materials incidents can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and the environment. The magnitude of the hazard is often expressed as a percentage of property damage caused by the incident. The extent of hazardous materials in the county to-date have been small incidents that have caused no injuries or fatalities.

Local Risk and Probability

Transportation routes present the greatest hazardous materials risk to people and property in Dawson County. There are multiple highways in the county that trucks utilize to transport hazardous materials. Interstate 94 is a major east-west connection in the state, and Highway 16 connects Glendive and Sidney. Additional highways include 200S, 200, 254, 335 and 470. Highways 200S, 16, 335 and Interstate 94 converge at Glendive. It is common to see large trucks carrying hazardous materials through town.

Natural gas and oil pipelines run throughout the county. On January 17, 2015, Bridger pipeline reported a 12-inch dia. with a ½ in thick wall pipe leak, located in the area of the Yellowstone River crossing 6.5 miles upstream of Glendive, Montana in Dawson County. The spill was estimated between 758 barrels of crude oil released. The crude oil released was mostly Bakken crude.

Additionally, the railroad travels throughout the southeastern portion of the county, including Glendive which is home to a large rail yard adjacent to downtown.

The Montana Department of Environmental Quality (DEQ) maintains a statewide database of permitted hazardous waste handlers, which includes sites for hazardous materials treatment, storage or disposal. A summary of hazardous waste handlers and transportation corridors in Dawson County is shown in Figure 24.

The National Response Center (NRC) and Pipeline and Hazardous Materials Safety Administration (PHMSA) track hazardous materials releases nationwide. Since 1990 there have been 37 reported hazardous materials releases in Dawson County as of 2021.

- 11 releases involved the railroad.
- 11 releases involved truck transportation.
- 7 releases involved fixed facilities.
- 8 releases involved pipelines.

Figure 24 Hazardous Material Transportation Corridors in Dawson County

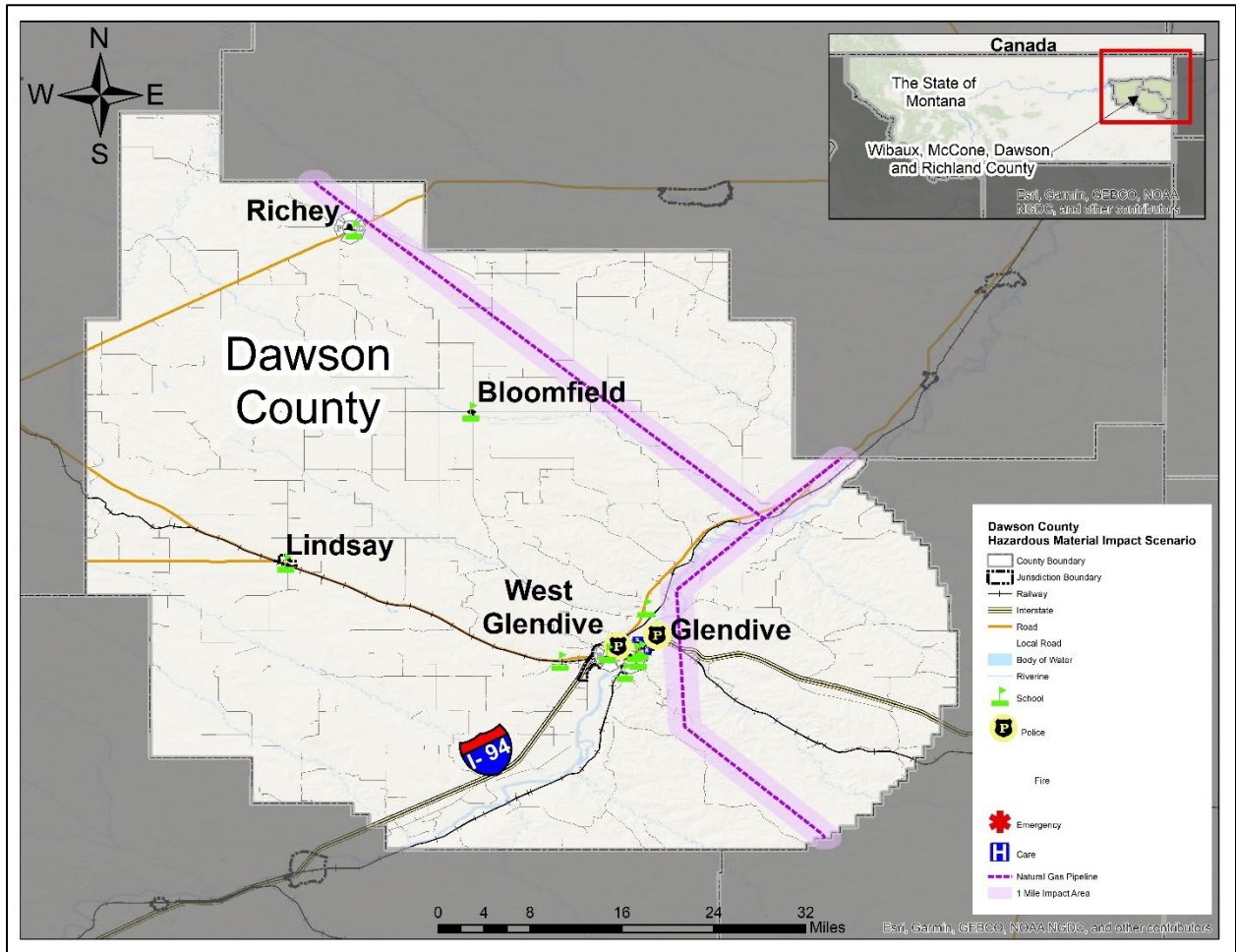
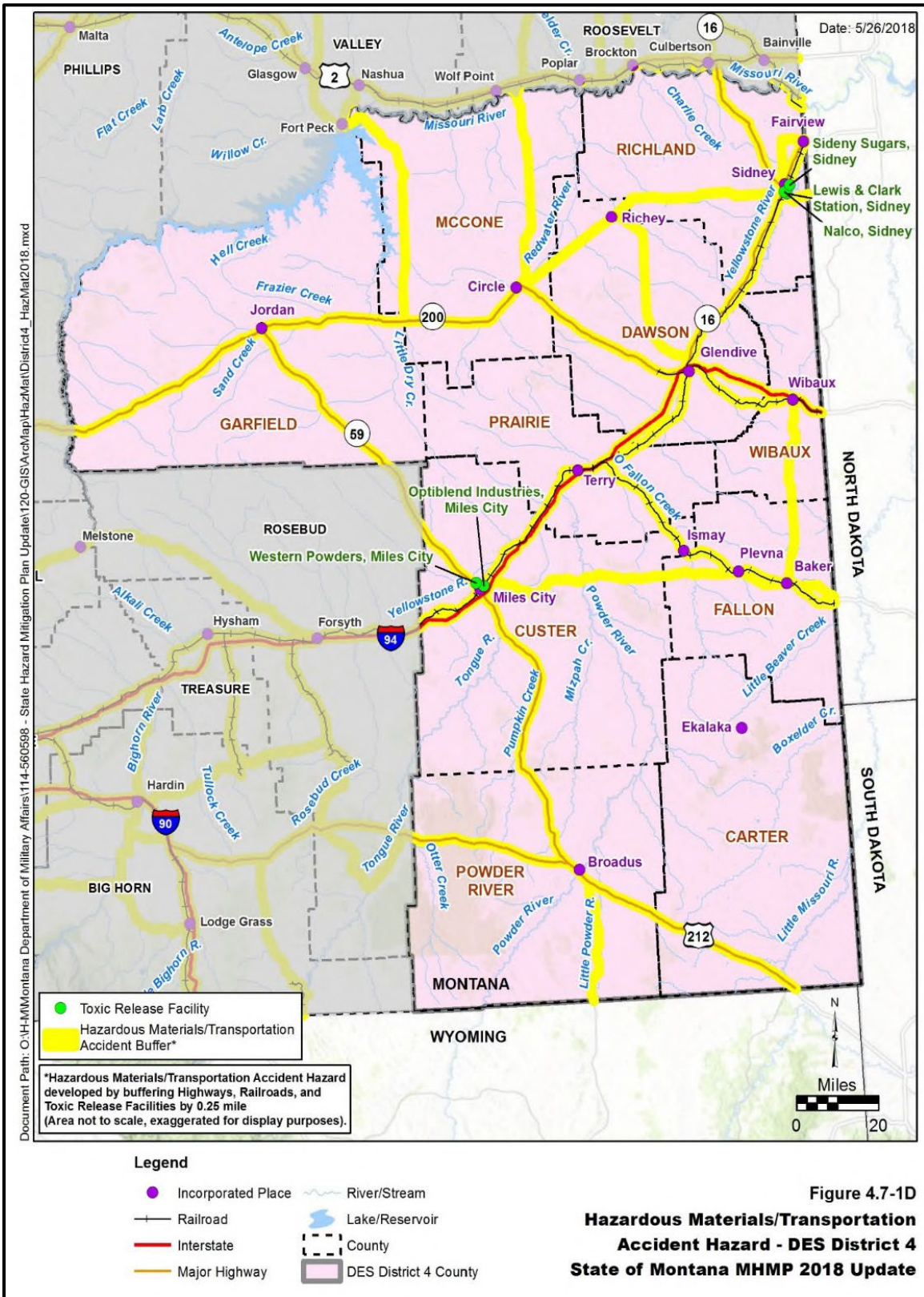


Figure 25 Regional HAZMAT Transportation Hazard Areas



Vulnerabilities

Population

For purposes of this analysis, a half-mile hazard area is established around each potential source of a hazardous materials release. This area is a general estimate and would vary in a real-world situation depending on the type of material released and the weather conditions. It is important to note that this analysis looks at the number of people living within a potential hazard area – not the number of people who would be affected by a single event. The population is taken from 2010 census block statistics (at the time of the update, the 2020 census data was not available). In many cases, the hazard area only partially bisects a census block, so the population within the hazard area is a proportional estimate.

- Approximately 4,000 residents are within the hazard area for highway incidents.
- Approximately 3,600 residents are within the hazard area for railroad incidents.
- Approximately 1,500 residents are within the hazard area for pipeline incidents.

The Glendive/West Glendive area is affected by highway, rail and pipeline, and the Richey area is affected by highway and pipeline.

Key Facilities

All key facilities would be affected in some way if a hazardous materials release required a mass evacuation. All key facilities are located within a half-mile of a major roadway, pipeline or railroad. Key facilities located directly adjacent (within 1,000 feet) to a railroad or major highway include:

- Dawson County High School.
- Glendive Fire Department/City Hall/Ambulance.
- Glendive Medical Center.
- Jefferson Elementary.

The bridges in the Glendive area could be significantly damaged if they are the location of a release.

Property

The analysis in Table 32 looks at assessed property values for parcels that are primarily within the one-mile hazard buffer area.

