



# Multi-Hazard Mitigation Plan

## 2021 Update



### Rosebud County, Montana and

### Cities of Forsyth & Colstrip, Montana



November 2021



**2021 UPDATE TO  
MULTI-HAZARD MITIGATION PLAN**

**FOR**

**ROSEBUD COUNTY, MONTANA  
CITY OF FORSYTH &  
CITY OF COLSTRIP**

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## LIST OF ACRONYMS

BCA	Benefit Cost Analysis
BLM	Bureau of Land Management
BNSF	Burlington Northern-Santa Fe (railroad)
BRIC	Building Resilient Infrastructure and Communities
CDBG	Community Development Block Grant
CDC	Centers for Disease Control
CDP	Census Designated Place
cfs	Cubic Feet Per Second
CPRI	Calculated Priority Risk Index
CRP	Conservation Reserve Program
CRS	Community Rating System
CWD	Chronic Wasting Disease
CWPP	Community Wildfire Protection Plan
DES	Disaster and Emergency Services
DFIRM	Digital Flood Insurance Rate Map
DHS	U.S. Dept. of Homeland Security
DMA	Disaster Mitigation Act
DNRC	Montana Department of Natural Resources and Conservation
DOI	U.S. Department of Interior
DPHHS	Montana Dept. of Public Health and Human Services
EAP	Emergency Action Plan
EDA	Economic Development Authority
EMS	Emergency Medical Services
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance
FMAG	Fire Management Assistance Grant
FP&S	Fire Prevention & Safety
FSA	Farm Service Agency
GIS	Geographic Information Systems
HAZUS	Hazards of the United States
HES	High Emissions Scenario
HMGP	Hazard Mitigation Grants Program
IBC	International Building Code
IDSA	Infectious Disease Society of America
IRC	International Residential Building Code
LEPC	Local Emergency Planning Committee
LERD	Lands, Easements, Rights-of-way, Relocations, and Disposal
LES	Low Emissions Scenario
LiDAR	Light Detection and Ranging
MDEQ	Montana Department of Environmental Quality

## LIST OF ACRONYMS

MDOR	Montana Department of Revenue
MDT	Montana Department of Transportation
MDU	Montana Dakota Utilities
MHMP	Multi-Hazard Mitigation Plan
MOU	Memorandum of Understanding
MSU	Montana State University
NCDC	National Climatic Data Center
NDRP	National Drought Resiliency Partnership
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRIS	Natural Resource Information System (Montana)
NTSB	National Transportation Safety Board
NWS	National Weather Service
PA	Public Assistance
PDM	Pre-Disaster Mitigation
PHEP	Public Health Emergency Preparedness
PPE	Personal Protective Equipment
PSA	Public Service Announcement
RFA	Rural Fire Assistance
SEMDC	Southeast Montana Economic Development Corporation
SHELDUS	Spatial Hazard Events and Losses Database for the United States
SEAT	Single Engine Air Tanker
STD	Sexually Transmitted Disease
SWIF	System-wide Improvement Framework
TRI	Toxic Release Inventory
TSEP	Treasure State Endowment Program
USACE	United States Army Corps of Engineers
USBR	United States Bureau of Reclamation
USDA	United State Department of Agriculture
USFS	United States Forest Service
USGS	United States Geological Survey
VFD	Volunteer Fire Department
WHO	World Health Organization
WRN	Weather Ready Nation
WUI	Wildland Urban Interface

## SECTION 1. INTRODUCTION

### 1.1 Background

In response to requirements of the Disaster Mitigation Act of 2000 (DMA 2000), Rosebud County and the cities of Forsyth and Colstrip have developed this Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP). DMA 2000 amends the Stafford Act and is designed to improve planning for, response to, and recovery from, disasters by requiring state and local entities to implement hazard mitigation planning and develop MHMPs. The Federal Emergency Management Agency (FEMA) has issued guidelines for development of MHMPs. The Montana Disaster and Emergency Services (DES) supports plan development for jurisdictions in the State of Montana. This Plan does not include the Northern Cheyenne Indian Reservation, located in the south portion of Rosebud County, which is a sovereign nation with its own hazard mitigation plan.

**Hazard Mitigation** is any sustained action taken to reduce or eliminate the long-term risk and effects that can result from specific hazards.

FEMA defines a **Hazard Mitigation Plan** as the documentation of a state or local government evaluation of natural hazards and the strategies to mitigate such hazards.

Rosebud County completed and adopted a Pre-Disaster Mitigation (PDM) Plan in 2007 to help guide and focus hazard mitigation activities. The original PDM Plan was updated in 2013. Rosebud County, working together with Tetra Tech Inc., has prepared this 2021 MHMP update to satisfy the requirement that hazard mitigation plans be updated every five years. The updated Rosebud County MHMP profiles significant hazards to the community and identifies mitigation projects that can reduce those impacts. The purpose of the updated MHMP is to promote sound public policy designed to protect residents, critical facilities, infrastructure, private property, and the environment from natural and man-made hazards. The updated Rosebud County MHMP includes resources and information to assist residents, organizations, local government, and others interested in participating in planning for natural and man-made hazards. This 2021 MHMP supersedes the 2007 and 2013 PDM Plans.

### 1.2 Authority

The 2021 update to the Rosebud County MHMP has been developed pursuant to the requirements in the Interim Final Rule for hazard mitigation planning and the guidance in the State and Local Plan Interim Criteria under DMA 2000. The Plan also meets guidance developed by FEMA in March of 2013 for Local Mitigation Planning.

The Rosebud County Board of County Commissioners have adopted this MHMP. Also adopting the Plan are the incorporated communities of Forsyth and Colstrip. These governing bodies have the authority to promote sound public policy regarding natural and man-made hazards in their jurisdictions. Copies of the signed resolutions are included in **Appendix A**. The MHMP was adopted at the regularly scheduled County Commission and City Council meetings, which were open to the public and advertised through the typical process the jurisdictions use for publicizing meetings.

Rosebud County will be responsible for submitting the adopted MHMP to FEMA for review. Upon acceptance by FEMA, Rosebud County and the incorporated communities of Forsyth and Colstrip will remain eligible for mitigation project grants and post-disaster hazard mitigation grant projects.



### **1.3 Acknowledgements**

Many groups and individuals have contributed to development of the Rosebud County MHMP. Rosebud County provided support for all aspects of plan development including providing digital locations and insurance values for the critical facilities and infrastructure used in the MHMP analysis. The MHMP Planning Team, comprised of various members of the Local Emergency Planning Committee (LEPC), planning officials from municipal departments, first responders, and other community members, met on a regular basis to guide the project, identify the hazards most threatening to Rosebud County, develop and prioritize mitigation projects, review draft deliverables and attend the public meetings. Other local community members participated in the planning process by attending public meetings and contributing to plan development by reviewing and commenting on the draft Plan.

### **1.4 Scope and Plan Organization**

The process followed to prepare the 2021 Rosebud County MHMP update included the following:

- Review and prioritize disaster events that are most probable and destructive,
- Identify and update critical facilities,
- Identify and update areas within the community that are most vulnerable,
- Identify and update goals for reducing the effects of a disaster event,
- Identify and update projects to be implemented for each goal,
- Identify and update procedures for monitoring progress and updating the MHMP,
- Review the draft MHMP, and
- Adopt the updated MHMP.

The MHMP is organized into sections that describe the planning process (Section 2), community profile (Section 3), risk assessment (Section 4), mitigation strategies (Section 5) and plan maintenance (Section 6). Appendices containing supporting information are included at the end of the plan.

## SECTION 2. PLANNING PROCESS

The 2021 Rosebud County MHMP is the result of a collaborative effort between Rosebud County, the incorporated communities of Forsyth and Colstrip, utilities, local agencies, non-profit organizations, businesses, and regional, state and federal agencies. The planning effort was facilitated by the contractor, Tetra Tech. Public participation played a key role in development of goals and mitigation projects, as outlined below. For the purposes of this planning effort, the public is defined as residents of Rosebud County, local departments, state and federal partners that support activities in the county, neighboring communities and local organizations.

The planning process for the Rosebud County MHMP took place between January and December 2021, during the COVID-19 (Corona Virus) global pandemic. All non-essential travel was discouraged to slow the spread of the virus and as such, all coordination for this project took place through conference calls and virtual meetings.

### 2.1 MHMP Planning Team

The Rosebud County DES Coordinator requested that members of the stakeholders group serve as the MHMP Planning Team for the purposes of updating the plan. Volunteers were solicited from the stakeholder group and invited to attend the various meetings and workshops in accordance with their expertise. Individuals who attended Planning Team meetings are listed in **Appendix B-1**. The affiliation of these participants is presented in **Table 2.1-1**.

**Table 2.1-1. Agencies Represented on the MHMP Planning Team**

Organization / Department / Position	Type of Organization
Rosebud County / Disaster and Emergency Services / Coordinator	County Government
Rosebud County / Commissioner	County Government
Rosebud County / Extension Office / Agent	County Government
Rosebud County / Rural Fire Department / Chief	County Government
Rosebud County / Public Information Officer	County Government
Rosebud County / Public Health	County Government
City of Forsyth / Mayor	City Government
City of Forsyth / Public Works / Water & Wastewater	City Government
City of Forsyth / Clerk-Treasurer	City Government
City of Colstrip / Mayor	City Government
City of Colstrip / Police Chief	City Government
NOAA / National Weather Service / Warning Meteorologist	Federal Government
Montana Disaster and Emergency Services / District Field Representative	State Government

Responsibilities of the Planning Team included attending conference calls to discuss update of the Plan, providing data for analysis in the risk assessment, attending public meetings, providing input and feedback on mitigation strategies, reviewing the draft Plan document, and supporting the Plan throughout the adoption process. The MHMP Planning Team will assist Rosebud County DES in updating the Plan in the future.

The Hazard Mitigation Planning Team had several video-conference calls over the course of the project, as detailed below.

- **February 17, 2021** – Score hazards using Calculated Priority Risk Index and determine priorities including which hazards should be profiled in the 2021 MHMP.
- **March 10, 2021** – Review and update critical facilities and hazard impact area maps.
- **March 31, 2021** – Mitigation strategy workshop on the Wildfire hazard.
- **April 21, 2021** – Mitigation strategy workshop of the Flooding, Dam Failure, Severe Weather and Drought hazards.
- **May 12, 2021** – Mitigation strategy workshop on the Communicable Disease, Hazardous Material Incident and Transportation Accident hazards, and the All Hazard goal.
- **June 2, 2021** – Capability assessment, plan maintenance, and future development discussion.

In advance of each conference call, an agenda and/or materials to be discussed (i.e. hazard maps, hazard ranking matrices, example mitigation strategies, etc.) were emailed to meeting participants and were posted on the project website. Planning Team conference call notes are presented in **Appendix B-4**.

## 2.2 Project Stakeholders

The planning process was initiated by preparing a stakeholders list of individuals whose input was needed to help prepare the MHMP. Planning partners on the stakeholders list received a variety of information during the project including invitations to participate in Planning Team meetings, public meeting notices, documents for review, and the draft mitigation strategy. **Appendix B-1** presents the stakeholders list for this project.

On the county level, project stakeholders included the County Commissioners, Sheriff, DES Coordinator, Floodplain Administrator, Fire Chief, Road Department/Fire Chief, Rural Addressing, Information Technologies Director, Public Information Officer, Extension Agent, Clerk and Recorder, Emergency Medical Services, Superintendent of Schools, Environmental Health, Public Health, and Planning Board. These entities participated in the planning process by either providing data, attending Planning Team and/or public meetings or reviewing the draft MHMP.