Table 33 Properties Vulnerable to Hazardous Materials Incidents

Dawson			
Land Use	Structure	Land	Total
Residential & Other Property Types	\$7,023,139	\$753,039	\$7,776,178
Exempt*	\$213,446	\$1,546,061	\$17,595,097
Farmstead	\$7,224,240	\$5,496,657	\$12,720,897
Commercial	\$0	\$34,361	\$34,361
Vacant	\$69,450	\$11,357,498	\$11,426,948
Total	\$14,530,275	\$19,187,616	\$49,553,481

Glendive			
Land Use	Structure	Land	Total
Residential & Other Property Types	\$4,857,096	\$292,097	\$5,149,193
Exempt*	\$0	\$0	\$0
Farmstead	\$2,674,370	\$750,657	\$3,425,027
Commercial	\$0	\$0	\$0
Vacant	\$0	\$17,242	\$17,242
Total	\$7,531,466	\$1,059,996	\$8,591,462

Richey			
Land Use	Structure	Land	Total
Residential & Other Property Types	\$1,991,081	\$236,300	\$2,227,381
Exempt*	\$33,135	\$22,791	\$55,926
Farmstead	\$1,106,980	\$745,681	\$1,852,661
Commercial	\$0	\$0	\$0
Vacant	\$0	\$262,469	\$262,469
Total	\$3,131,196	\$1,267,241	\$4,398,437

All Property Types: Apartment Urban, Centrally Assessed Non-Value Property, Exempt Property, Partial Exempt, Farmstead - Rural, Improved Property - Rural, Improved Property - Urban, Industrial - Urban, Non-valued Property, Manufactured Home, Tribal Property, Vacant Land - Rural, Vacant Land - Urban, and Blanks

Residential & Others includes: - Apartment Urban, Improved Property - Rural, Improved Property -Urban, Non-valued Property, Manufactured Home, Tribal Property, and Blanks

Commercial: Industrial - Urban and Centrally Assessed Non-Value Property

Spatial Analysis, HAZMAT Buffer 1 mile, Montana 2021 Tax Assessor Data, <https://svc.mt.gov/msl/mtcadastral>

Existing Capabilities

The county has an evacuation plan in the event of a hazardous materials release. The plan is contained in the county's Emergency Operations Plan.

All first responder vehicles have binoculars to help assess a situation from a safe distance.

All schools have an evacuation plan and practice evacuation on a regular basis (fire drills).

Local fire departments have staff who are trained to respond at the operations level. The fire departments are primarily responsible for protecting nearby persons, property and environment from the effects of the release. Private operators such as BNSF and assorted chemicals distributors have their own hazmat crews that are responsible for clean-up and reclamation of incident sites. Assistance is also available from the hazardous materials response team in Billings and a few private contractors in Sidney can provide clean-up activities for simple spills.

Glendive has ordinances restricting the parking of vehicles carrying hazardous materials through the city.

Future Development/Trends and Impact on Hazard Risk

Much of the future development currently occurring in the county is off major roads and rail networks. The potential does exist for development of agricultural lands bordering the highways and railroad. Very few restrictions are in place to prevent development in these areas.

Key Issues and Potential Action Items

Key Issue: The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas.

- *Potential Action Item:* Educate residents about hazardous materials and who to call to report spills to ensure property cleanup.
- *Potential Action Item:* Designate evacuation shelter facility located a safe distance from potential sources of a hazardous materials incident.
- *Potential Action Item:* Develop ordinances for Richey that restrict the parking of vehicles carrying hazardous materials through the county.

Key Issue: The closest state hazardous materials response team is in Billings, which is approximately 220 miles from Glendive and 260 miles from Richey.

- *Potential Action Item:* Work with DEQ to establish a hazardous materials response team in eastern Montana.

Key Issue: The county has contacted BNSF about receiving periodic reports about the hazardous materials being transported through the county, but the railroad has not been regularly delivering the reports.

- *Potential Action Item:* Continue attempting to work with BNSF to receive hazardous materials reports.

Key Issue: The fire departments receive Tier II reports but they are not shared with all first responders. The text-based report format of Tier II reports makes them impractical for regular reference.

- *Potential Action Item:* Map all hazardous materials locations in the county using GIS mapping software and distribute maps to all first responders. Hazardous materials locations can also be integrated into GIS-based dispatch system.

Key Issue: County emergency management authorities are not always consulted prior to approval of new facilities containing hazardous materials.

- *Potential Action Item:* Require DES Coordinator review for all proposed facilities that may be a source of hazardous materials.

Terrorism and Violence

Overall Risk:	Low (all jurisdictions)
Probability:	Low (Significant hazard event is likely to occur within 100 years)
Magnitude:	Low
Seasonal Pattern:	None
Duration:	Varies
Speed of Onset:	Quick
Identified Impacts:	Agricultural loss (crops, livestock)
	Economic loss
	Human loss and injuries
	Increased stress on medical services
	Localized evacuation
	Property damage or loss
	Release of hazardous materials
	Structure collapse
	School/Education

Hazard Profile

Terrorism is defined by the Code of Federal Regulations as “the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” Terrorist attacks are generally premeditated and motivated by a political and social methodology. The 2018 statewide plan identifies four primary types of terrorism.

- **Cyber-terrorism:** attack on computers, networks and the information they contain including internet fraud.
- **Biological and chemical weapons:** biological and chemical agents used to produce illness or death in people, animals or plants. These agents could be used to contaminate food or water supplies or could be deployed into the air in a gaseous form. They are often odorless and tasteless, and are difficult to detect.
- **Radiological dispersion devices:** a combination of conventional explosives and radioactive material designed to scatter dangerous and sub-lethal amounts of radioactive material over a general area.
- **Eco-terrorism:** use or threatened use of violence of a criminal nature against innocent victims or property by an environmentally-oriented, subnational group for environmental-political reasons. Eco-terrorism attacks are often symbolic in nature and aimed at an audience beyond the target.

Civil unrest also poses the threat of widespread violence. Civil unrest can occur when a person or group disrupts public order by blocking sidewalks, roadways or buildings. Escalated forms of

civil unrest include rioting and looting. Civil unrest is most likely to occur when there is a shortage of critical materials such as food or fuel.

Location

Terrorism and violence are unpredictable and can occur anywhere in the county. Key government facilities or critical assets are likely to be most vulnerable.

Extent

The severity of terrorism, violence, civil unrest, or a cyber breach are difficult to determine but can be measured by the number of people affected and by economic loss. As of 2021, no major incidents have occurred in the county.

Local Risk and Probability

There is no history of terrorism or civil unrest in Dawson County. The 2018 statewide plan identifies one major terrorist event that has happened in eastern Montana. The “Freemen Crisis” in 1996 was an 81-day FBI siege of the Ralph Clark ranch complex in Jordan (115 miles west of Glendive). The Montana Freemen, as the group called itself, rejected the authority of all outside governments and declared their ranch to be a sovereign township. The government alleged that the nearly 30 people inside the ranch compound were a radical and racist religious sect who had written bad checks and threatened judges. The standoff ended without violence.

There is no specific threat of terrorism to Dawson County, although the multiple energy storage and distribution facilities located throughout the county may be a potential target. A terrorist event in the county is considered to be very unlikely. The county is not considered a specific terrorist target nor is it an area of high risk for civil unrest. As with any area, a shooting by a disgruntled person, employee, or student is always possible. A large-scale attack cannot be ruled out, and therefore, a small probability exists.

Of greater probability is a national terrorist incident or cyberattack that has an indirect effect on the county through its economy.

There is no history of significant school violence in the county and lockdown procedures are in place.

Vulnerabilities

Population

Schools in the county are potential locations of school violence. Approximate enrollment is listed below.

- Bloomfield Elementary (Bloomfield, 4 students)
- Dawson County High School (Glendive, 351 students)
- Deer Creek Elementary (North of Glendive, 19 students)
- Jefferson Elementary (Glendive, 290 students)
- Lincoln Elementary (Glendive, 138 students)
- Lindsay Elementary (Lindsay, 12 students)
- Richey K-8 (Richey, 44 students)
- Richey High School (Richey, 28 students)
- Washington Middle School (Glendive, 641 students)

The number of residents vulnerable to a terrorist attack is highly variable based on time of day and extent of the attack.

Key Facilities

The following key facilities have an increased vulnerability to an incident involving terrorism and violence:

- Armory
- Bridges
- Communications and Utility Infrastructure
- City Halls in Glendive and Richey
- County Courthouse
- Law Enforcement Center
- MDU Turbines
- Schools

Property

Due to the variability of an incident involving terrorism and violence, it is difficult to quantify the potential effect on property in the county.

Existing Capabilities

The county's Emergency Operations Plan includes procedures that could be utilized in the event of a terrorist attack.

The 83rd Civil Support Team of the Montana National Guard provides assistance with the identification and response to chemical, biological, radiological, nuclear or explosive (CBRNE) incidents.

Future Development/Trends and Impact on Hazard Risk

Future development does not directly impact this hazard.

Key Issues and Potential Action Items

Key Issue: The multiple energy storage and distribution facilities located throughout the county may be a potential target for terrorism, although a specific threat has not been identified. Terrorism and violence are an ongoing concern, but it is very unlikely an event will occur in the county.

- *Potential Action Item:* Continue general surveillance of suspicious persons or activities within the county.
- *Potential Action Item:* Review and require evacuation plans that could be utilized in the event of a terrorist attack.
- *Potential Action Item:* Evaluate energy storage and distribution facilities that may require additional fencing or surveillance.

Key Issue: There was a bomb threat called into the K-Mart in West Glendive in late 2013. No bomb was found but the threat prompted an evacuation of the store.

- *Potential Action Item:* Assist local businesses with developing emergency action plans.

Risk Assessment Summary

Risk Assessment Factors

Probability of Occurrence

The probability of occurrence of a hazard is indicated by a probability factor based on the likelihood of annual occurrence:

- **High**—Significant hazard event is likely to occur annually (Probability Factor = 3)
- **Medium**—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)
- **Low**—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)
- **Unlikely**—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

The assessment of hazard frequency is generally based on past hazard events in the area. The table below summarizes the probability assessment for each hazard of concern for this plan.

Impact

Hazard impacts were assessed in five categories: impacts on people, impacts on property, impacts on the local economy, and the catastrophic potential of the hazard. Numerical impact factors were assigned as follows:

- **Population Exposed**—Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of actual impact on individuals from any hazard event can vary widely, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs.
 - **High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
 - **Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
 - **Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
 - **No impact**—None of the population is exposed to a hazard (Impact Factor = 0)
- **Property Exposed**—Values were assigned based on the percentage of the total property value exposed to the hazard event:
 - **High**—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
 - **Medium**—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
 - **Low**—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
 - **No impact**—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

- **Property Damages**—Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard based on historical data for each event or probabilistic models/studies.
 - **High**—More than \$5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
 - **Medium**—More than \$500,000, but less than \$5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
 - **Low**—Less than \$500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
 - **No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

- **Economic Factor**—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).
 - **High**—Where the total economic impact is likely to be greater than \$10 million (Impact Factor = 3)
 - **Medium**—Total economic impact is likely to be greater than \$100,000, but less than or equal to \$10 million (Impact Factor = 2)
 - **Low**—Total economic impact is not likely to be greater than \$100,000 (Impact Factor = 1)
 - **No Impact**—Virtually no significant economic impact (Impact Factor = 0)

- **Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic.
 - **High**—High potential that this hazard event could be catastrophic (Impact Factor = 3)
 - **Medium**—Medium potential that this hazard event could be catastrophic (Impact Factor = 2)
 - **Low**—Low potential that this hazard event could be catastrophic (Impact Factor = 1)
 - **Unlikely**—Virtually no potential that this hazard event could be catastrophic (Impact Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 for both population exposed to the hazard and its potential for catastrophe; a weighting factor of 2 for property damages probable due to a major hazard event; and a weighting factor of 1 for both property exposed to the hazard and its impact on the economy. The following tables below summarize the impacts ratings for each hazard.

Risk Assessment Results

Priority hazards in Dawson County are determined to be:

Dawson County

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Severe Summer Storm	3	20	60
Hazardous Materials Release	3	20	60
Flood	2	29	58
Severe Winter Storm	3	19	57
Drought	2	22	44
Wildfire	2	19	38
Communicable Disease	2	18	36
Terrorism & Violence	1	15	15
Landslide	1	12	12

Glendive

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Severe Summer Storm	3	20	60
Hazardous Materials Release	3	20	60
Flood	2	30	60
Severe Winter Storm	3	19	57
Drought	2	22	44
Wildfire	2	19	38
Communicable Disease	2	18	36
Terrorism & Violence	1	15	15
Landslide	1	10	10

Richey

Hazard Event	Probability Factor	Sum of Weighted Impact Factors	Total (Probability x Impact)
Severe Summer Storm	3	20	60
Severe Winter Storm	3	19	57
Drought	2	22	44
Hazardous Materials Release	2	20	40
Wildfire	2	19	38
Communicable Disease	2	18	36
Flood	1	13	13
Terrorism & Violence	1	10	10
Landslide	1	10	10

Chapter 4: Mitigation Strategy

The mitigation strategy includes specific action items to reduce the impact of the priority hazards identified in Chapter 3. The process for identifying action items included a public meeting, online community survey and significant input from the planning team. Goals were identified to guide the development of action items.

Capability Assessment

Before identifying goals and action items, it is important to know the county and city's capability to undertake different types of hazard mitigation projects. Specific capabilities are listed as part of each hazard profile in Chapter 3. Additional capabilities for the county are summarized below.

Legal and Regulatory Capabilities

- Building Code (County and Glendive)
- Zoning Ordinance (Glendive)
- Subdivision Ordinance (County, Glendive and Richey)
- Floodplain Ordinance (County and Glendive)
- Wildfire Protection Plan (County)
- Growth Policy
- Emergency Operations Plan (County)

Administrative and Technical Capabilities to Implement Hazard Mitigation

- Engineer with knowledge of land development and land management (County and Glendive)
- Engineer trained in construction practices related to buildings or infrastructure (County and Glendive)
- City and county officials with education or expertise to assess the community's vulnerability to hazards (all jurisdictions)
- Floodplain manager (County and Glendive)
- Personnel skilled in GIS
 - The county has identified a mitigation action to solicit support to map the entire county
- Emergency manager (County)

Fiscal Capabilities

- Eligible for Community Development Block Grants (all jurisdictions)
- Authority to levy taxes (all jurisdictions)
- Fees for water, sewer, gas and electric (County and Glendive)
- Ability to incur debt through bonds (County and Glendive)

The county and incorporated communities have the ability to implement a wide variety of mitigation projects, including those found in this plan. The county LEPC has a large and wide-ranging membership; the committee was actively involved with the creation and update of the plan and will oversee implementation of recommended mitigation projects for the county, Glendive and Richey.

Funding/financing mechanisms for large projects is the greatest element that limits the capability

of all jurisdictions. The county has a relatively small tax base, and any financing mechanism that increases the public tax burden is not desired by residents, many of which are elderly and on fixed incomes. As a result, a majority of projects identified in this plan have a minimal cost and can be completed by local staff. Outside funding sources and technical assistance would need to be acquired to help fund the few large projects identified in this plan.

While Dawson County has not experienced significant population growth due to the oil industry, many neighboring counties have. The potential exists for population growth to have a significant impact on the county, particularly in rural areas located near oil development locations. Additional regulatory mechanisms may be necessary to ensure that development occurs in a safe and efficient manner.

Goals

The goals defined below provide the general guiding principles that were used when developing mitigation activities. The goals may be used to guide the development of additional action items as the plan is evaluated in future years. The county's 2014 Hazard Mitigation Plan was used to guide goal creation. The goals below are all priorities and presented in no particular order.

1. Reduce or avoid flood damage to people and property.
2. Reduce the potential for hazardous materials incidents and mitigate potential impacts to life and property.
3. Minimize the impacts of severe winter storms.
4. Minimize the impacts of severe summer storms.

Mitigation Action Plan

The action plan helps to prioritize mitigation initiatives according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The action plan also provides the framework for how the proposed projects and initiatives will be implemented and administered over the next 5 years.

Mitigation Strategy/Action Timeline Parameters

While the preference is to provide definitive project completion dates, this is not possible for every mitigation strategy/action. Therefore, the parameters for the timeline (**Projected Completion Date**) are as follows:

- **Short Term**—To be completed in 1 to 5 years
- **Long Term**—To be completed in greater than 5 years
- **Ongoing**—Currently being implemented under existing programs, but without a definite completion date.

Mitigation Strategy/Action Benefit Parameters

Benefit ratings were defined as follows:

- **High**—Project will provide an immediate reduction of risk exposure for life and property.

- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term

Mitigation Strategy/Action Estimated Cost Parameters

While the preference is to provide definitive costs (dollar figures) for each mitigation strategy/action, this is not possible for every mitigation strategy/action. Therefore, the estimated costs for the mitigation initiatives identified in this Plan were identified as high, medium, or low, using the following ranges:

- **High**—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
- **Medium**—The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

Mitigation Strategy/Action Prioritization Process

The action plan must be prioritized according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

The priorities are defined as follows:

- **High Priority**—A project that addressed numerous goals or hazards, has benefits that exceed cost, has funding secured or is an ongoing project, and meets eligibility requirements for the HMGP or BRIC grant program. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority**—A project that addressed multiple goals and hazards, that has benefits that exceed costs, and for which funding has not been secured but that is grant eligible under HMGP, BRIC, or other grant programs. The project can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority**—A project that will address few or no goals, mitigate the risk of one or few hazards, has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for HMGP or BRIC grant funding, and for which the timeline for completion is long term (1 to 10 years). Low priority projects may be eligible for other sources of grant funding from other programs.

For many of the strategies identified in this action plan, the partners may seek financial assistance under the HMGP or HMA programs, both of which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit-cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, the partners reserve the right to define “benefits” according to parameters that meet the goals and objectives of this plan.

New Mitigation Actions

New mitigation actions identified during this update are included in this section.

Mitigation Table - New Actions

NEW MITIGATION ACTION 1

Mitigation Project: Explore and implement mitigation alternatives to keep Penninger Park from eroding into the Yellowstone River.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Glendive	City of Glendive Army Corp of Engineers	High	Short	TBD	High
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		Flood	Erosion is causing city infrastructure to be exposed, such as the fire hydrant and water lines.	High		Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: None							

NEW MITIGATION ACTION 2

Mitigation Project: Procure and install updated and improved boilers and HVAC systems at local schools (DCHS, WMS, LES) and ensure they are installed above base flood elevation.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County Schools (DCHS,	Glendive Public Schools	High	Short	TBD	High

		WMS, LES)				
Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source		
Goal 1, 2, 3	All Hazards	Mitigate flooding and damage to facilities	Medium	Bonds and grants		
Action/Implementation Plan, Project Description, and Project Status:						
Key Issues: None						

NEW MITIGATION ACTION 3

Mitigation Project: Establish protocols, procedures, and provide education to ensure the safety and operational integrity of pipelines in the County. Purchase equipment to support in the response of pipeline related incidents. Specifically, the following may be considered:

- Educate residents about 811 to prevent pipeline strikes.
- Procure/improve water intake equipment to prevent uptake of hydrocarbons on water surface
- Train and utilize law enforcement to assist with site security.
- Keep interstate open.
- Prevent fire from reaching terminal.
- Improve electricity utility resilience to weather.

Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County and Glendive	Emergency Management, Sheriff, Volunteer Fire Departments	Medium	Ongoing	TBD	Medium
Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source			
Goal 2	Hazardous Materials	Safety and operational integrity of pipelines	Medium	Public and private-sector funds and grants MTDES			
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues:							

NEW MITIGATION ACTION 4

Mitigation Project: Continue promoting and implementing NFIP and CRS							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County, City of Glendive	Flood Plain Management	Medium	Ongoing	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		All Hazards		Medium		Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: None							

NEW MITIGATION ACTION 5

Mitigation Project: Establish a public/private partnership and MOUs to develop a plan to provide fuel for emergency response vehicles during a power outage or fuel shortage incident.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County	Emergency Management, Sheriff, Volunteer Fire Departments	Medium	Short	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goals 1, 2, 3 and		All Hazards	Fuel shortage	Medium		Local budget and staff time	

4				
Action/Implementation Plan, Project Description, and Project Status:				
Key Issues: Potential partners could include, but are not limited to: Cennix Harvest States (CHS)				

NEW MITIGATION ACTION 6

Mitigation Project: Develop, implement and procure equipment to support short-term housing and/or sheltering alternatives for stranded people and vehicles during long-term road closures.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County	Dawson County Emergency Management	High	Ongoing	TBD	Medium
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goals 1, 2, 3 and 4		Severe Winter storm, Wildfire, and Flooding	Assist stranded motorists	Medium		MTDES	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: None							

NEW MITIGATION ACTION 7

Mitigation Project: Develop a public health recovery plan to address unmet needs in the County.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County	PHEP Coordinator/ DCHD	High	Short (2023)	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	

Goals 1, 2, 3 and 4	All Hazards	Address unmet needs	Medium	Local funds and staff time
Action/Implementation Plan, Project Description, and Project Status:				
Key Issues: MOUs will be explored and established to increase the County’s capacity to support a major public health and medical incident, specifically in regards to unmet needs in the health, medical and social services.				

NEW MITIGATION ACTION 8

Mitigation Project: Explore, implement and purchase equipment to mitigate the impacts of ice jams on major water ways that may result in and exacerbate flooding and the dangerous release of water downstream.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County and the City of Glendive	Dawson County Planning and Emergency Management	High	Short	TBD	Medium
Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source			
Goal 1	Flooding	Mitigate flooding	High	Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC			
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: None							

NEW MITIGATION ACTION 9

Mitigation Project: Procure generator and generator hookups for the Water Treatment Facility in Richey.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Richey	Emergency Management	High	Short	\$60,000	Medium
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goals 3 and 4		All Hazards	Ensure the town can provide clean water in times of disasters and prolonged power outages.	High		Hazard Mitigation Grant Program (HMGP), BRIC, ARPA	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: ARPA funds may provide funding for this project.							