Stakeholders from the City of Forsyth included: the Mayor, City Council, Floodplain Administrator, Public Works, Clerk/Treasurer, Volunteer Fire Department Chief, Airport Authority, Water/Wastewater, and Planning Board. These entities participated in the MHMP update by either providing data, attending Planning Team and/or public meetings or reviewing the draft Plan.

Stakeholders from the City of Colstrip included the Mayor, City Council, Police Department, Public Works, Clerk/Treasurer, Planning/Zoning/Code Official, and Fire Department. These individuals participated in the MHMP by either attending Planning Team and/or public meetings or reviewing the draft Plan.

Stakeholders from federal agencies included the warning meteorologist with the National Weather Service who participated in the MHMP update by provided data for Plan development, attending Planning Team meetings, and reviewing the draft MHMP.

Stakeholders from state agencies included representatives from Montana DES and Montana Department of Natural Resources and Conservation (DNRC). These entities participated in the planning process by providing data for the plan, attending Planning Team and/or public meetings, and/or reviewing the draft MHMP.

Non-governmental stakeholders included non-profit and local organizations, utilities, the healthcare community, and other businesses. These entities included Southeastern Montana Development Corporation, the American Red Cross, CHS Pipeline Company, and Mid-Yellowstone Electric Co-op. Several of these entities attended Planning Team and/or public meetings or reviewed the draft MHMP.

Planning partners from adjoining jurisdictions included: the Musselshell, Garfield, Big Horn, Custer, Treasure, and Powder River County DES Coordinators, as well as the emergency manager from the Northern Cheyenne Indian Reservation. These entities did not offer input on the Rosebud County MHMP update.

## **2.3 Review of Existing Plans and Studies**

At the initiation of the project, planning documents, regulations, and studies completed for Rosebud County, the cities of Forsyth and Colstrip, and the region were obtained from relevant websites and/or provided by the DES office. Documents were reviewed in order to determine how hazard mitigation is integrated into local land use planning, ordinances, and programs. Contributing plans, regulations, and studies reviewed by the contractor included:

### **DAMS**

- Colstrip Evaporation Pond & Diversion Dams
- Castle Rock Reservoir and Reservoir Dams
- Emergency Action Plan, Tongue River Dam (Big Horn County)
- Emergency Action Plan, Yellowtail & Yellowtail Afterbay Dams (Big Horn County)

### **FLOODPLAIN STUDIES**

- Flood Insurance Study, Rosebud County and Incorporated Areas, 2019

### **GROWTH POLICIES, ORDINANCES & REGULATIONS**

- Rosebud County Growth Policy, 2019
- Rosebud County Subdivision Regulations, 2017
- Rosebud County Floodplain Regulations, 2008
- City of Forsyth Growth Policy, 2016
- City of Colstrip Growth Policy, 2019

### **HAZARD MITIGATION**

- Rosebud County Pre-Disaster Mitigation Plan, 2013
- Rosebud County Community Wildfire Protection Plan, 2004
- Northern Cheyenne Indian Reservation Pre-Disaster Mitigation Plan, 2006

### **OTHER**

- Comprehensive Economic Development Strategy, 2016-2020

Data obtained from the plan and regulation review was incorporated into various sections of the MHMP. A summary of land use implementation tools is presented in *Section 3.7.1*. *Section 4.0* contains reference to the plans and ordinances affecting hazard management and future development. *Section 6.3* includes a discussion on how mitigation can be implemented through existing programs.

## 2.4 Project Website

A website was set up at the start of the project to provide information to the Planning Team, project stakeholders and the citizens of Rosebud County. The project website can be viewed at: [www.MTmitigation.com/](http://www.MTmitigation.com/) (password: Forsyth). The website remained active during the course of the project through adoption of the Plan.

The website contained a Home page and pages for: Contacts, Planning Team, Meetings, Draft MHMP, Maps, and Resources. The Home page contained a letter inviting to public to participate in development of the MHMP. The Contacts page contained information on Tetra Tech and County personnel involved in management of the project. The Planning Team page contained the meeting schedule, agendas, handouts, and notes from Planning Team meetings. The Meetings page contained the public meeting schedule, notes, handouts and presentations from the public meetings. The Draft MHMP page contained sections from the draft plan for stakeholder review. The Maps page contained draft versions of the critical facility and hazard maps prepared for the project. The Resources page contained the 2013 Rosebud County PDM Plan, FEMA guidance on preparing multi-jurisdictional hazard mitigation plans, the FEMA Region 8 Plan Review Guidance dated September 2011, FEMA Mitigation Ideas Handbook dated January 2013, FEMA Local Mitigation Planning Handbook dated March 2013, and links to the State of Montana Multi-Hazard Mitigation Plan and FEMA websites.

## 2.5 Project Meetings

Two virtual public meetings were conducted during development of the MHMP using the Microsoft Teams platform. The first public meeting was held to kick-off the project. At this meeting, the 2013 Rosebud County PDM Plan was reviewed and hazard events over the past eight years were discussed. The second public meeting was held to review the draft risk assessment and mitigation strategy and to kick-off the public review period for the draft MHMP. Since the meetings were held online, collecting signatures from those in attendance on a sign-in sheet was not feasible. Instead, meeting attendance was documented on the meeting notes. As individuals joined the online meeting, they introduced themselves, and their names and affiliation were recorded. Documentation is presented in **Appendix B-3**.

The first public meeting was held on January 26, 2021. The Forsyth Independent Press published an article on the meeting in their January 21, 2021 newspaper. A meeting notice was sent via e-mail to all project stakeholders, posted on the Rosebud County Facebook page, and the meeting notice was posted on the project website. Media documentation is presented in **Appendix B-2**.

During the first public meeting, Tetra Tech made a presentation which reviewed and analyzed each section of the 2013 Rosebud County PDM plan, outlined the background and rationale for updating the Plan, the process and methodology for the update, and the project schedule. **Table 2.5-1** describes the outcome of the 2013 PDM Plan review.

**Table 2.5-1. Review and Analysis of 2013 Pre-Disaster Mitigation Plan**

2013 PDM Sections	How Reviewed and Analyzed
Section 1 – Adoption Documentation	No review or analysis needed. Moved to Appendix A.
Section 2 – County Profile	Reviewed existing section through discussion at kick-off meeting. No analysis needed. Moved and updated this chapter to Section 3 – Community Profile.
Section 3 – Planning Process	Identified new and emerging hazards to include in updated Plan. Outlined planning process for Plan update to include public meetings, planning team conference calls, project website, and plan review process. Content in this chapter was moved to Section 2 – Planning Process.
Section 4 – Hazard Analysis	Reviewed and analyzed existing section through discussion during kick-off meeting and Planning Team conference calls. Scored hazards using Calculated Priority Risk Index. Reviewed and updated critical facility data. Updated and created new hazard area impact maps. Reviewed, updated and created new hazard profiles incorporating data on recent events. Completed new risk assessment, including discussion on climate change for each hazard. Included hazard composite map and evaluation of future development.
Section 5 – Mitigation	Reviewed during Planning Team conference calls. New projects developed, existing projects re-worded and/or deleted, completed projects documented. Identified implementation details including responsible dept., progress made, planned activities, potential funding sources, and proposed schedule. Updated information on funding sources. Included new section on Capability Assessment.
Section 6 – Plan Monitoring, Revision, Maintenance, and Coordination	Reviewed and analyzed existing section through discussion during kick-off meeting and Planning Team conference calls. Determined that plan maintenance procedures outlined in previous plan were implemented but not documented.

The meeting presentation was placed on the project website for stakeholders who could not attend the meeting (**Appendix B-4**). Eleven (11) individuals attended the public meetings including a Rosebud County Commissioner, County DES, County Superintendent of Schools, County Rural Fire Chief, County Public Health, the Forsyth Mayor, Forsyth Public Works, Forsyth Water and Wastewater, Colstrip Police Dept., Ashland Fire Dept., and Montana DES.

A second virtual public meeting to review the draft MHMP was held on October 5, 2021. A notice of the meeting was sent via email to the project stakeholders, advertised in the September 30, 2021 edition of the Forsyth Independent Press newspaper, via social media, and posted on the project website. Eleven (11) individuals attended the meeting including Rosebud County DES, a County Commissioner, County Rural Fire Chief, County Public Information Officer, County Public Health, the Mayor of Forsyth, Forsyth Water/Wastewater Director, Mayor of Colstrip, Colstrip Police Chief, and two representatives from CHS Pipelines. Meeting notes and the Plan Review presentation are included in **Appendix B-3**. The meeting presentation was also placed on the project website for those who were unable to attend the meeting. Meeting notification documentation is presented in **Appendix B-2**.

## 2.6 Plan Review

The planning process for the MHMP began on January 6, 2021 and lasted approximately 11 months. The public was provided at least two opportunities for comment prior to adoption of the plan. The first opportunity was during the drafting process. A notice regarding availability of the draft MHMP was published in the Forsyth Independent Press newspaper, posted on the project website, posters hung in public places, and the notice was posted on the county’s Facebook page. The notice indicated

the Plan was available in hard copy at the Rosebud County DES office, electronically on flash drive upon request, or available on the project website. An e-mail announcement was sent to the project stakeholders with instructions on how to comment on the draft MHMP.

The draft document was produced with line numbers to aid in the review process. Reviewers were asked to submit their comments on the draft plan to the Rosebud County DES Coordinator after a review period of approximately 30 days (October 1 to November 1, 2021). Comments received from this review were addressed in a plan revision (final draft) which was submitted to Montana DES and FEMA for review and concurrence.

At this point a second opportunity was provided to the public to comment. The final draft plan was posted on the project website and stakeholders were notified of its availability via an e-mail for a second review from December 1, 2021 to February 1, 2022, an approximate 60-day review period. Any final comments were addressed, and the final version of the Plan was provided to the Rosebud County Commissioners, the Forsyth City Council, and Colstrip City Council for adoption. After adoption, copies of the resolutions were submitted to Montana DES and FEMA.

Future comments on the MHMP should be addressed to:

Rosebud County Disaster and Emergency Services  
P.O. Box 687  
Forsyth, Montana 59327  
(406) 346-7968

## SECTION 3. COMMUNITY PROFILE

This section of the MHMP presents an overview of Rosebud County, the communities of Forsyth and Colstrip, and the unincorporated communities within the county. Information is provided on the characteristics of the county, the economy and land use patterns, and presents the backdrop for this mitigation planning process. The Rosebud County Growth Policy (Great West Engineering, 2019), City of Forsyth Growth Policy (Great West Engineering, 2016), and City of Colstrip Growth Policy (KLJ, 2019) and Rosebud County PDM Plan (2013) provided many of the details presented in this section.