NEW MITIGATION ACTION 10

Mitigation Project: Explore and identify water lines in the County that need to be replaced, hardened, and/or improved to mitigate disruptions and to be more resilient to flooding and other impacts.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County City of Glendive	West Glendive Public Works Glendive Public Works	Medium	Ongoing	TBD	High

Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source
Goals 1, 3 and 4	Flooding Severe Winter Weather		Medium	Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC
Action/Implementation Plan, Project Description, and Project Status:				
Key Issues: None				

NEW MITIGATION ACTION 11

Mitigation Project: Removal of grain elevators that pose a danger during high wind incidents.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Richey	Town Administration	High	Short	TBD	Medium
Goal	Hazard(s) Mitigated		Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goals 3 and 4	Severe Thunderstorm, Severe Winter Weather, Tornado and High Winds		Reduce dangerous debris during high wind events	High		Hazard Mitigation Grant Program (HMGP), other rural community development grants	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: None							

NEW MITIGATION ACTION 12

Mitigation Project: Landslide mitigation and erosion control to reduce debris on susceptible roadways, such as, but not limited to: CR303 and Makoshika State Park.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County	Emergency Management	Medium	Long-term	TBD	High
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 4		Landslide Severe Summer Weather	Reduce dangerous debris on roadways	Medium		Hazard Mitigation Grant Program (HMGP)	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: The issue on CR303 may require rerouting the road.							

NEW MITIGATION ACTION 13

Mitigation Project: Explore, study, and implement increased HAZMAT response capabilities in the region.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County	Emergency Management, Sheriff, Volunteer Fire Departments	Medium	Long-term	TBD	High
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	

Goal 2	HAZMAT	HAZMAT response capabilities in Eastern Montana.	High	MTDES
Action/Implementation Plan, Project Description, and Project Status:				
Key Issues: Currently, the nearest HAZMAT response team is located in Billings, Montana. Although very preliminary, discussions have been ongoing regarding the need for a Regional HAZMAT team in eastern Montana.				

NEW MITIGATION ACTION 14

Mitigation Project: Continue to explore, study and implement mitigation measures to address overtopping concerns on the West Glendive Levee.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County and Glendive	Army Corp of Engineers	High	Long-term	TBD	High
Goal	Hazard(s) Mitigated		Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1	Flooding		Mitigate flooding	High		Hazard Mitigation Grant Program (HMGP), BRIC, Army Corp of Engineers	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: Susceptible properties in the immediate impact area are a trailer park and other key resources/facilities. As part of this project, consideration may require relocating the trailer park, if necessary.							

NEW MITIGATION ACTION 15

Mitigation Project: Erosion control and levee improvements near Cottonwood Grove.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	Dawson County	Emergency Management	Medium	Long-term	TBD	High
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		Flooding	Mitigate flooding	Medium		Hazard Mitigation Grant Program (HMGP), BRIC	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: Ownership of the levee needs to be determined. Erosion concerns may impact the integrity of the levee.							

NEW MITIGATION ACTION 16

Mitigation Project: Mitigation surface and shoulder erosion caused by water on key roads and address issues with culverts, such as, but not limited to:							
<ul style="list-style-type: none"> • Increasing culvert size • Increasing efficiency of the entrance • Raising the culvert • Adding slurry 							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	County and all participating	County and Cities	Medium	Long-term	TBD	High

		jurisdictions				
Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source		
Goal 1, 3 and 4	Flooding, Severe Summer and Winter Weather	Protect roads	High	Hazard Mitigation Grant Program (HMGP), BRIC		
Action/Implementation Plan, Project Description, and Project Status:						
Key Issues: County roads are susceptible to washout. Damage to culverts is caused primarily by floodwaters eroding culvert entrances or outlets and road embankments, and usually results in a full or partial washout or misalignment of the culvert. These damages may be due to insufficient design capacity or end treatments, inadequate slope protection, or inadequate protection from floating debris.						

NEW MITIGATION ACTION 17

Mitigation Project: Explore and implement mitigation alternatives to address flooding on Marsh Road.							
Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
New	2021	County and City of Glendive	Emergency Management	Medium	Long-term	TBD	Medium
Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source			
Goal 1	Flooding	Protect isolated population	High	Hazard Mitigation Grant Program (HMGP), BRIC			
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: During ice jams and extreme flooding, the road floods trapping residents in the Cottonwood Grove neighborhood. The area is not conducive to levees or other water diversion methods.							

Previous Mitigation Actions

Mitigation actions from the previous Dawson County Hazard Mitigation Plan that are still relevant during this update are included in this section.

Mitigation Table - Ongoing Actions

ONGOING MITIGATION ACTION 1

Mitigation Project: Utilize the results and recommendations from key flood studies, such as the ongoing Army Corp of Engineer’s study, in Glendive to pursue and implement mitigation projects that reduce the flood risk for the community.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Glendive	Glendive Public Works Emergency Manager	High	Short	Varies	Varies
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		Flood	Mitigate flood risk	High		Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: Several existing properties are located in the floodplain; a majority of the properties are private residences and commercial structures. The estimated costs of relocating the structures is between \$60 and \$70 million. Floodplain management ordinances prohibit any future development in the floodplain area that is below the base flood elevation.</p> <p>Notes: The study will provide a detailed analysis of the current flood risk in the community and provide mitigation recommendations. Further analysis of structural mitigation actions for the community is not possible until completion of the study.</p> <p>2021 Status: Ongoing, currently in the 205 permit phase.</p>							

ONGOING MITIGATION ACTION 2

Mitigation Project: Acquire replacement sirens where necessary and identify strategic locations for new sirens.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County, Glendive, Richey	Emergency Manager	High	Short	\$80,000	Medium
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 4		Severe Summer Storm	Life/safety	Medium		MTDES	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.</p> <p>Several sirens in the county are aging and in need of replacement. The county is seeing many new temporary residents living in mobile homes/RVs due to energy-related growth in the nearby Bakken region. The county does not have any temporary workforce housing facilities, but they are a possibility in the future. Residents in temporary housing often have satellite dishes (no local television) and out-of-state cell phones, which makes them difficult to reach through traditional notification channels.</p> <p>Notes: There are many different types of sirens, each with a different price point. Items to consider include: Omni-directional, fixed or rotating siren. Omni-directional sirens provide a continuous stream of sound, whereas rotating and fixed sirens only produce full volume in the direction the siren is pointed. Omni-directional sirens are generally recommended for environments with a large amount of ambient noise, and they generally carry a higher price point than alternatives.</p> <p>Duty rating. Duty rating is the maximum operating time between cooling periods. Most sirens have a duty rating above 15-20 minutes. Some companies manufacture high-end sirens that have an unlimited duty rating and do not require cooling periods.</p> <p>Decibel ratings. Most sirens for municipal use are at least 100 decibels.</p> <p>Sound circle. Generally ranges between 4,000 to 12,000 feet in diameter for omni-directional and rotating systems. An area dense with tall structures and/or trees may reduce the effective sound circle of a siren.</p> <p>Battery or generator backup. Backup power is available for most siren configurations.</p> <p>An additional consideration for the county is to ensure sirens are audible in mobile home/RV park locations. Siren coverage in these areas should be evaluated and considered when developing locations for new sirens.</p>							

2021: Need more education on sirens and their efficacy.

ONGOING MITIGATION ACTION 3

Mitigation Project: Map all hazardous materials locations in the county using GIS mapping software and distribute maps to first responders.

2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County	Dawson County Planning Glendive Dispatch Emergency Manager	Medium	Short		Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 2		Hazardous Materials Release	Improved response capabilities and situational awareness	Medium		Staff Time	

Action/Implementation Plan, Project Description, and Project Status:

Key Issues:

The fire departments receive Tier II reports but they are not shared with all first responders. The text-based report format of Tier II reports make them impractical for regular reference.

Notes: Locations can also be incorporated into the county’s GIS-based dispatch system.

2021 Status: City is contracting with a GIS vendor to map the whole county.

ONGOING MITIGATION ACTION 4

Mitigation Project: Require new mobile home/RV parks and workforce housing facilities of a certain size to have a safe room or sheltering plan.

2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County, Glendive, Richey	County Planner	High	Short		Low

Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source
Goal 4	Severe Summer Storm	Life/safety	Medium	Staff Time

Action/Implementation Plan, Project Description, and Project Status:

Key Issues:

Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.

The county is seeing many new temporary residents living in mobile homes/RVs due to energy-related growth in the nearby Bakken region. The county does not have any temporary workforce housing facilities, but they are a possibility in the future. Residents in temporary housing often have satellite dishes (no local television) and out-of-state cell phones, which makes them difficult to reach through traditional notification channels.

Notes: Identification of an adequate safe room or sheltering plan would be required as part of the permitting process. New facilities located near an existing shelter area may only require a sheltering plan, but facilities in rural areas and not near an existing shelter should require an adequately-sized safe room.

ONGOING MITIGATION ACTION 5

Mitigation Project: Install Yellowstone River gauge upstream of Glendive, and mitigate ice and debris affecting gauges ability to function.

2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County, Glendive, Richey	Floodplain Administrator	Medium	Short		Low

Goal	Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)	Potential Funding Source
Goal 1	Flood Dam Failure	Mitigate flooding	Medium	US Geological Survey, US Army Corps of Engineers

Action/Implementation Plan, Project Description, and Project Status:

Key Issues:

While rare, ice jams along the Yellowstone River have the potential to flood low-lying surrounding areas and damage bridge crossings in the Glendive/West Glendive area.

Notes:

The only river gauge in Dawson County is in Glendive. A gauge (or gauges) upstream of the city would allow for more advanced warning about rising water levels.

Primary funding and operation of the gauge would most likely come from the US Geological Survey, which operates the National Streamflow Information Program; however, program funding was cut by five percent in 2013 which resulted in the closure of nearly 300 river gauges throughout the country.

ONGOING MITIGATION ACTION 6

Mitigation Project: Develop ordinances for Richey that restrict the parking of vehicles carrying hazardous materials through the county.

2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Richey	Emergency Manager	Low	Short	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 2		Hazardous Materials Release	Life/safety	Low		Staff Time	

Action/Implementation Plan, Project Description, and Project Status:

Key Issues:

The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas.

Notes: Glendive’s existing ordinances could be used as a model.

ONGOING MITIGATION ACTION 7

Mitigation Project: Identify and prepare solutions to mitigate the ongoing bank erosion for the creek that bisects the Dawson County High School and athletic fields.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Glendive	Emergency Manager	High	Short	Varies	Varies
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		Flood	Property protection and flood mitigation	High		Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: The drainage creek between Dawson County High School and the football field regularly experiences high flows during rain events and periods of rapid snowmelt. The walls of the creek are being washed-out, which is causing the adjacent school parking lot to sink. Continued erosion of the creek walls will significantly damage the parking lot and may eventually damage the school structure.</p> <p><i>Notes:</i> This is an ongoing issue. A geotechnical report and stabilization report should help in determining next steps to reduce erosion.</p> <p>Mitigating the stream bank erosion could potentially save millions of dollars and prevent serious accidents or even loss of life. The bank has slowly been eroding, but the problem progressively becomes worse each spring with run-off and heavy rains.</p> <p>Structural solutions may include a detention pond, infiltration basin or diversion canal to reduce stream volume prior to entering school area. A levee along the parking lot could also protect the school but may create flooding problems in other areas adjacent to the stream.</p> <p>Non-structural solutions such as permeable pavement and rain gardens may help to reduce overall storm water runoff citywide.</p> <p>2021 Status: This is still ongoing. Explore and implement mitigation alternatives to address the preliminary engineering report with mitigation options based on their assessment. Need to seek funding to implement this project.</p>							

ONGOING MITIGATION ACTION 8

Mitigation Project: Create or identify adequate safe rooms for schools.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County, Glendive, Richey	Emergency Manager	High	Short	Varies	Varies
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 4		Severe Summer Storm Terrorism and Violence	Life/safety	High		Hazard Mitigation Grant Program (HMGP), BRIC	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.</p> <p>The schools do not have adequate safe rooms. Students currently would go to the basements of most facilities, but there is not enough space for all students.</p> <p><i>Notes:</i> Safe rooms are large investments, and constructing a safe room for every school in the county is not feasible. Further investigation may conclude that existing safe areas (hallways, interior classrooms/offices) are adequate for some schools.</p> <p>2021 Status: ALICE is in place in all buildings (door barricades). Training is still an ongoing action.</p>							

ONGOING MITIGATION ACTION 9

Mitigation Project: Work with BNSF or other agencies/organizations (Federal Railroad Administration, American Association of Railroads) to receive rail transport hazardous materials reports.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County	Emergency Manager	Medium	Ongoing	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 2		Hazardous Materials Release	Life/safety	Medium		Staff time	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas.</p> <p>The county has contacted BNSF about receiving periodic reports about the hazardous materials being transported through the county, but the railroad has not been regularly delivering the reports.</p> <p><i>Notes:</i> The Federal Railroad Administration’s (http://fra.dot.gov) mission is to “enable the safe, reliable, and efficient movement of people and goods for a strong America, now and in the future.” The organization issues, implements and enforces safety regulations for rail transportation. A current focus of the organization is the safety of hazardous materials shipped by rail.</p> <p>The American Association of Railroads (http://aar.org) is a trade organization made up of the major freight railroads in North America. The organization’s stated goal is to ensure that America’s freight railroads are the “safest, most efficient, cost-effective, and environmentally sound freight transportation system in the world.”</p> <p>Both of these organizations are available to facilitate communication between local communities and railroads. The Federal Railroad Administration has regional safety offices, and Montana is located in Region 8. The Region 8 safety office is located in Vancouver, WA. Contact information can be found at http://www.fra.dot.gov/Page/P0243.</p> <p>Contact information for Montana’s American Association of Railroads representative can be found at https://www.aar.org/keyissues/Documents/staterailroadreps.pdf.</p>							

ONGOING MITIGATION ACTION 10

Mitigation Project: Conduct NFIP community workshops to provide information and incentives for property owners to acquire flood insurance.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Dawson County, Glendive	Emergency Manager	Medium	Ongoing	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		Flood	Flood insurance	Medium		Staff time	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: Many existing properties, a majority of them private residences and commercial structures, are located in the floodplain. The estimated costs of relocating the structures is between \$60 and \$70 million. Floodplain management ordinances prohibit any future development in the floodplain area that is below the base flood elevation.</p> <p><i>Notes:</i> Workshops would be targeted at educating residents currently located in a floodplain (and required to buy flood insurance) and residents living outside of a floodplain but still at risk for flooding. Technical assistance for a workshop is available from the Montana DNRC Water Resources Division (http://dnrc.mt.gov/wrd/water_op/floodplain/) and the Association of Montana Floodplain Managers (http://www.mtfloods.org/).</p> <p>2021 Status: This is part of the floodplain outreach program in conjunction with state DNRC.</p>							

ONGOING MITIGATION ACTION 11

Mitigation Project: Continue educating residents about seasonal weather safety.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County	Emergency Manager	Medium	Ongoing	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	

Goals 3 and 4	Severe Summer Storm, Severe Winter Storm	Life/safety	Medium	Staff time
Action/Implementation Plan, Project Description, and Project Status:				
Key Issues: Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region. Residents do not always follow travel restrictions, which presents a hazard to themselves and first responders. Due to its location along Interstate 94, the county often has out-of-state travelers who are inexperienced with the weather conditions. <i>Notes:</i> The Emergency Manager already conducts weather safety workshops and other outreach activities such as public service announcements. Potential education topics include:				
<ul style="list-style-type: none"> • Locations of community safe rooms/shelters. • Understanding of warning methods. • Travel safety. • Safe use of personal heating devices. • Emergency power outage kit. 				
2021 Status: Annual SkyWarn classes are held. Safety/preparedness trainings and workshops will be held, as requested.				

ONGOING MITIGATION ACTION 12

Mitigation Project: Educate residents about hazardous materials.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Dawson County	Fire Chiefs	Medium	Ongoing	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 2		Hazardous Materials Release		Medium		Staff time	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent							

years. Several major highways and railroads are located near populated areas.

Notes: Education would focus on keeping residents away from a hazardous materials incident. Residents seeking further information can participate in free online hazardous materials awareness training. The training can be found at www.saferesponse.com. The course is targeted to first responders but the basic concepts would be beneficial to the general public as well.

ONGOING MITIGATION ACTION 13

Mitigation Project: Coordinate with MDT to construct snow fences along critical county roads, especially near Richey.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Dawson County	Emergency Management and MDT	Medium	Ongoing	TBD	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 3		Severe Winter Storm	Mitigate impacts from severe winter storms	Medium		MTDES, Hazard Mitigation Grant Program (HMGP), Staff time	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues: Residents do not always follow travel restrictions, which presents a hazard to themselves and first responders. Due to its location along Interstate 94, the county often has out-of-state travelers who are inexperienced with the weather conditions.							
<i>Notes:</i> MDT's new snow fences are designed to be more durable, require a smaller footprint and less maintenance, and are similar to guard rail fencing along interstates and major highways.							

ONGOING MITIGATION ACTION 14

Mitigation Project: Evaluate participation in the NFIP Community Rating System (CRS)							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	County, Glendive	Flood plain management	Medium	Ongoing	N/A	Low, Staff time
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 1		Flooding	Flood mitigation and insurance	High		Staff Time	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues:							
2021 Status: Ongoing. NFIP participation mandatory. CRS continues to be considered.							

ONGOING MITIGATION ACTION 15

Mitigation Project: Assist local businesses with creating emergency action plans							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Ongoing	2013	Dawson County, Glendive	Emergency Management	Low	Ongoing	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goals 1, 2, 3, 4		All Hazards	Continuity of Operations	High		Staff time	
Action/Implementation Plan, Project Description, and Project Status:							
Key Issues:							
2021 Status: This project is ongoing.							

Completed Mitigation Actions

Mitigation actions from the previous Dawson County Hazard Mitigation Plan that were identified as completed are included in this section.

Mitigation Table – Completed/Removed Actions

COMPLETED MITIGATION ACTION 1

Mitigation Project: Designate an emergency shelter in Richey.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Complete	2013	Richey	Emergency Manager	Medium	Short	N/A	Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goals 3 and 4		All Hazards		High		Staff time	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. The designated emergency shelter in Glendive is Dawson County High School. The school is currently in the process of acquiring a back-up generator. Richey does not have a designated emergency shelter.</p> <p>Notes: Additional items to consider when designating a new winter shelter include:</p> <ul style="list-style-type: none"> • Acquiring a back-up generator for the facility or selecting a facility with an existing back-up generator. • Identifying residents in the community who need electricity for medical equipment and developing a plan to transport them to the winter shelter in the event of a power outage. • Promotion of winter shelter so residents are aware of its availability during a winter storm event. 							
2021 Status: Emergency shelter at high school, no basement. Installed a generator for the high school.							

COMPLETED MITIGATION ACTION 2

Mitigation Project: Define steep slope/landslide areas in Growth Policy and implement development restrictions in those areas.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Complete	2013	County, Glendive	County Planner	Low	Short		Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	
Goal 4		Landslide		Medium		Staff Time	
Action/Implementation Plan, Project Description, and Project Status:							
<p>Key Issues: The southeast urban area of Glendive borders rugged badlands terrain that is considered to be highly susceptible to landslides. Growth may present future development pressures in the badlands area. There are additional isolated landslide areas within Glendive/West Glendive, primarily along the Yellowstone River.</p> <p>2021 Status: This is now part of the 2015 growth policy.</p>							

COMPLETED MITIGATION ACTION 3

Mitigation Project: Set up and test generator for Dawson County High School so the school can serve as a shelter.							
2021 Status	Year Initiated	Applicable Jurisdiction	Lead Agency/ Organization	Priority (Low, Medium, High)	Timeline/ Projected Completion Date (Short, Long-term, or Ongoing)	Estimated Cost	Cost Analysis (Low, Medium, High)
Complete	2013	Glendive	Emergency Manager	Medium	Short		Low
Goal		Hazard(s) Mitigated	Benefits (Description of Loss Avoided)	Benefit Analysis (Low, Medium, High)		Potential Funding Source	

Goals 3 and 4	Severe Summer Storm Severe Winter Storm		Medium	Staff time
Action/Implementation Plan, Project Description, and Project Status:				
Key Issues: A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. The designated winter shelter in Glendive is Dawson County High School. The school is currently in the process of acquiring a back-up generator. Richey does not have a designated winter shelter.				
2021 Status: This was installed and is tested weekly. There is still a need to complete the paperwork to transfer ownership of the generator to the high school.				

Funding

Dawson County will need to utilize local, state and federal funding to implement the action items identified in this plan.

Dawson County has access to multiple state and federal funding opportunities. US Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG) and US Department of Agriculture (USDA) Community Facility Grants are available for a wide variety of uses. There are also other viable funding streams that are tailored specifically for hazard mitigation and disaster response. FEMA’s Hazard Mitigation Grant Program (HMGP) could provide funding for a wide variety of mitigation projects and is only available following a Montana disaster declaration. Additional FEMA grant programs that provide funds for mitigation include the Building Resilient Infrastructure and Communities (BRIC) program and Flood Mitigation Assistance (FMA) program.

It is difficult to project grant funding levels over future years. Local funding in the form of taxes, loans and bonds should be analyzed to cover the cost of projects in case the state department and FEMA programs are not funded through the federal government. A grant writing consultant could be contacted to help with grant research and completing grant applications.

Plan Integration

The county’s 2016 Growth Policy was recently updated, which was identified as a key action item during the last update in 2014. Specific items included in the Growth Policy directly reference the 2014 Multi-Hazard Mitigation Plan. Hazard-specific items included in the 2016 Growth Policy are:

- Hazards
- Wildland-Urban Interface considerations
- Floodplain regulations
- Hazard impacts on future development
- Stormwater Drainage

There is also a commitment by the county and the City of Glendive to update floodplain regulations upon completion of flood-related studies that are currently underway.