### 3.1 Physical Setting

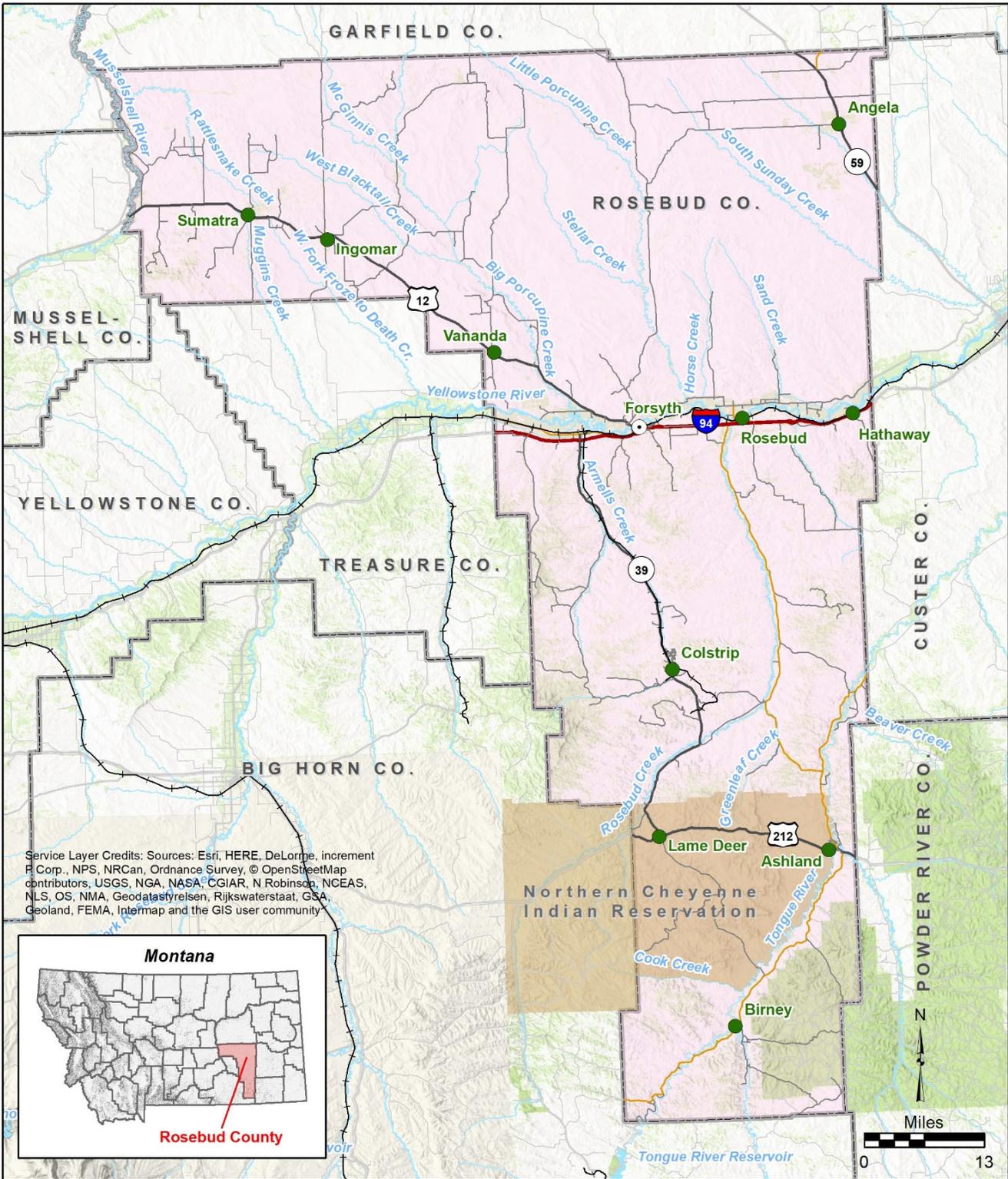
Rosebud County is located in eastern Montana and is the third largest county by land area in Montana. According to 2019 U.S. Census Bureau estimates, the population of Rosebud County was 8,937. The county is bordered on the north by Garfield County, to the east by Custer and Powder River Counties, to the southwest by Big Horn County, to the west by Treasure, Yellowstone, and Musselshell Counties, and to the northwest by Petroleum County. A portion of the Northern Cheyenne Reservation lies in the southern portion of the county. **Figure 1** presents a location map of Rosebud County.

Rosebud County has two incorporated communities – the City of Colstrip and the City of Forsyth. Forsyth is the county seat and, according to 2019 U.S. Census estimates, had a population of 1,770, while Colstrip had a population of 2,246. Unincorporated communities within Rosebud County include Angela, Ashland, Birney, Hathaway, Ingomar, Lame Deer (on the Northern Cheyenne Reservation), Rosebud, Sumatra, and Vananda.

Elevations throughout Rosebud County range from about 2,400 feet along the Yellowstone River to roughly 4,500 feet at Cook Creek Butte in the Little Wolf Mountains. Three rivers pass through the county, the Yellowstone, Tongue, and Musselshell Rivers, along with many creeks and streams. The terrain in northern Rosebud County consists of rolling grasslands covered by farms and ranches. The southern end of the county is more rugged with a section of the Custer National Forest, Ashland Ranger District, east of the Tongue River. The vegetation varies widely from prairie in the northern part of the county to dense stands of ponderosa pine in the south.

Approximately 12 billion tons of strippable coal exists in Rosebud County and the county has several active coal-fired power plants and additional coal is exported to other parts of the country. The PPL Montana facility is the second largest coal-fired project west of the Mississippi River. Southern Rosebud County also has a small timber industry.

Rosebud County consists of approximately 3,216,222 acres. Seventy-seven (77) percent of the county is under private ownership, while federal land managers (Bureau of Land Management and U.S. Forest Service) administer 10 percent of the land area. State agencies, including Montana DNRC (responsible for State Trust Land), and the Montana Department of Fish Wildlife and Parks (responsible for State Parks and fishing accesses), administer 5.5 percent of the acreage. The Northern Cheyenne Indian Reservation comprises 7.5 percent of the county. **Figure 2** present the landownership in Rosebud County. Population density in Rosebud County is 1.8 persons per square mile (**Figure 2A**), compared to 6.8 persons per square mile for the State of Montana.

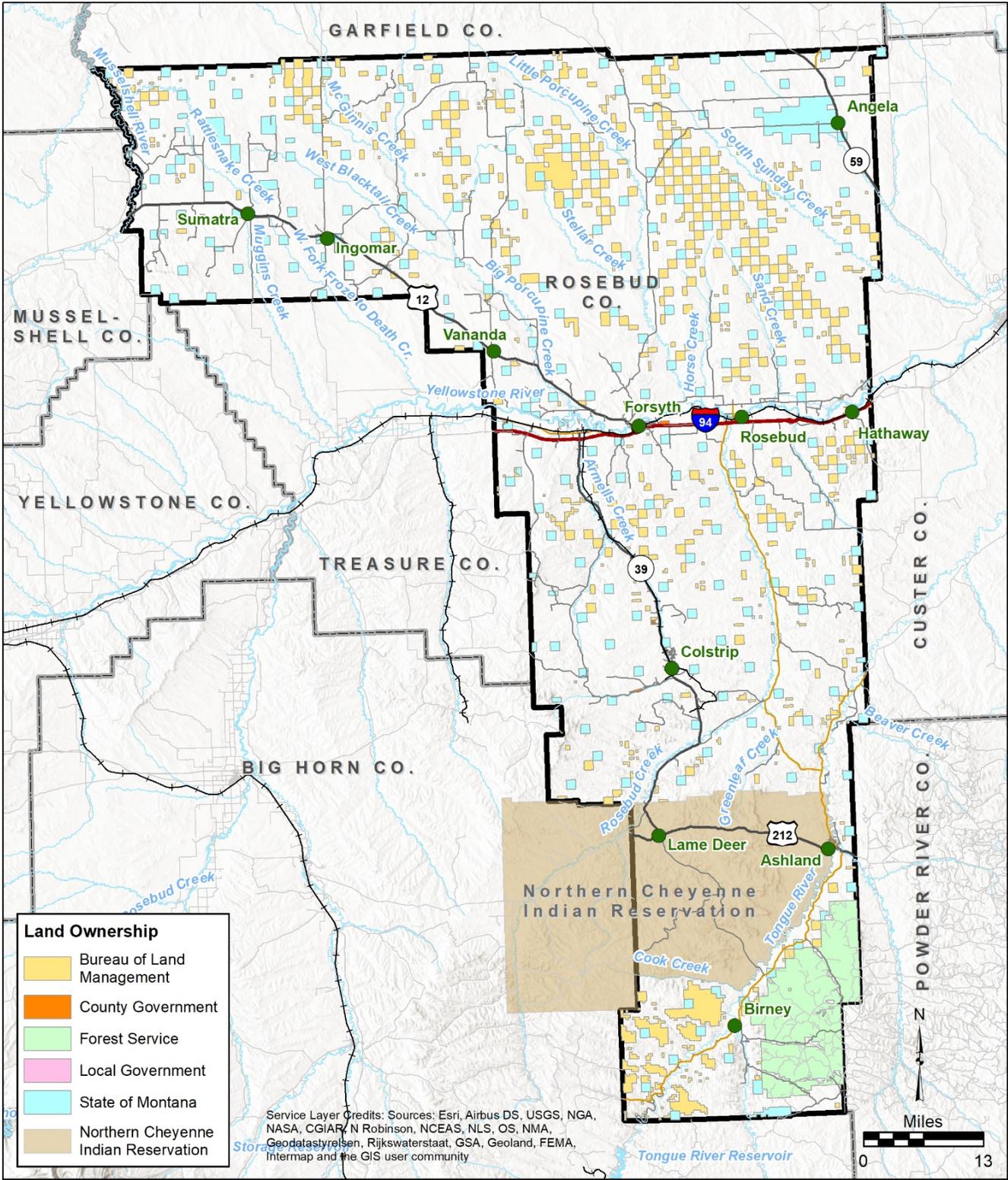


Date: 7/27/2021

**Legend**

- County Seat
- Town
- +— Railroad
- Interstate
- Primary Road
- Secondary Road
- City-County Road
- Other Road
- Stream
- Lake
- Northern Cheyenne Indian Reservation
- County Boundary

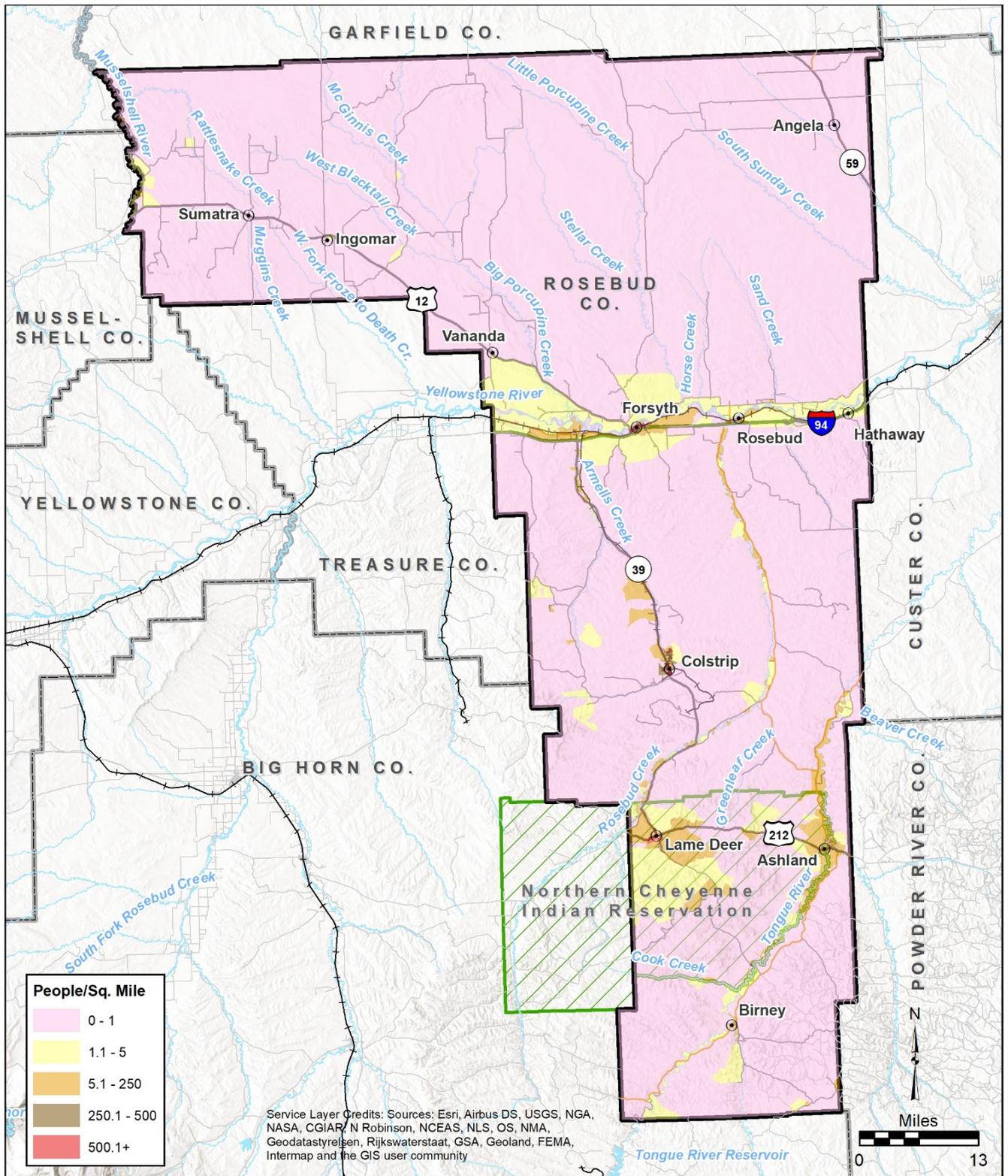




**Figure 2**  
**Land Ownership**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



Section 3: Community Profile



**Legend**

- ⊙ Town
- Primary Road
- Other Road
- +— Railroad
- Secondary Road
- Stream
- Interstate
- City-County Road
- Lake
- ▨ Northern Cheyenne Indian Reservation
- ▭ County Boundary

**Figure 2A**  
**Population Density**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



## 3.2 Climate

The climate of Rosebud County is considered Continental, with cold and dry winters, cool and damp springs and falls, and hot and dry summers. Like most of Montana, Rosebud County's climate can be one of extremes, but is generally mild and dry.