Chapter 5: Plan Maintenance

This chapter details the plan maintenance process to ensure the Dawson County Multi-Hazard Mitigation Plan will remain an active and relevant document. The plan maintenance process includes monitoring the implementation of mitigation projects, evaluating the effectiveness of the plan at achieving its goals, and updating the plan. This chapter also includes information about how this plan will be integrated into existing planning mechanisms.

Plan Monitoring and Evaluation

The Planning Team (LEPC), led by the Dawson County Emergency Manager, will monitor and evaluate the plan once per year. A basic agenda for each meeting should include:

- Discussion of project progress for the current period (and uncompleted projects from previous periods)
- Local champion reports on project status
- Discussion of upcoming projects and grant/funding opportunities
- Develop action list for upcoming reporting period

The local champion (i.e. lead agency/organization) should provide the following basic information about projects in the reporting period:

- What was accomplished for the project since the last meeting
- What obstacles, problems or delays did the project encounter
- If the project needs to be changed or revised

Project progress should be recorded on the Mitigation Action Progress Report Form found in Appendix C. A form should be completed for each project during the reporting period (and projects from the previous reporting periods that have not been completed). If time constraints are an issue, the Planning Team may decide to only complete the form for high priority projects; non-priority projects may be generally discussed without completing the form.

The Dawson County Emergency Manager should maintain a folder with all Mitigation Action Progress Report Forms and meeting notes.

The risk and vulnerability assessment should be evaluated during a Planning Team (LEPC) meeting approximately two years after project adoption. Any changes to risks since plan adoption, such as a major flood event that damaged areas thought to be safe from flooding, should be noted. The key facilities list should also be reviewed to see if any additions or deletions need to be made, a report should be made detailing these changes. If significant changes need to be made, the Dawson County Emergency Manager should schedule a meeting to discuss amending the current plan. If no significant changes are required, the Emergency Manager should save the report of changes for reference during the next five-year plan update.

Continuing Public Involvement

LEPC meetings that are reserved for discussion of the plan will be open to the public and advertised in the newspaper. Each planning partner should provide links to the County hazard mitigation plan website on their individual jurisdictional websites to increase avenues of public access to the plan. Dawson County Disaster & Emergency Services has agreed to maintain the

hazard mitigation plan on their website. This site will not only house the final plan, it will also become the one-stop shop for information regarding the plan, the partnership and plan implementation.

Integrating the Plan into Existing Planning Mechanisms

The county's Growth Policy has been updated, which was a key action item during the last update. Specific items included in the Growth Policy update are included as Action Items in this plan, and have been designated as completed actions, as appropriate. Additionally, hazard mitigation goals and strategies, as well as the risk and vulnerability assessment, should be considered when formulating goals and strategies for the Growth Policy in future updates.

Completion of mitigation projects will affect several of the county's response and emergency plans and other regulatory documents (Emergency Operations Plan, zoning ordinances, etc.). Completed projects will be integrated into these existing documents when applicable. Future plan updates will be more thorough in documenting jurisdiction-level successes and plan integration.

The plan development process provided the County and participating jurisdictions with the opportunity to review and expand on policies contained within these planning mechanisms. The planning partners used their respective community plans and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of Dawson County. An update to the Growth Policy, Subdivision Regulations, or Zoning regulations should trigger an update to the hazard mitigation plan.

Updating the Plan

The Dawson County Emergency Manager is responsible for overseeing the five-year update process. Nine months should be allowed for completion of the plan – six months to develop a draft and three months to collect DES and FEMA comments/revisions and formally adopt the plan. The Emergency Manager should begin the plan update process approximately two years prior to the expiration of the current plan. The first step is to develop the project scope by utilizing the Plan Update Evaluation Worksheet in Appendix C. Funding opportunities from DES/FEMA may also be evaluated when determining project scope. The Emergency Manager should also evaluate the possibility of contacting neighboring jurisdictions to join in the plan. Because the state is currently utilizing a regional approach to mitigation planning, the county should explore being part of the regional plan, as well.

The Emergency Manager should maintain any documentation gathered during the five-year period that will be useful when developing the update. This will help to greatly reduce the research collection phase of the plan update, which will reduce the time and cost of the plan update. It will also ensure that any priority items identified during Planning Team monitoring meetings will be included in the plan.

Appendix A: Plan Process and Development

Stakeholder Mitigation Meetings

Stakeholder Hazard Mitigation meeting were held on the following dates, as noted below. All jurisdictional representatives and regional stakeholders were invited.

- March 16, 2021 – Stakeholder kickoff meeting and mitigation introduction
- June 15, 2021 – Mitigation Workshop
- November 16, 2021 – Reviewed finalized list of mitigation actions and addressed planning element gaps



Mitigation Workshop

Development is underway on pre-disaster plan

By Hunter Herbaugh
Ranger-Review Staff Writer

The process for developing a Pre-disaster Mitigation Plan began in earnest on March 16 when the Local Emergency Planning Committee met with Michael Kemp, a representative of Integrated Solutions Consulting, the contracted consulting firm on the project. The meeting was the first of several steps to go through before a final plan is published, with the plan expected to be ready for submission to the state by January 2022.

Pre-disaster mitigation plans are required for counties to have in order to be eligible for certain state grants and are required to be updated every five years. The process for updating the plan for Dawson County began in October of 2019 but was stalled for nearly a year. This was because Dawson County joined McCone, Richland and Wibaux counties when accepting contractor bids and one of the Disaster and Emergency Services coordinators for one of those counties expressed concerns with awarding the contract to ISC. That coordinator has since left their position.

At Tuesday's meeting, Kemp, one of the founders of ISC who grew up in Glendive, laid out the path ahead and the important details to keep an eye on while developing this plan. Particularly, he highlighted how important it is that the local planning team, the LEPC in this case, as well as the community in general is communicating as much information as possible and ensuring the information ISC is working on is accurate to ensure that the plan is ultimately approved and accepted at the state and federal levels.

"When we (at ISC) work on something like this, we can put all the dressings on it, we can put it in the right state, we can make sure that you go through all the steps. What your guys' responsibility is, is

you're the experts. You live here, we don't. We need to know the information we're putting in this plan is accurate. We need to know, 'oh, all the growth is up on the flood plain now,' and 'it's all up on this side of town,' we need to understand that and repack-age that," Kemp said.

That communication will be key to building both the community profile and the hazards profile that are both needed to form a comprehensive mitigation plan. Kemp noted that a large part is just updating what has changed in the community. For Glendive, that means things like the BNSF layoffs that happened last summer, the state of the oil field, social demographics and other things.

Kemp added that though the hazard assessment process is set up to primarily look

at natural disasters when it comes to risks to the community, they will look at all disasters that could potentially strike the county, including man-made disasters, such as a train derailment or something else of that nature.

According to the timeline that Kemp laid out, the next step of the process is a survey of the community that will be taking place in April. After that, there will be two more planning meetings, one in June and one in September, then the final draft of the plan will be submitted to the LEPC in the fall. Once the plan has been looked over and any desired revisions or corrections have been made, it is expected to be submitted by ISC to state and federal officials for review in January.

Reach Hunter Herbaugh at rrreporter@rangerreview.com.

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Mitigation Kickoff Meeting – media and public were invited to the meeting

Hazard Mitigation Workshop

JURISDICTION USING SOFT MATCH:		POINT OF CONTACT OR LEAD INSTRUCTOR:		Training/Event/Meeting Roster		MONTANA DISASTER EMERGENCY SERVICES DES	
Dawson County							
EVENT/MEETING NAME: Hazard Mitigation Planning - LERC							
LOCATION: SOC							
DATE AND LENGTH OF TIME: June 15 10A							
Name / Title	E-mail or Phone #:	EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Forest Sawyer Dawson County	406 373-7240 2611 GARFIELD Bldg	Yes / No	450				
Jacob Zanker MWS Glasgow	952-891-3761 17 Bailey Ln, Glasgow	Yes / No					
Patrick Glick MWS Glasgow	406 544-2714 92 Argyle St	Yes / No					
Coary Harper MDOT	(406) 345-8268	Yes / No					
Todd Opp EMC/CI-D	406 439-2075 202 Prospect Dr.	Yes / No	4				
Dennis Zwerg Dawson Co	406 545-4100	Yes / No					
Heather Heston Ranger - Review	406 941.0520	Yes / No					

JURISDICTION USING SOFT MATCH:		POINT OF CONTACT OR LEAD INSTRUCTOR:		Training/Event/Meeting Roster		MONTANA DISASTER EMERGENCY SERVICES DES	
EVENT/MEETING NAME:							
LOCATION:							
DATE AND LENGTH OF TIME:							
Name / Title	E-mail or Phone #:	EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Jerry Timison - Mayor City of Glendive	mikeor@midrivers.com 300 S. merrill Ave	Yes / No	2				
Chris Fink CHS	chris.fink@chs-inc.com Lewistown Mt	Yes / No	400				
Frank Caine PW City of Glendive	300 S. Marshall Ave	Yes / No					
Joanie Len Town of Richey	PO Box 205 Richey 59259	Yes / No					
Sarah Hildner Glendive PD	410 Colorado Blvd	Yes / No					
Chuck Kerr CHS Terminal Supr		Yes / No					
Jan Miller CHS Inc P&T	PO Box 909 Lewistown, MT 59404	Yes / No					

JURISDICTION USING SOFT MATCH:		Training/Event/Meeting Roster							
POINT OF CONTACT OR LEAD INSTRUCTOR:									
EVENT/ MEETING NAME:									
LOCATION:									
DATE AND LENGTH OF TIME:									
Name / Title:	E-mail or Phone #:		EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match	
Organization:	Address:		Yes / No						
Name / Title:		E-mail or Phone #:		EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Organization:		Address:		Yes / No					
Name / Title:		E-mail or Phone #:		EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Organization:		Address:		Yes / No					
Name / Title:		E-mail or Phone #:		EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Organization:		Address:		Yes / No					
Name / Title:		E-mail or Phone #:		EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Organization:		Address:		Yes / No					
Name / Title:		E-mail or Phone #:		EMPG/Federally Funded? *REQUIRED*	Trip Miles	Total Hours	2017 IRS Mileage Rate: .535	Federal Volunteer Rate: \$24.14	Total Soft Match
Organization:		Address:		Yes / No					

Area officials attend meeting to discuss disaster mitigation plans

By Hunter Herbaugh
Ranger-Review Staff Writer

The next step of developing the county's disaster mitigation plan was taken on Tuesday when a meeting was held to identify the county's mitigation goals. Attending the meeting were members of the Local Emergency Planning Committee, National Weather Service Station in Glasgow, the Montana Department of Transportation, Dawson County, City of Glendive, Town of Richey, Glendive Public Schools and CHS Pipelines and Terminals.

Counties are required to update their Disaster Mitigation Plans every five years to remain eligible for federal assistance following a disaster.