Average annual precipitation in the county is approximately 14.4 inches, with most of the precipitation falling between April 1st - October 30th. Heavy snow falls are not common in this area. Daily snowfalls of a foot and a half or more, can be expected during a typical snowstorm.

Spring and fall are transition seasons between the cold of winter and warmth of summer, and day to day changes can be extreme. Summer precipitation almost always occurs as showers, but late spring sometimes will produce general rains of several hours in duration and late September and October in some years can have rainstorms of the same general character. Thunderstorms are common in the general area, occurring 20 to 30 days a year. Hail and strong winds occasionally occur, but the incidence of these is not large. Tornadoes are rare in Rosebud County, but this may be partially due to the sparse population of the county.

Summers are characterized by warm days, but most nights even during mid-summer cool down to 60 degrees or less. Temperatures of 90 degrees or more occur about 40 days each year and can occur in any month from May through October, although most of the 90 degree temperatures occur in July and August. Temperatures of 100 degrees or more occur around 2 days of the year in at least three out of four years. Mornings during July and August are mostly clear and sunny, but by afternoon on most days convective cloudiness appears, occasionally accompanied by thunder and showers.

Winters are cold, but not extreme. While minimum temperatures rarely fail to cool to 32 degrees or colder, during the winter most days will find afternoons warming to at least the mid-thirties. An occasional cold spell will generate sub-zero temperatures, but these spells seldom last more than two or three days. Less than one out of three days will the maximum temperature fail to reach zero during the afternoon. Wind is seldom a factor during cold spells.

Climate statistics for the City of Forsyth are presented in **Table 3.2-1**.

**Table 3.2-1. Rosebud County Climate Statistics – Forsyth**

Category	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average High (°F)	35	40	50	61	70	79	88	87	75	61	46	35
Average low (°F)	10	14	23	33	42	51	57	55	44	33	21	11
Avg. Precipitation (Inches)	0.45	0.44	0.97	1.51	2.54	2.37	1.50	1.10	1.40	1.23	0.68	0.54
Average Snowfall (Inches)	5	4	3	2	1	0	0	0	0	1	4	7

Source: <https://www.usclimatedata.com/climate/forsyth/montana/united-states/usmt0119>

For the purposes of this mitigation plan, weather is of interest when it threatens property or life and thus becomes a hazard. The National Weather Service (NWS) provides short-term forecasts of hazardous weather to the public and also records weather and climatic data. Further information on NWS weather warning criteria is presented in the individual hazard profiles in *Section 4.0*.

### Climate Change

Climate change will affect the people, property, economy and ecosystems of Rosebud County in a variety of ways. The most important effect for the development of this plan is that climate change will have a measurable impact on the occurrence and severity of natural hazards. In 2017, the Montana Climate Assessment was published (Whitlock, Cross, Maxwell, Silverman, and Wade, 2017) and explored how future projected climate change would affect agriculture, forestry and water resources to better plan for the future.

The Montana Climate Change Assessment evaluated two emission scenarios. The low-emissions scenario (LES) assumes that global emissions of the greenhouse gases that cause changes in climate conditions peak in the year 2040 and then decline. The high-emissions scenario (HES) assumes that global emissions of greenhouse gases remain largely unabated through the 21<sup>st</sup> century. Climate projections from FEMA and the National Oceanic and Atmospheric Administration (NOAA) were analyzed by county for the State of Montana MHMP (DES, 2018). A summary of these climate projections is presented below.

Under both emission scenarios, Montana is projected to continue to warm in all geographic locations and seasons, throughout the 21<sup>st</sup> century. By mid-century, Montana temperatures are projected to increase by approximately 4.5 to 6.0°F, while by the end of the century, temperatures are projected to increase 5.6 to 9.8°F. These state-level changes are larger than the average changes projected nationally and globally. Across Montana, precipitation is projected to increase in winter, spring, and fall, and decrease in summer.

From 1950 to 2006, Rosebud County observed 12 days above 95 degrees each year. According to both emission scenarios, Rosebud County is projected to see 39 to 45 days above 95 degrees annually by mid-century. By the end of the century, the county is projected to see 33 more days above 95 degrees, annually according to the LES, and 66 more days above 95 degrees, according to the HES.

Between 1950 and 2006, Rosebud County observed an average 0.9 days with more than 1-inch of precipitation. By mid-century, the county is projected to see between 0.4 and 0.7 fewer days with 1-inch precipitation according to both emission scenarios. At the end of the century, the county is projected to see 0.9 fewer 1-inch precipitation days according to the LES, and 0.1 more 1-inch precipitation days according to the HES.

Climate change indicators provide useful information about what is occurring in complex systems. These indicators include temperature and growing season, rainfall intensity, snowpack, streamflow, stream temperature, wildland fire occurrence, plants live cycle events, and forest health. The hazard profiles in *Section 4* provide climate change implications as they relate to hazard mitigation.

### 3.3 Critical Facilities and Infrastructure

Critical facilities are of particular concern because they provide essential products and services that are necessary to preserve the welfare and quality of life and fulfill important public safety, emergency response, and/or disaster recovery functions. Critical facilities include: 911 emergency call centers, emergency operations centers, police and fire stations, public works facilities, sewer and water facilities, communication sites, hospitals and shelters. Critical facilities also include those facilities that are vital to the continued delivery of community services or have large vulnerable populations.

These facilities may include buildings such as the jail, law enforcement center, public services buildings, senior centers, community corrections center, the courthouse, and juvenile services building and other public facilities such as hospitals and schools. Critical facilities in Rosebud County are identified in **Appendix C-2** and further discussed in *Section 4*.

A summary of the county's infrastructure from the Rosebud County Growth Policy (Great West Engineering, 2019), the City of Forsyth Growth Policy (Great West Engineering, 2016), and the City of Colstrip Growth Policy (KLJ, 2019) is presented below.

### **3.3.1 Water and Wastewater Services**

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Water and wastewater services in Rosebud County are varied and include municipal systems as well as those managed by water and sewer districts, as outlined below.

#### ***City of Forsyth Water and Wastewater System***

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Forsyth's water system consists of a raw water intake in the Yellowstone River, a conventional surface water treatment plant, a distribution system, and a 1 million gallon welded steel water tank.

The city's wastewater collection system consists of approximately 72,000 feet of pipe ranging in size from 6-inches to 12-inches. High groundwater is prevalent during the spring and summer and consequently any faults in the collection system result in high flows at the treatment plant. Three lift stations are integral components of the collection system. The wastewater treatment plant was constructed in 1979 and has adequate capacity for the community but will need to be updated in the future to address maintenance needs and the potential that future discharge regulations may require additional treatment. The city is currently installing a new disinfection system to meet the requirement of their discharge permit.

Forsyth does not have an underground storm drainage system and the street system is designed to allow water to flow into Riverside Park during any storm events. Over the years, some of the streets have been modified in such a way that it has created drainage issues that are continually being addressed.

#### ***City of Colstrip Water and Wastewater System***

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Colstrip's water source is the Yellowstone River. Water is pumped through two pipelines 30 miles from the Yellowstone River to a surge pond located on the outskirts of Colstrip, referred to as Castle Rock Lake. Castle Rock Lake, a 160-acre raw water reservoir, is owned and operated by the power plant owners. Four 6,000 gallon per minute pumps supply water from the pond to the Colstrip Power Plant located within the city limits. The lake is also the source of drinking water for the city of Colstrip. As part of the Raw Water Transportation Agreement between the city and the power plant owners, the City owns water rights to 2.1 cubic feet per second (cfs) of the water in Castle Rock Lake. The pumps and intakes from the river are owned by the power plant owners and maintained and operated by Talen Energy. There is currently ongoing discussion and studies being completed on how Colstrip can maintain its water supply once the remaining two power plant units are retired.

The city has approximately 19 miles of sanitary wastewater gravity collection mains ranging in size from 6-inches to 18-inches in diameter. Wastewater mains in Colstrip consist primarily of PVC pipe. At present, the Colstrip Wastewater Treatment Plant system treats approximately 180,000-200,000

gallons per day, less than one-half its capacity. The system consists of lagoon cells and an oxidation ditch – a mechanical and chemical treatment facility. Treated wastewater from the oxidation ditch is transmitted to the second and third cells of the lagoon. The wastewater collection system includes seven lift stations located throughout the city to transport wastewater to the treatment plant. Since 2007 all lift stations have been rehabilitated or replaced.

Except for approximately one-third of the original town site, Colstrip is served by a storm sewer system, which effectively handles storm water runoff in most parts of the city. In several areas of the original town site and other areas without storm drains, storm water accumulation creates problems for the city and the individual property owners. As streets are scheduled for maintenance or repairs, these problems are addressed.

### ***Ashland Water and Sewer District***

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This district serves the unincorporated community of Ashland. The wastewater treatment system includes the St. Labre Mission as a customer. The drinking water system consists of three wells connected to a 250,000-gallon storage tank. The system was originally designed to serve up to 2,500 people. The system currently serves 100 users. The Mission has its own drinking water system.

The Ashland wastewater treatment system includes sewer lagoons and an irrigation sprinkler system. It was designed to serve 2,000+ users. The sewer lagoons for the system are located north of Ashland and the Mission provides 130 acres for the disposal of treated wastewater effluent through sprinkler irrigation.

### ***St. Labre Water System***

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The St. Labre Mission operates its own drinking water system. The system was designed to treat surface water and provides water to 600 - 700 individuals on the Mission campus on any given day, which includes 92 housing units.

### ***Rosebud Water and Sewer District***

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The unincorporated community of Rosebud is located 10 miles east of Forsyth. The community formed a water and sewer district in 1975 and constructed a facultative lagoon system wastewater treatment plant. The system includes two cells and two lift stations. The system processes approximately 11,100 gallons of wastewater effluent per day from the residential users.

### ***Ingomar Water District***

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The Ingomar Water District provides drinking water to ten (10) users in the unincorporated community of Ingomar. The system storage tank has a capacity of 20,000 gallons and is located 1.5 miles from the well and the tank is located 1.5 miles from the users.

### ***Other Areas of Rosebud County***

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Groundwater wells are the primary source of domestic water for residents outside the water and sewer districts listed above. County residents in areas not served by municipal or district systems rely on concrete septic tanks and drainfields.

### **3.3.2 Utilities**

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Electrical and natural gas services in Forsyth are provided by Montana-Dakota Utilities (MDU). MDU is the only natural gas provider in Rosebud County. Natural gas is delivered from the Williston Basin in eastern Montana and western North Dakota through a 4,300-mile integrated pipeline system. Large propane tanks are located throughout Rosebud County at ranch and home sites.

NorthWestern Energy is a major, regional provider of electricity to approximately 650,000 customers in Montana, Nebraska and South Dakota. Their current energy-delivery system includes more than 26,000 miles of electrical lines. Northwestern Energy is the electricity supplier within the City of Colstrip. There is no natural gas service available in Colstrip.

Mid-Yellowstone and Tongue River Electric Cooperatives also provide electric services in areas of Rosebud County through an aboveground electrical distribution system. A power generating facility is located in Colstrip with major electric transmission lines extending throughout the county.

Telephone service is provided by Range Telephone Cooperative through underground lines.

### **3.3.3 Transportation**

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Interstate-94 (I-94) is the primary road providing east-west access in the county. Highway 39 provides southward access to Colstrip and Lame Deer from I-94 and intersects with Highway 212 at Lame Deer. Route 447 provides southward access through the central portion of the county to Ashland, which is located along Highway 212. Route 566 provides access to the far southern end of the county along the Tongue River. Highway 12 provides access to the northwestern portion of the county and connects Forsyth with the communities of Melstone and Roundup. Highway 59 accesses the northeast corner of the county and connects to Miles City and Jordan.

Elsewhere, the County Road Department maintains an extensive network of roads and bridges. The Road Department works on approximately 1,165 miles of roads. According to the MDT Off-System Bridge records, Rosebud County is responsible for maintaining 32 bridges over 20 feet in length. Forsyth has approximately 28.4 miles of streets and alleys, which are maintained by the Forsyth Public Works Department. Colstrip has approximately 22 miles of streets and alleys, which are maintained by the Colstrip Public Works Department.

The Burlington Northern and Santa Fe Railroad (BNSF) runs east-west through Rosebud County and moves large volumes of coal and freight through the area. Freight originating in the region includes coal and coal products, petroleum, farm products, lumber and wood products, and stone, clay, glass and concrete products. Ninety percent of these commodities are shipped out of state. An inactive/decertified BNSF branch line connects Colstrip to the main rail line that is thirty (30) miles to the north of Colstrip. Because the line is decertified and currently inactive, there are no trains currently passing through Colstrip.

Airports serving small private and charter aircraft are located in Forsyth (Tillitt Field Airport, 1S3), Colstrip (Ricks Field, M46), and Ashland (3U4). Single engine air tankers (SEATs) can load fire retardant at the Colstrip Airport reload facility. The closest commercial airport with a regional carrier is in Miles City and the closest multi-carrier airport is in Billings.

### 3.3.4 Law Enforcement, Fire Protection, and Emergency Services

The Sheriff's Department provides law enforcement to all of Rosebud County. The main office and detention center are in Forsyth and there are satellite offices in Ashland and Colstrip. The departments' staff includes 25 staff including the sheriff, undersheriff, two sergeants, nine deputies, six dispatchers, five detention officers, and an administrative assistant. Rosebud County also provides dispatch for Treasure County. The City of Forsyth contracts with the Rosebud County Sheriff's Department for law enforcement. Colstrip has their own Police Department.

#### *Fire Protection*

There are three rural fire departments in Rosebud County: the Ashland Fire District, the West Rosebud Fire District and the County Rural Fire Department. These departments are manned by volunteers. The West Rosebud Fire District encompasses the area around Sumatra and Ingomar. The district contracts with the town of Melstone Fire Department for fire protection. The County Rural Fire Department has nine firefighting vehicles stationed north of I-94, 10 located south of the interstate, and 19 in Forsyth. The vehicles located outside of Forsyth are strategically placed with farmers and ranchers to expedite quick response to wildland and structure fires.

Fire protection in Forsyth is provided by the Forsyth Volunteer Fire Department. The department has two stations, approximately 20 volunteer fire fighters, and 4 fire engines. The city has mutual aid agreements for fire protection with Rosebud County and other surrounding communities.

The City of Colstrip maintains an active fire department with the latest equipment and training, as well as an adequate water infrastructure and supply to service the community of Colstrip. The Colstrip Volunteer Fire Department is responsible for responding to all fire/rescue incidents within the Colstrip city limits. The department provides structure fire suppression, wildland fire suppression, automobile extrication, HAZMAT decontamination, ice rescue, and general rescue. It is a completely volunteer fire department, with a current staffing level of 26 and the maximum staffing level capped at 30 volunteers.

In addition to providing services to the City of Colstrip, the department also has mutual aid agreements with Rosebud County, Lame Deer, Forsyth, Ashland, and St. Labre. The department also contracts with the Rosebud Power generating station located 6 miles north of Colstrip to provide fire suppression services.

#### *Disaster and Emergency Services*

Rosebud County emergency management comes under the office of Disaster and Emergency Services. County DES is staffed with a full time ambulance director with DES responsibilities and two deputies, all of whom are county-funded. Rosebud County DES prepares and manages plans and programs directed at disaster preparedness and coordination of response and recovery. They maintain and deliver information to the public in coordination with fire protection agencies, law enforcement, and other emergency response providers.

Rosebud County DES plans, organizes, and manages the county Emergency Preparedness Program; evaluates, improves, and promotes comprehensive disaster planning efforts; organizes and facilitates effective operations of multi-jurisdiction, multi-discipline work groups and task forces; promotes interagency coordination; and develops and reviews policies, contracts, and interagency

agreements. These efforts are designed to enhance the capacity of the local government to plan for, respond to, and mitigate the consequences of threats and disasters using an all-hazards framework.

### 3.4 Population Trends

During the 1970s and 1980s, Rosebud County experienced a 70 percent rise in population due largely to the development of the electrical power generation facilities at Colstrip and the associated coal mining. **Table 3.4-1** illustrates the change in population in Rosebud County compared to the State of Montana and United States.

**Table 3.4-1. County, State and National Population Trends**

Year	Rosebud Co. Population	% change from previous census	State of Montana Population	% change from previous census	United States Population	% change from previous census
2019 est.	8,937	-3.21%	1,068,144	7.96%	330,150,668	6.48%
2010	9,233	-1.60%	989,415	9.67%	308,745,538	9.71%
2000	9,383	-10.68%	902,190	12.91%	281,424,602	13.15%
1990	10,505	6.12%	799,065	1.57%	248,709,873	9.79%
1980	9,899	64.11%	786,690	13.29%	226,542,199	11.43%
1970	6,032	-2.51%	694,409	2.91%	203,302,031	13.37%

Source: U.S. Census Bureau, 2021.

**Table 3.4-2** presents population statistics for the incorporated communities and the Census Designated Places (CDP) within Rosebud County.

**Table 3.4-2. Rosebud County Community Population Trends**

Incorporated Community /CDP	1980	% Change Since Last Census	1990	% Change Since Last Census	2000	% Change Since Last Census	2010	% Change Since Last Census	2019 Est.	% Change Since Last Census
Ashland CDP	--	--	484	--	464	-4.13%	824	77.59%	957	16.14%
Birney CDP	--	--	--	--	108	--	137	26.85%	110	-19.71%
Colstrip, city	--	--	3,035	--	2,346	-22.70%	2,214	-5.63%	2,448	10.57%
Forsyth, city	2,553	36.31%	2,178	-14.69%	1,922	-11.75%	1,777	-7.54%	1,495	-15.87%
Lame Deer CDP	--	--	1,918	--	2,018	5.21%	2,052	1.68%	2,086	1.66%
Rosebud CDP	--	--	--	--	--	--	111	--	72	-35.14%

Source: U.S. Census Bureau, 2021; Notes: CDP = Census Designated Place; -- = data not available.

The entire southeastern Montana region has been losing population since the 1970’s. Rosebud County accounted for the only variation from this pattern with the increase of population due primarily to the influx of construction workers and spinoff employment during the 1980’s. Farms/ranches have combined ownership and acreage resulting in fewer families to support schools and businesses, absentee owners, and no significant new industry developing since the Colstrip boom. These conditions have contributed to a cycle of population decline.

According to the Rosebud County Growth Policy, the median age of its residents has decreased. In 2010, the median age for county residents was estimated at 37.3 years of age and by 2016 it had decreased to 36.3. Despite the lowering of its median age, the county has seen a decrease in the number of people in the age group 35 to 44 years of age and an increase in the number of people in the age group 65 years of age and over. This is a trend found in most other eastern Montana counties.

### 3.5 Housing Stock

The U.S. Census Bureau estimates that in 2019, Rosebud County had 4,159 housing units. The median value of the occupied housing units was \$114,900. A further breakdown of the housing units from the census is presented in **Table 3.5-1**.

**Table 3.5-1. U.S. Census Housing Data – 2019 Estimates; Rosebud County**

Category	Rosebud County	Forsyth (City)	Colstrip (City)
Total Number of Housing Units	4,159	944	1,017
Median Value Housing Units	\$114,900	\$151,300	\$119,000
Year Structure Built			
2014 or later	12	0	0
2010 to 2013	54	0	6
2000 to 2009	401	33	121
1990 to 1999	372	17	69
1980 to 1989	926	89	436
1970 to 1979	1,283	286	336
1960 to 1969	295	125	19
1950 to 1959	223	120	0
1940 to 1949	140	61	16
1939 or earlier	453	213	15

Source: U.S. Census Bureau, 2021.

Rosebud County's housing stock is relatively diversified by age. The Montana Department of Revenue compiled data as part of its appraisal process that classified the physical condition of housing throughout the state. The data provided physical assessments for 1,838 residential structures in Rosebud County, including the cities of Forsyth and Colstrip. Of the structures assessed, 551 or almost 30 percent were classified as being in either unsound or in poor physical condition. Of the total housing units in the Rosebud County, a large portion were identified as being vacant.

### 3.6 Economy

The economy of Rosebud County has been relatively diversified. Major employers include farming/ranching, mining, electrical utilities, retail trade, education and government employment. Agriculture has always been one of the economic anchors for Rosebud County.

Rosebud County has experienced a declining economy in the last several decades. Primary businesses have downsized, and a small U.S. Air Force base closed. Ongoing drought conditions have also impacted the county's agricultural sector. The Tongue River Lumber Mill (a major employer of Native Americans) closed but has attempted to reopen numerous times in the last 10 years.

There is one coal mine in the county, the Rosebud Mine, owned by Westmoreland Rosebud Mining LLC. It is a surface mine that extracts sub-bituminous coal. The mines' production is used primarily to power the steam turbines at electrical generation units of the Colstrip Power Station. In 2017, the mine employed 407 full-time employees.

There are two electrical power generation facilities in Rosebud County: the Colstrip Generating Station Colstrip and Rosebud Power Plant Colstrip Energy Limited Partnership. The Colstrip Station is located adjacent to the City of Colstrip. The station is made up of four separate coal-fired generating Units 1, 2, 3, and 4. Units 1 and 2, each with 307 megawatts of net generating capacity, closed at the

end of 2019. Units 3 and 4, each with 740 megawatts of net generating capacity, are planned to close in 2025.

The Rosebud Power Plant Colstrip Energy Limited Partnership is a 38-megawatt waste coal-fired power project located north of the City of Colstrip. Currently, energy produced at the station is sold to NorthWestern Energy. Fuel for the plant is primarily waste coal from the nearby Rosebud Mine. In 2017, the station employed 30 full-time employees.