The meeting focused on what Integrated Solutions Consultant Diako Abe noted was probably the most important part of the process; determining the county's mitigation goals. To do this, he collected input from everyone in attendance as to what they believe are the most pressing hazards the county is facing and what mitigations everyone would like to see put in place. He essentially boiled this stage of the process down to the county making a "wish list" of mitigation projects that they would like to consider. The county would not be required to pursue those projects, but having them in the plan could be useful.

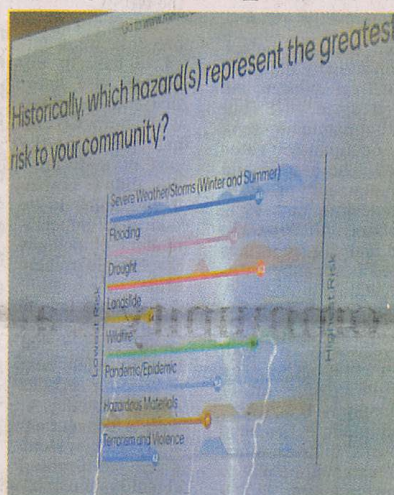
"By having those projects in your plan, that does not obligate your communities to have to do it, it simply gives you the opportunity to pursue those grants, those dollars, if and when you choose to," Abe said. "It's like a wish list of things you want to do to build a better, safer, more resilient community."

From the input he received, it was clear that everyone in attendance had a wide range of what they believed were some of the most pressing hazards the county is facing. However, the most common concerns raised were centered on flooding, abandoned buildings, hazardous material and cyber security. Abe noted that cyber security isn't normally something that is included in these types of plans but added that if it is something the county feels should be included, then it can be.

Some in attendance noted that in some cases, these concerns were fairly general and recommended considering differentiating between different types of certain events, such as flooding for example. As pointed out by Dawson County Emergency Services Coordinator Mary Jo Gehmert, flooding in Dawson County is primarily caused by seasonal ice jams in the river, however Patrick Gilchrist, a warning coordination meteorologist with the NWS station in Glasgow questioned if there would be benefits to distinguishing between ice jam flooding and regular flooding in the plan.

"They are such different animals. Ice jam is so fast moving and dynamic, and then it will get hung up for awhile and nothing will happen, then it will shift again. It's just got a very different feel and flavor than routine flooding, so to me its almost a separate animal," he said.

Gehmert noted that she hadn't put much thought into the subject as flooding not caused by ice jams is a very rare occurrence locally. Abe noted that in the flood profile



Hunter Herbaugh photo

A chart showing what is determined to be the biggest disaster risks in the area included the top four: severe weather storms, drought, hazardous materials and wildfire.

section of the plan, they can be more nuanced and have actions based on the cause of the flooding.

Glendive Mayor Jerry Jimison raised similar concerns when discussing hazardous materials. With the Keystone Pipeline project formally ended, he noted that means more oil will be shipped via railroad and believes the possibility of rail disasters should be noted.

"I know BNSF has their own 'mitigation plan' so to speak, but they have come close to blowing up a few towns in the United States with their rail shipments and I just think that 'rail hazardous material' might be a category of its own," Jimison said.

He added that this is something of particular concern for him as the main rail line through town is extremely close to several major places, including the high school, city hall and quite a few businesses.

Overall, Abe noted that the goals that are set for the plan, while seemingly vague, are meant to represent areas of focus for the community and they can be more defined as the plan is made. There are still more steps to come in the process as well, with another planned for either September or October. There must also be a meeting meant to engage with the general public as well before a first draft of the plan can be delivered to the LEPC.

County Planner Forest Sanderson noted to Abe that coming to the quarterly meeting of the Dawson County Planning Board could be a good idea, as the board is made up of representatives from all over the county, providing plenty of view points on what they want to see out of the plan and those meetings are open to the public, so people are free to attend. The next planning board meeting will be in July.

Reach Hunter Herbaugh at rrreporter@rangerreview.com.

ing across the globe. It has affected our final cost of equipment. That, in addition to stringent code enforcement from the state, our final costs are much higher than any of us had anticipated," Coon wrote in a report to the GUSB.

"It's not a number that we wanted to hear at all, but we also knew that (was possible) with how COVID has (increased the cost of materials). We didn't realize it was going to be that bad," Superintendent of Schools Stephen Schreiber said.

The district is abandoning—the steam system that has provided heat at WMS for decades and replacing it with a conventional HVAC system. The antiquated steam system at WMS has caused numerous issues in recent years, forcing closures of sections of the school as well as a total school shutdown last fall.

The project will include the addition of multiple furnaces (there are 34 listed in the equipment costs) and gas and electric unit heaters.

The original plan was to cover the project using a state Delivering Local Assistance grant awarded to WMS in the amount of \$750,000.

It wasn't until a week ago that the final estimates were in and the district and its design-build partner Bartlett and West, an engineering firm out of Bismarck, N.D. were able to lock in the prices for equipment. Coon noted that local contractors are also part of the team. Representatives from Holden Electric and Hansen Heating and Cooling were present during Monday's GUSB meeting.

The \$1.26 million budget includes cost reduction measures discussed between district officials and Bartlett and West.

"This also reflects your direction for any costs to complete miscellaneous carpentry for walls, drywall, ceilings, and various finishes be excluded from the Design-Build costs to be completed by GPS internal resources with intent to reduce the project costs," Jim Rinner from Bartlett and West said in a letter to Coon. The finishes to be completed by GPS were estimated to save \$25,000 on the original price outline.

In an average year, the district would likely not have had the money to cover the additional costs of the project. However, with additional COVID relief funding expected, the district has more options

according to Schreiber.

"It will make things a lot safer, it will mitigate the spread of COVID and other things," he added.

In his letter to Coon, Rinner urged the district to approve the budget as quickly as possible.

"Based on the information we have from equipment and material suppliers, time is of the essence to avoid effects of additional inflation and delivery concerns for the project, in addition to concerns to complete the work as soon as possible ahead of the next heating season,"

**Jim Rinner,
Bartlett and West**

"Based on the information we have from equipment and material suppliers, time is of the essence to avoid effects of additional inflation and delivery concerns for the project, in addition to concerns to complete the work as soon as possible ahead of the next heating season," Rinner said.

Getting the project underway as soon as possible is also a goal of the district. Coon noted in earlier meetings that he wanted to start construction as soon as school was complete in May, hoping to have the majority of the project done before students came back in the fall.

"(We were) hoping by this time these guys would already be working," Coon said in Monday's meeting. "It's going to be where they are going to be working nights and weekends probably, to have the availability to get this done before the snow flies."

To allow for the least disruption for students and staff, Coon said the classroom work would be the first priority this summer and work on the halls and other areas of the school would follow.

Members of the GUSB, the majority of them newly elected, raised many questions about the project during discussion at Monday's meeting. The breakdown of the costs and plans for the project were not available for review by board members prior to the meeting.

Coon fielded many of the questions as did the local contractors present. Ultimately, the time crunch to secure the pricing before additional increases occurred and to get the project under way as quickly as possible pushed board members to a vote Monday.

The GUSB unanimously approved moving forward with the estimated \$1.26 project and granted permission to Schreiber and Board Chairman Mike Ziegler to give final authority on the contract with Bartlett and West.

"I think it's still a good deal, it's just not as good of a deal as it once was," Ziegler said, adding that not having to go to local taxpayers to cover the costs has been a win for the district.

Reach Jamie Ausk Crisafulli at

Mitigation Workshop Meeting – media and public were invited to the meeting

Resources and Tools for Planning Partners

These handouts were used to determine jurisdiction-specific risks and the identification of new mitigation projects.

Jurisdiction/Organization-Specific Hazard Concerns
Hazards

Name: _____ ; E-mail: _____ ;

Jurisdiction/Organization/Agency: _____

Natural Hazards	
Hazards	Please describe any specific and/or unique concerns/risks that this hazard poses to your jurisdiction and/or organization. For example, are there properties that are at risk of repetitive damages from this hazard? Are certain population groups in your jurisdictions more vulnerable to this hazard? Are there specific neighborhoods or areas in your community that are more at risk from one of these hazards?
Severe Drought	
Extreme Cold/ Extreme Heat	
Severe Winter Storm	
Severe Thunderstorm	
Tornado and High Winds	
Flash Flood	
River/Stream Flood	

Page 1 of 2

Jurisdiction/Organization-Specific Hazard Concerns

Dam/Levee Failure	
Landslide	
Wildfire	
Epidemic/Pandemic	
Infrastructure Failure	
Utility Failure/Power Failure	
Hazardous Materials Incident	
Riot/Civil Disorder	
Terrorism/Active Shooter	

Handout: New Mitigation Actions (Dawson County)

Name:

Organization/Department:

E-mail:

Phone:

New Mitigation Action (Please Describe):

Year Initiated	2021 (New Mitigation Action)
Applicable Jurisdiction	
Lead Agency/Organization	
Supporting Agencies/Organizations	
Potential Funding Source	
Estimated Cost	
Benefits (loss avoided)	
Projected Completion Date	
PRIORITY (High, Medium, Low)	

Please indicate if the mitigation goals and objectives below are applicable to the new mitigation action/project). Check All That Apply.

X	Place an "X" by the applicable goals, if applicable
	Goal 1. Reduce or avoid flood damage to people and property.
	Goal 2. Reduce the potential for hazardous materials incidents and mitigate potential impacts to life and property.
	Goal 3. Minimize the impacts of severe winter storms.
	Goal 4. Minimize the impacts of severe summer storms.

Handout: New Mitigation Actions (Dawson County)

This mitigation action:

Instructions: Circle the best option

	Strongly Disagree (1)	Disagree (2)	Neither Agree or Disagree (3)	Agree (4)	Strongly Agree (5)
Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community; does not adversely affect a particular segment of the population; does not cause relocation of lower income people, and is compatible with the community's social and cultural values.	1	2	3	4	5
Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts.	1	2	3	4	5
Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action.	1	2	3	4	5
Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process.	1	2	3	4	5
Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action.	1	2	3	4	5
Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost benefit review, and is possible to fund.	1	2	3	4	5
Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals.	1	2	3	4	5

Place an "X" by the hazard(s) this action/project will mitigate:

Mitigated Hazards	
X	Place an "X" by the applicable hazard
	Dam/Levee Failure
	Drought
	Extreme Cold
	Extreme Heat
	Flood (Riverine)
	Flood (Urban/Flash Flooding)
	Landslide
	Severe Thunderstorm
	Severe Winter Weather/Heavy Snowfall
	Tornado and High Winds
	Wildfire
	Active Shooter
	Civil Disorder/Riot
	Hazardous Materials Release/Pipeline
	Public Health Emergency (pandemic)
	Terrorism
	Utility Failure (Power Failure)
	All Hazards

Survey Results

Double-click the link below to access the full Survey Report in PDF format.



Survey Results
2021.pdf

FOR IMMEDIATE RELEASE

Contact:

Mary Jo Gehmert, Coordinator
Dawson County Emergency Management
207 W Bell
Glendive, Mt 59330
406.377.2566

DAWSON COUNTY RESIDENTS INVITED TO PARTICIPATE IN COMMUNITY PREPAREDNESS STUDY

GLENDIVE, MONTANA – Dawson County residents and businesses can help the county update its emergency preparedness plans by participating in a voluntary online questionnaire. Feedback from the confidential 10-minute survey will enable Dawson County Emergency Management to better serve residents and businesses before, during, and after an emergency or disaster.