Northwestern Rosebud County contains petroleum resources that have been developed and produce a modest amount of oil. Production in the area has steadily declined over the last five plus years. Exploration in the area continues and if petroleum prices increase in the future, production may increase. In addition, the development of new technologies will make extracting oil more cost effective.

**Table 3.6.1** presents economic indicators for Rosebud County and the cities of Forsyth and Colstrip in 2019.

**Table 3.6-1. Rosebud County 2019 Economic Indicators**

Indicator	State of Montana	Rosebud County	Forsyth (City)	Colstrip (City)
Per capita income	\$32,625	\$24,922	\$26,002	\$33,571
Median household income	\$57,153	\$57,992	\$41,328	\$86,797
Persons living below poverty level	12.6%	16.3%	13.4%	5.4%

Source: U.S. Census Bureau, 2021.

From 1970 to 2016, per capita income in Rosebud County increased from \$19,620 to \$37,395. Since that time, U.S. Census estimates indicate that per capita income in the county fell by 33 percent to \$24,922.

The U.S. Census Bureau estimates that 16.3 percent of the county population was living below the poverty level in 2019 compared to 12.6 percent for the State of Montana. Forsyth had a 13.4 percent poverty level, and Colstrip was at 5.4 percent, well above the state average.

### 3.7 Land Use and Future Development

Rosebud County is a large county, covering 5,010 square miles and stretching 85 air miles from the northern edge of the county to the southern edge. Land ownership and natural resource development are key land uses. A majority of the land in the county is open grassland or shrubland and is used to graze cattle. Other uses include coal mining and electrical generation around Colstrip, cropland in the Yellowstone River valley and timber in the southern half of the county. The vast and open landscape provides the region with natural resources and space to farm, ranch, mine and hunt.

#### 3.7.1 Land Use Implementation Tools

Industrial, commercial and residential land use is managed with zoning and subdivision regulations in accordance with guidelines set forth in the county and city growth policies. These documents recognize natural hazards require regulations to ensure safe growth. Building codes also play an important role to ensure structures are built to minimum safety standards.

### **Growth Policies**

A growth policy is not a regulation; rather, it is an official statement of public policy to guide growth and change. The goals and objectives included in a growth policy provide a basis for the policies and regulations implemented by a county or city. Any directions given in a growth policy are general guidelines to follow and are not intended to be specific and inflexible. Rosebud County and the cities of Forsyth and Colstrip use growth policies to manage growth. These documents were updated in 2019, 2016, and 2019, respectively.

The 2013 Rosebud County PDM Plan was incorporated into the Rosebud County Growth Policy (2019), the City of Forsyth Growth Policy (2016), and the City of Colstrip Growth Policy (2019). The **Rosebud County Growth Policy** details several goals and objectives specific to hazard mitigation, as follows:

Goal - Ensure new residential and commercial development occur in areas of minimal hazard.

- Objective - New subdivisions will not be approved within flood prone areas.
- Objective - The development of new homes and businesses on existing tracts of record shall comply with the requirements of the County Floodplain Regulations.
- Objective - New subdivisions will be discouraged in areas of high to severe wildfire hazard unless mitigation steps are taken to reduce the risks.

Goal - Reduce the risk of wildfire in the County's forested areas.

- Objective - Support the commercial harvest of timber on public and private lands.
- Objective - Encourage the U.S. Forest Service (USFS) and Bureau of Land Management (BLM) to undertake controlled burns on lands managed by each agency.

Both the Forsyth and Colstrip growth policies include a discussion on the wildland urban interface (WUI) and wildfire risk. The Forsyth Growth Policy includes a discussion the levee system that protects the city from flooding. Further details are presented in the hazard profiles in *Section 4*.

### **Zoning Regulations**

Zoning regulations are a common regulatory tool to control land use. One of the primary purposes of zoning regulations is to minimize land use incompatibility. Zoning regulations also establish standards that limit the density or intensity of development as well as other characteristics of development. Zoning regulations are supplements to a zoning map that establishes zoning districts in the jurisdiction. The zoning map provides the means to separate incompatible land uses and zoning regulations mitigate potential land use incompatibilities at the boundaries separating different zoning districts.

The City of Forsyth uses a Euclidian form of zoning which is common in Montana. The regulations focus on specific land used (residential, commercial, industrial, etc.) and are designed to ensure the compatibility or separation of used. The City of Colstrip adopted zoning regulations in 2001. Over the years, several amendments have been made to those regulations. There is no zoning in Rosebud County outside the city limits of Forsyth and Colstrip.

### ***Subdivision Regulations***

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Subdivision regulations are meant to address issues related to the division of land for new residential and commercial development. These include ensuring accurate surveying, providing legal and physical access, provision of utilities, parkland requirements, right-of-way location and mitigating hazards. The Rosebud County's Subdivision Regulations were updated in 2018 and at that time complied with State statute. Both Forsyth and Colstrip use their own subdivision regulations.

The subdivision regulations specify the procedure for major and minor subdivisions, stipulate required improvements, and provide development standards for commercial and residential subdivisions. The subdivision regulations closely follow what is required and authorized by state law with few exceptions.

The subdivision review must consider all potential hazards to residents of the subdivision from high voltage lines, high-pressure gas lines, highways, railroads or railroad crossing and nearby industrial or mining activity. In addition, any creation of public health or safety hazards by the subdivision, such as traffic or fire conditions, contamination or depletion of groundwater supplies, accelerated stormwater runoff, widening or existing floodplain or flood hazard area, or existence within the wildland urban interface, must be considered in subdivision review. If the Rosebud County Planning Board after review, finds any portion of a parcel of land proposed to be subdivided unsuitable for subdivision because of potential hazards such as flooding, landslides, steep slopes, rock falls, high water table, polluted or non-potable water supply, danger from fire or explosion or other features which may be detrimental to the health, safety, or general welfare of existing or future residents, they will not recommend approval of the subdivision unless the hazards can be eliminated or overcome through approved design and construction.

Design standards can significantly affect the appearance and functionality of a development. For these reasons, they are often employed to address a variety of issues including land use, aesthetics, transportation, and public service. The city and county subdivision regulations include requirements for adequate water supply for fire-fighting purposes, and at least two points of access for all new major and subsequent minor subdivisions to address the threat of wildfire. Further details from these regulations are presented in the hazard profiles in *Section 4*.

### ***Building Codes***

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Building codes are also a tool to control future development. The main purpose of building codes are to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. They comprise a set of rules that specify the minimum acceptable level of safety for buildings and often contain requirements for roof construction associated with snow and wind loads. Building codes are generally intended to be applied by architects and engineers, but are also used by building inspectors. Rosebud County does not have a building department and as such, does not enforce building codes. The State of Montana performs building inspections in Rosebud County for commercial construction and residential four-plex units or larger. The cities of Forsyth and Colstrip have certified programs and enforce building codes.

### ***Floodplain Regulations***

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The purpose of floodplain regulations is to protect the watercourses and their flood storage areas, as well as the public health, safety, and welfare. Montana state law requires local governments to adopt and enforce floodplain management regulations. It is in the public interest to manage regulation of

flood prone lands and waters in a manner consistent with sound land and water use management practices which will prevent and alleviate flooding threats to life and health and reduce private and public economic losses.

Flooding is a fact of life in Rosebud County, particularly along the Yellowstone River. The County administrates Floodplain Regulations for those areas that have identified floodplains. They include the Yellowstone River, particularly around the City of Forsyth, Dry Creek, Cove Creek, and Five Mile Creek. Maps showing the location of identified floodplains in the county are available in the office of the County Commission. The County Floodplain Regulations were updated in 2019 using the State of Montana’s Model Floodplain Regulations.

Rosebud County and the City of Forsyth participate in the National Flood Insurance Program (NFIP) which requires jurisdictions to adopt floodplain development regulations. In return for the local adoption and enforcement of floodplain management regulations that meet the minimum criteria of the NFIP, FEMA provides the availability of flood insurance coverage within Rosebud County and the City of Forsyth. The Floodplain Regulations prescribe minimum standards for development within the regulated flood hazard areas and have a high degree of impact on land use decisions. The City of Colstrip does not participate in the NFIP.

The floodplain regulations prohibit certain uses within designated floodplains and place conditions on other uses. Most commercial and residential development is generally prohibited in the floodway and flood fringe unless suitably flood-proofed.

### **3.7.2 Future Development**

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According to the MHMP Planning Team, no future development projects are in the planning phase in Rosebud County at the current time. No subdivisions are being reviewed and no new municipal or community buildings are being planned. The reverse scenario of growth could play out in Colstrip including the closing and/or consolidation of schools and potentially demolition of buildings.

Due to the pending closure of Units 3 and 4 of the Colstrip Power Plant, there have been ongoing discussions on future development within the Colstrip city limits. Some potential projects include carbon capture, low cost hydrogen production, rare earth mineral extraction, bottom ash remediation, energy park development, business innovation center development, and nuclear power generation.

According to the Rosebud County Growth Policy (2019), Orion Renewable Energy Group LLC is considering the development of electrical generation project on the Clearwater Wind Farm located in Rosebud, Garfield and Custer Counties. The proposed project would be located in northeastern Rosebud County and northwestern Custer County near Angela. The project is proposed to be up to 750 megawatts and will interconnect into the electric grid at an existing substation north of Colstrip, via a new 345 kilovolt electric transmission line approximately 70 to 95 miles in length that will need to be constructed. It is estimated that 500 jobs would be created during construction, and then perhaps 25 to 35 jobs to manage the wind farm.

Rosebud County also has oil reserves, particularly in the northwest portion of the county, that have the potential for higher production depending upon economic factors and technology.

*Section 4.10* presents a hazard analysis of the proposed future development projects in Rosebud County.

## SECTION 4. RISK ASSESSMENT AND VULNERABILITY ANALYSIS

Rosebud County is exposed to many hazards both natural and man-made. A risk assessment and vulnerability analysis were completed to help identify where mitigation measures could reduce loss of life or damage to property in Rosebud County and the Cities of Forsyth and Colstrip.

This section includes a description of the risk assessment methodology and hazard profiles for eight hazards organized from high to low by county priority: wildfire, drought, severe summer weather, communicable disease, severe winter weather, flooding/dam failure, structure fire, and hazardous material incidents/transportation accidents. The section is concluded with a risk assessment summary and discussion on the location of future development projects with respect to a composite of the hazard impact areas. Supporting documentation is presented in **Appendix C**.

### 4.1 Risk Assessment Methodology

A risk assessment was conducted to address requirements of the DMA 2000 for evaluating the risk to Rosebud County from natural and man-made hazards. DMA 2000 requires measuring potential losses to critical facilities and property resulting from natural hazards by assessing the vulnerability of these facilities to natural hazards. In addition to the requirements of DMA 2000, the risk assessment approach taken in this study evaluated risks to vulnerable populations and also examined the risk presented by several man-made hazards. The goal of the risk assessment process is to determine which hazards present the greatest risk and what areas are the most vulnerable to hazards.

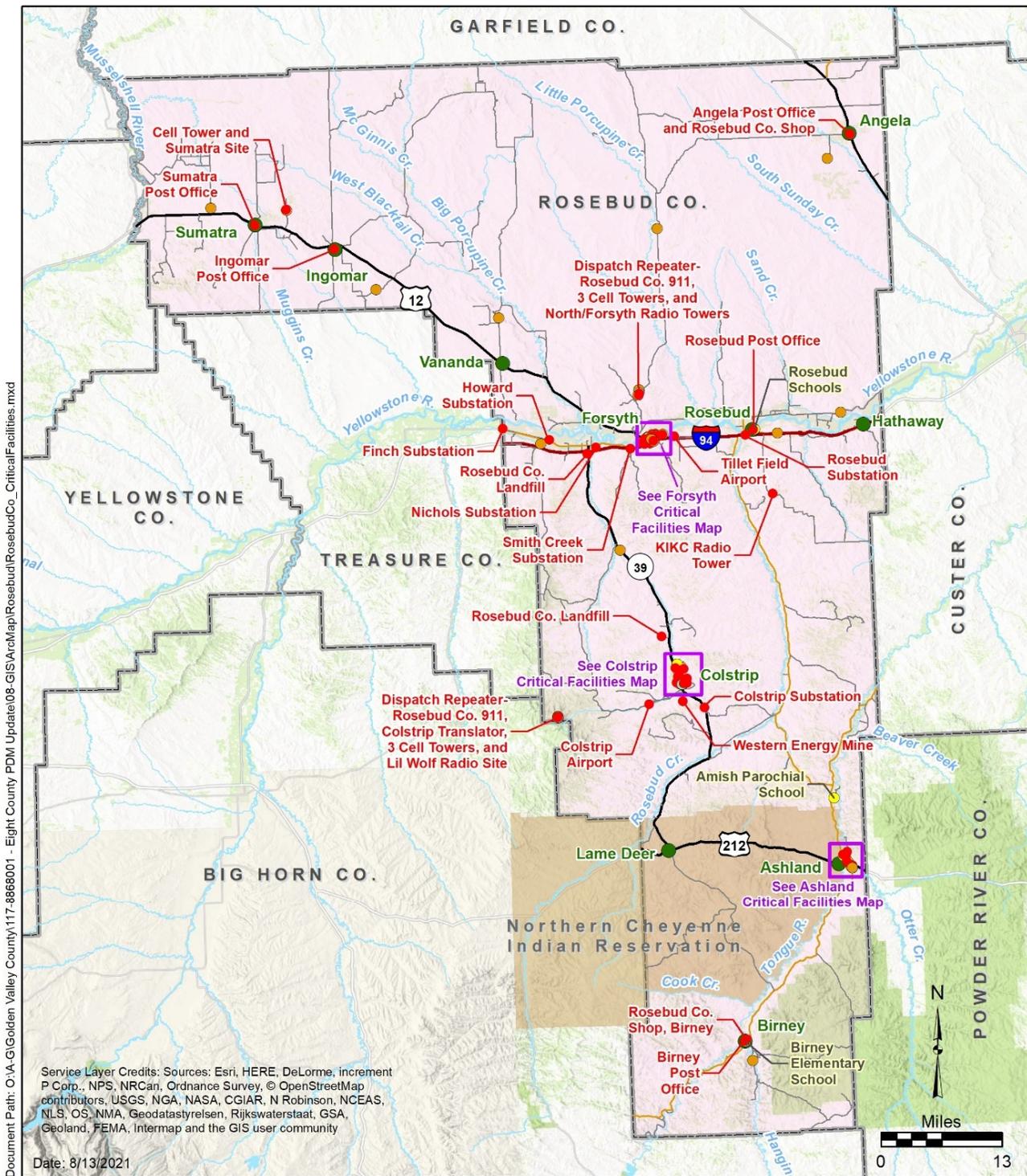
The risk assessment approach used for this Plan entailed using Geographic Information System (GIS) software and data to develop vulnerability models for people, structures and critical facilities, and evaluating those vulnerabilities in relation to mapped hazard locations. This type of approach to risk assessment is dependent on the detail and accuracy of the data used during the analysis. Additionally, some types of hazards are extremely difficult to model. Data limitations are described in *Section 4.1.7*.

#### 4.1.1 Critical Facilities and Building Stock

Critical facilities and infrastructure, including bridges, water/wastewater facilities, and communication sites were included in the MHMP analysis. Mapping of these facilities, provided by Rosebud County, allowed for the comparison of their location to the hazard impact areas where spatially recognized. Critical facility and infrastructure values were obtained, where readily available, from municipal departments and insurance companies. Replacement values for privately-owned critical facilities was obtained from the Montana Department of Revenue's (MDOR) Cadastral Mapping Program. Some values were estimated based on values of similar facilities. Construction type of critical facilities (e.g. steel, wood, masonry, etc.) has not been compiled and was therefore, not considered in the analysis. This data should be collected for future updates of this Plan.

**Figures 3, 3a, 3B, and 3C** present the location of critical facilities in Rosebud County, Forsyth, Colstrip, and Ashland.

Section 4: Risk Assessment and Vulnerability Analysis



Legend

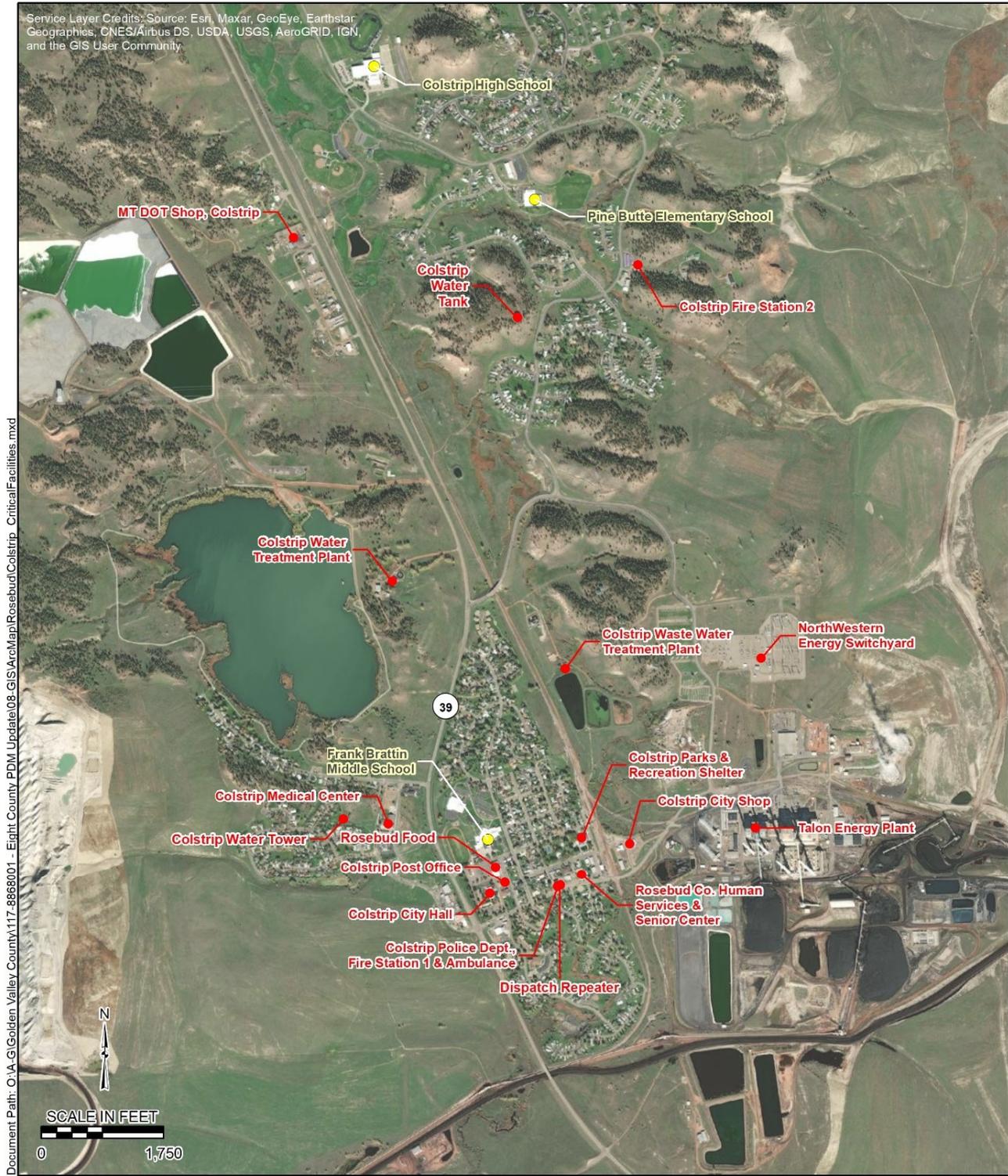
- Critical Facility
- Vulnerable Population
- Cell Tower
- Dispatch
- Town
- Interstate
- Primary Road
- Secondary Road
- City-County Road
- Stream
- Lake
- Northern Cheyenne Indian Reservation
- County Boundary

Figure 3  
**Critical Facilities**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**





## Section 4: Risk Assessment and Vulnerability Analysis



Date: 8/13/2021

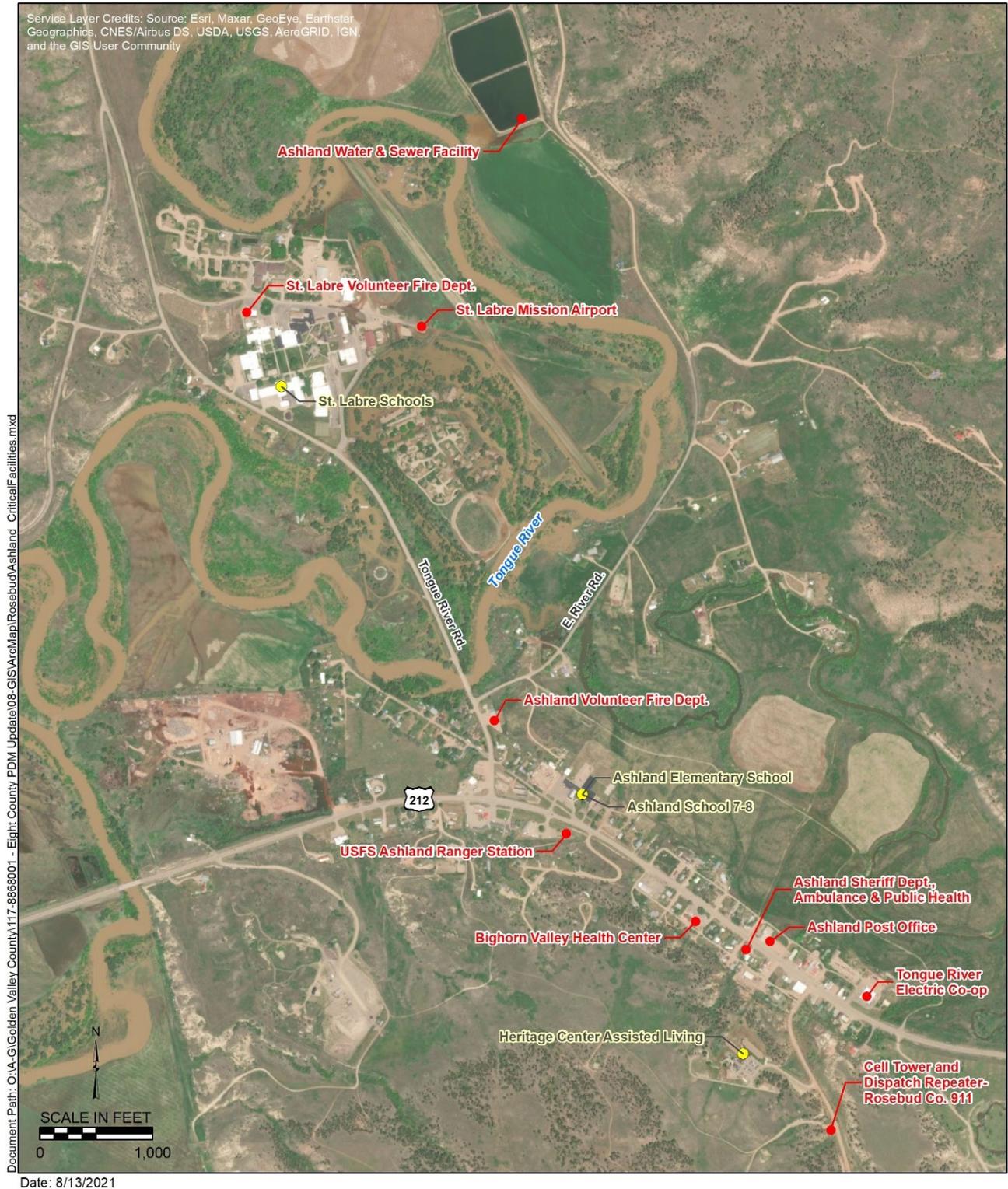
### Legend

- Critical Facility
- Vulnerable Population

Figure 3B  
**Critical Facilities - Colstrip  
 Rosebud County, Montana  
 Multi-Hazard Mitigation Plan**



## Section 4: Risk Assessment and Vulnerability Analysis



- Legend**
- Critical Facility
  - Vulnerable Population

Figure 3C  
**Critical Facilities - Ashland  
 Rosebud County, Montana  
 Multi-Hazard Mitigation Plan**



## Section 4: Risk Assessment and Vulnerability Analysis

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Bridge data was obtained from the Montana State Library, Natural Resource Information System (NRIS) and the National Bridge Inventory. Bridge replacement values were extrapolated using unit costs for span length and width. **Figure 4** presents the bridge locations in Rosebud County. **Appendix C-2** presents a key to the bridge inventory. Rosebud County may wish to enhance the bridge data for the 2026 MHMP update by adding the major culverts in the county.