Some sample questions are:

- Please indicate where you go to obtain emergency and disaster preparedness related information?
- Do you believe that your household and/or place of business might ever be threatened by the following hazards?
- In an evacuation, would you or anyone in your household require special assistance?

To fill out the questionnaire, go to: <http://prepare.community/dawson>

The survey will remain open until October 30, 2021.

###

Dawson County: Social Media for Promoting the Survey

Facebook and NextDoor:

- Are you prepared for the next disaster? Let the County know! Dawson County residents and businesses can help the county update its emergency preparedness plans by participating in a voluntary online questionnaire. Feedback from the confidential 10-minute survey will enable Dawson County Emergency Management to better serve residents and businesses before, during and after an emergency or disaster. To fill out the questionnaire, go to: <http://prepare.community/dawson>

The survey will remain open until October 31, 2021.

- Dawson County Emergency Management wants to know how it can better prepare you for disasters. All responses are confidential, and will greatly help improve preparedness in the county. Join the conversation at <http://prepare.community/dawson>
- Dawson County Emergency Management invites you to take our disaster preparedness survey! Don't miss out on your opportunity to join the conversation. <http://prepare.community/dawson>
- What have you done to prepare for the next disaster? How can Dawson County help? Let us know by taking this survey! <http://prepare.community/dawson>

Twitter:

- Are you #prepared for the #nextdisaster? Let the County know! #DawsonCounty needs your help by completing a preparedness survey. Go to <http://prepare.community/dawson>
- Are you #DisasterResilient? Let us know how you've prepared for #disasters! <http://prepare.community/dawson> #DawsonDisasterSurvey
- How prepared is #DawsonCounty for #disasters? Join the conversation at <http://prepare.community/dawson> #DawsonDisasterSurvey
- What will you do if a #disaster hits #DawsonCounty? Let us know at <http://prepare.community/dawson> #DawsonDisasterSurvey

- What have you done to prepare for the #NextDisaster? How can #DawsonCounty help? Let us know by taking this survey!
<http://prepare.community/dawson>

Planning Board Meeting and Public Meeting Agenda

- October 14, 2021

DAWSON COUNTY, CITY OF GLENDIVE AND TOWN OF RICHEY
Planning Board Meeting Agenda
October 14, 2021
Statutory Meeting

- I. 6:30 P.M. Call to Order
- II. Roll Call - Establish Quorum:
- III. OLD BUSINESS
 - a. Appointments to the Board for the City of Glendive. Rita Stortz
- IV. NEW BUSINESS
 - a. Public Hearing – 2021 Subdivision Regulations)
- V. PUBLIC COMMENT ON MATTERS WITHIN THE BOARDS JURISDICTION
- VI. STAFF COMMUNICATIONS
 - a. November meeting is Cancelled – No Actionable Items.
 - b. December meeting depends on applications needing Board Consideration
 - c. January 2022 meeting is required and is scheduled for January 13, 2021, at 6:30 p.m.
- VII. Pre-Disaster Mitigation – Daiko Abe and Mary Jo Gehmert
- VIII. There being no further business before the Board, the meeting was adjourned at 6:50 p.m.

- SIGN-IN SHEET: Hazard Mitigation Plan

Location: Planning Meeting / Public Meeting Date: 10/14/2021

Hazard Mitigation Planning Meeting			
Name	Organization	Phone	E-mail
Rita York		406-939-0659	ritam.storte@gmail.com
Mike Taylor		406-939-4119	crysteam547@gmail.com
Madeline Brown		406-979-5558	bslandscooping123@gmail
Gerald Feichert	City of Glendive Ward I	701-226-9820	ghektor@gmail.com
Jim Kutzler		406-989-1031	Jim.Kutzler@yahoo.com
Gary Burbach		406-671-0570	SargeantSafety@hotmail.com
Douglas W Byron		406-939-4638	dwbbyron@midrivers.com
Todd Eckert	City of Glendive	406-939-3776	toddmarshalleckert@gmail.com
David Heubes	Dawson County	406-939-6617	dheubes@midrivers.com
Mary Jo Gehmert	Dawson County	406-939-5102	ggehmer@dawsoncountywisconsin.com
Paulo ABC	ZSC	202-390-2021	paolo.abc@i-s-consulting.com

Appendix B: Plan Adoption

**Resolution No. 2022-6
A RESOLUTION
AUTHORIZING THE ADOPTION OF THE
DAWSON COUNTY MULTI- HAZARD MITIGATION PLAN**

WHEREAS, the mission of Dawson County and the participating jurisdictions include the charge to protect the health, safety, and general welfare of the people of Dawson County

WHEREAS, Dawson County, Montana is subject to flooding, severe summer storms, drought, wildfire, tornadoes, winter storms, and other natural, technological, and human hazards; and

WHEREAS, pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

WHEREAS, The Disaster Mitigation Act of 2000 (Public Law 106-390) established new requirements for pre- and post-disaster hazard mitigation programs; and

WHEREAS, Dawson County has participated in and completed a planning process that engages the public, assesses the risk and vulnerability to the impacts of hazards, develops a mitigation strategy consistent with a set of uniform goals and creates a plan for implementing, evaluating and revising this strategy;

NOW THEREFORE BE IT RESOLVED that Dawson County

1. Adopts in its entirety the 2022 Dawson County Multi-Hazard Mitigation Plan (Plan).
2. Will use the adopted and approved portions of the Plan to guide pre- and post-disaster mitigation of the hazards identified.
3. Will coordinate the strategies identified in the Plan with other planning programs and mechanisms under its jurisdictional authority.
4. Will continue its support of the Planning Committee and continue to participate in the planning partnership as described by the Plan.
5. Will help to promote and support the mitigation successes of all planning partners.

PASSED AND ADOPTED on this 5TH day APRIL of 2022, by the following vote:

YES: 3
NO: 0
ABSENT: 0



Shirley A. Kreiman
Shirley A. Kreiman, Clerk & Recorder

Joe Sharbono
Joe Sharbono, Chairman

Brad Mitchell
Brad Mitchell, Member

Dennis Zander
Dennis Zander, Member

476335 Fee:\$0.00 Page: 1 of 145

DAWSON CTY, MT Rec/Filed 4/7/2022 at 9:08 AM

Shirley Kreiman, Clk & Rcdr By *Joe Albert*

RETURN TO: FILED

Resolution #2022-6

Resolution No. 3100

**A RESOLUTION OF THE CITY OF GLENDIVE
AUTHORIZING THE ADOPTION OF THE
DAWSON COUNTY MULTI- HAZARD MITIGATION PLAN**

WHEREAS, the mission of the City of Glendive, and the participating jurisdictions include the charge to protect the health, safety, and general welfare of the people of Dawson County

WHEREAS, the City of Glendive, Montana is subject to flooding, severe summer storms, drought, wildfire, tornadoes, winter storms, and other natural, technological, and human hazards; and

WHEREAS, pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

WHEREAS, The Disaster Mitigation Act of 2000 (Public Law 106-390) established new requirements for pre- and post-disaster hazard mitigation programs; and

WHEREAS, the City of Glendive has participated in and completed a planning process that engages the public, assesses the risk and vulnerability to the impacts of hazards, develops a mitigation strategy consistent with a set of uniform goals and creates a plan for implementing, evaluating and revising this strategy;

NOW THEREFORE BE IT RESOLVED that the City of Glendive:

1. Adopts in its entirety the 2022 Dawson County Multi-Hazard Mitigation Plan (Plan).
2. Will use the adopted and approved portions of the Plan to guide pre- and post-disaster mitigation of the hazards identified.
3. Will coordinate the strategies identified in the Plan with other planning programs and mechanisms under its jurisdictional authority.
4. Will continue its support of the Planning Committee and continue to participate in the planning partnership as described by the Plan.
5. Will help to promote and support the mitigation successes of all planning partners.

PASSED AND ADOPTED on this 5th day July of 2022.


Teresea Olson, Mayor

ATTEST:

Kitty Schmid, Director of Operations

Town of Richey
Resolution #379

**A RESOLUTION
AUTHORIZING THE ADOPTION OF THE
DAWSON COUNTY MULTI- HAZARD MITIGATION PLAN**

WHEREAS, the mission of Dawson County and the participating jurisdictions include the charge to protect the health, safety, and general welfare of the people of Dawson County;

WHEREAS, Dawson County, Montana is subject to flooding, severe summer storms, drought, wildfire, tornadoes, winter storms, and other natural, technological, and human hazards;

WHEREAS, pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property;

WHEREAS, The Disaster Mitigation Act of 2000 (Public Law 106-390) established new requirements for pre- and post-disaster hazard mitigation programs; and

WHEREAS, Dawson County has participated in and completed a planning process that engages the public, assesses the risk and vulnerability to the impacts of hazards, develops a mitigation strategy consistent with a set of uniform goals and creates a plan for implementing, evaluating and revising this strategy;

NOW, THEREFORE, BE IT RESOLVED that the Town of Richey

1. Adopts in its entirety the 2022 Dawson County Multi-Hazard Mitigation Plan (Plan).
2. Will use the adopted and approved portions of the Plan to guide pre- and post-disaster mitigation of the hazards identified.
3. Will coordinate the strategies identified in the Plan with other planning programs and mechanisms under its jurisdictional authority.
4. Will continue its support of the Dawson County Planning Committee and continue to participate in the planning partnership as described by the Plan.
5. Will help to promote and support the mitigation successes of all planning partners.

PASSED AND ADOPTED on May 10, 2022, by the following vote:

YES: NaDean Brown, Mayor; Tammy Clinton, Councilperson; Deb Gibson, Councilperson; Troy Holzworth, Councilperson

NO: None

ABSENT: None

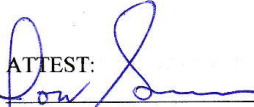

NaDean Brown, Mayor


Tammy Clinton, Councilperson


Deb Gibson, Councilperson


Troy Holzworth, Councilperson

ATTEST:


Jon Senner, Clerk

Appendix C: Mitigation Action Progress Report

Double-click the link below to access the Progress Report in PDF format.



Progress Report
2021.pdf

Worksheet 7.1 Mitigation Action Progress Report Form		
Mitigation Action Progress Report Form		
Progress Report Period	From Date:	To Date:
Action/Project Title		
Responsible Agency		
Contact Name		
Contact Phone/Email		
Project Status	<input type="checkbox"/> Project completed <input type="checkbox"/> Project canceled <input type="checkbox"/> Project on schedule <input type="checkbox"/> Anticipated completion date: _____ <input type="checkbox"/> Project delayed Explain _____	
Summary of Project Progress for this Report Period		
1. What was accomplished for this project during this reporting period?		

2. What obstacles, problems, or delays did the project encounter?		

3. If uncompleted, is the project still relevant? Should the project be changed or revised?		

4. Other comments		

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