Building stock data was downloaded from the Montana State Library, NRIS Structures Framework dataset. This dataset consists of a routinely updated database of primary structures/buildings and addresses across the state of Montana. For the hazard risk analysis, important information within this dataset includes structure type and parcel number. Structure type indicates building function, e.g., agricultural, residential, commercial, churches, schools, etc. The four structure types retained for the hazard analysis included residential, and commercial, industrial, and agricultural. The dataset provides spatial locations of structures within each parcel.

The NRIS Structures Framework dataset does not contain building values, an important factor in the MHMP vulnerability analysis. However, the dataset does contain parcel numbers which were related to the MDOR Cadastral Mapping Program dataset which contains both parcel numbers and building values.

### 4.1.2 Vulnerable Population

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Using the number of residential structures in each hazard impact area, vulnerable population was estimated by assigning U.S. Census county estimates on number of persons residing in each structure, percent of population over age 65 years, and under age 18. The number of residential buildings within a hazard impact area was multiplied by its respective county average number of people residing in a household in Montana (U.S. Census Quick Facts). Exceptions include structures typed as “Multi-Family” residential dwellings and “Nursing Homes”. Multi-Family structures (e.g., apartment buildings) were estimated at 18 people and nursing homes were estimated at 40 people. Census data also provided county percentages for persons under 18 years and persons 65 years and over. These percentages were multiplied by the total population number within a hazard area to calculate people at risk under 18 and age 65 years or more.

### 4.1.3 Hazard Identification

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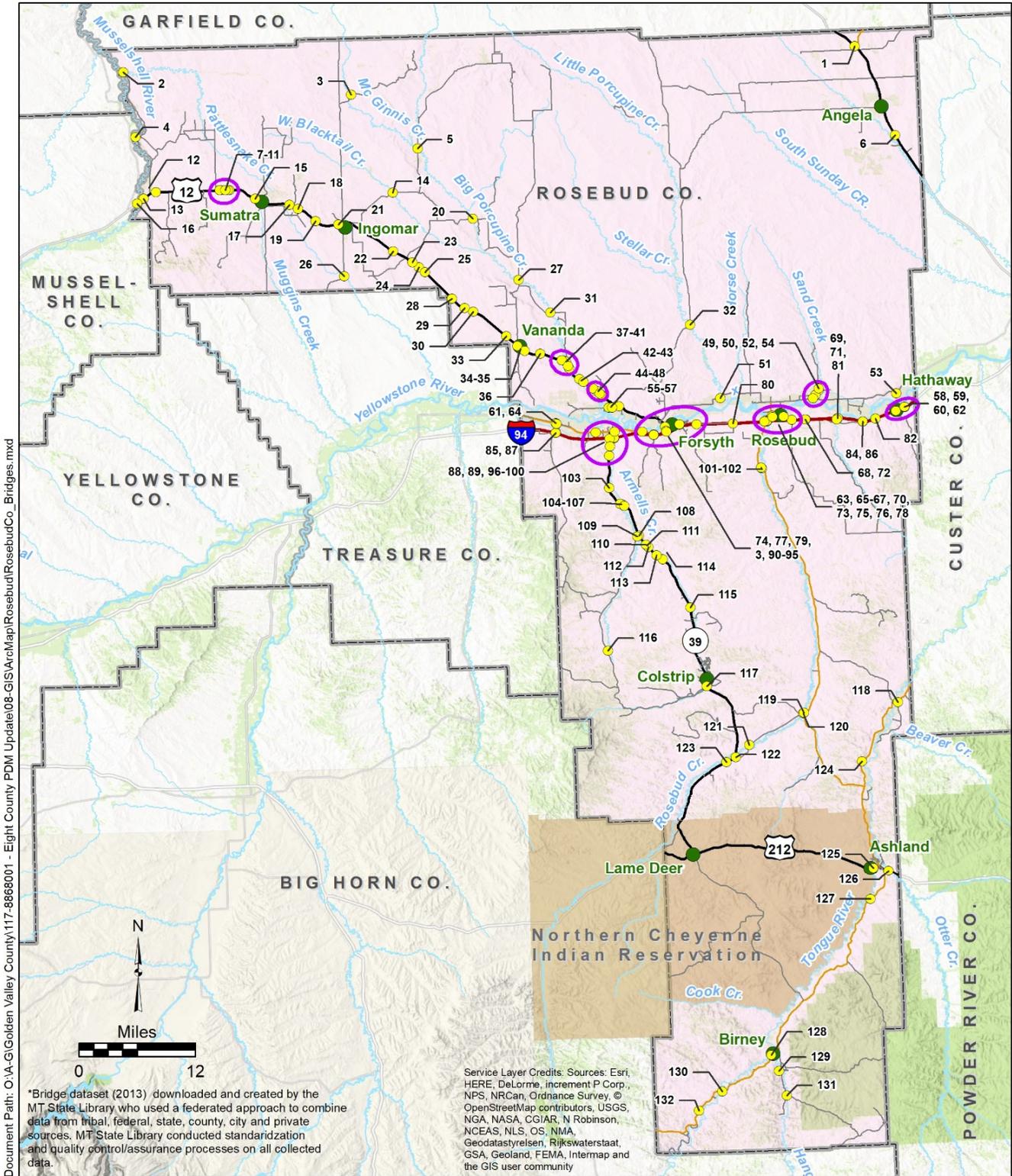
The 2013 Rosebud County PDM Plan identified seven hazards including: drought, severe summer weather, wildfire, severe winter weather, flooding, hazardous material release, and earthquake. These hazards were reviewed by the MHMP Planning Team who considered what other hazards might have emerged since development of the 2013 PDM Plan and/or should not be detailed in the 2021 Plan update. Further details on hazard reconciliation are presented in *Section 4.1.5*.

### 4.1.4 Hazard Profiles

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Hazard profiles were prepared for each of the identified hazards and are presented within this section according to their prioritized rank (see *Section 4.1.5*). The level of detail for each hazard is generally limited by the amount of data available.

Section 4: Risk Assessment and Vulnerability Analysis



- Legend**
- Bridge\*
  - Town
  - Interstate
  - Primary Road
  - Secondary Road
  - City-County Road
  - Stream
  - Lake
  - Northern Cheyenne Indian Reservation
  - County Boundary

**Figure 4**  
**Bridge Inventory**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



## ***Section 4: Risk Assessment and Vulnerability Analysis***

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Each hazard profile contains a description of the hazard and the history of occurrence, the vulnerability and area of impact, probability and magnitude, an evaluation of how future development is being managed to reduce risk, and how climate change may impact hazard probability and magnitude in the future. The methodology used to analyze each of these topics is further described below.

### ***Description and History***

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A number of databases were used to describe and compile the history of hazard events profiled in this plan. This data was supplemented by input from the public, local officials, newspaper accounts, and internet research. The two primary databases used included the National Climatic Data Center (NCDC) Storm Events Database and Spatial Hazard Events and Losses Database for the United States (SHELDUS).

The NCDC Storm Events database receives Storm Data from the National Weather Service. The NWS receives their information from a variety of sources, including county, state and federal emergency management officials, local law enforcement officials, skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry, and the general public. Storm Data is an official publication of the NOAA which documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce.

SHELDUS is a county-level hazard data set for the United States for 18 different natural hazard event types. For each event, the database includes the date, location, property losses, crop losses, injuries, and fatalities that affected each county. The database includes every loss-causing and/or deadly event between 1960 through 1975 and from 1995 onward. Between 1976 and 1995, SHELDUS reflects only events that caused at least one fatality or more than \$50,000 in property or crop damages. In order to compensate for the under-reporting of losses in general and to provide more loss-information for rural counties, SHELDUS now reports U.S. Department of Agriculture (USDA) data, which breaks down losses by floods, droughts, etc. just like the traditional SHELDUS data. However, the USDA data are all insured losses, i.e. disaster crop insurance payments (indemnity payments).

### ***Vulnerability and Area of Impact***

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Vulnerabilities are described in terms of potential losses to critical facilities, structures, population, and socioeconomic values that can be affected by the hazard event. Hazard impact areas describe the geographic extent to which a hazard can impact a jurisdiction and are uniquely defined on a hazard-by-hazard basis. Mapping of the hazards, where spatial differences exist, allows for hazard analysis by geographic location. Some hazards can have varying levels of risk based on location. Other hazards cover larger geographic areas and affect the area uniformly.

### ***Probability and Magnitude***

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Probability of a hazard event occurring in the future was assessed based on hazard frequency over a 100-year period. Hazard frequency was based on the number of times the hazard event occurred divided by the period of record. If the hazard lacked a definitive historical record, the probability

## *Section 4: Risk Assessment and Vulnerability Analysis*

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was assessed qualitatively based on regional history and other contributing factors. Probability was broken down as follows:

- Highly Likely – greater than 1 event per year (frequency greater than 1).
- Likely – less than 1 event per year but greater than 1 event every 10 years (frequency greater than 0.1 but less than 1).
- Possible – less than 1 event every 10 years but greater than 1 event every 100 years (frequency greater than 0.01 but less than 0.1).
- Unlikely – less than 1 event every 100 years (frequency less than 0.01)

The magnitude or severity of potential hazard events was evaluated for each hazard. Magnitude is a measure of the strength of a hazard event and is usually determined using technical measures specific to the hazard. Magnitude was calculated for each hazard where property damage data was available. Magnitude is expressed as a percentage according to the following formula:

- $(\text{Property Damage} / \text{Number of Incidents}) / \$ \text{ of Building Stock Exposure}$

### *Future Development*

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The impact to future development was assessed based on potential opportunities to limit or regulate development in hazardous areas such as building codes, zoning and subdivision regulations. The impacts were assessed through a narrative on how future development could be impacted by the hazard. Plans, ordinances and/or codes currently in place were identified that could be revised to better protect future development in Rosebud County from damage caused by natural and man-made hazards.

### *Climate Change*

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An essential aspect of hazard mitigation is predicting the likelihood of hazard events in a planning area. Typically, predictions are based on statistical projections from records of past events. This approach assumes that the likelihood of hazard events remains essentially unchanged over time. Thus, averages based on the past frequencies of, for example, floods are used to estimate future frequencies: if a river has flooded an average of once every 5 years for the past 100 years, then it can be expected to continue to flood an average of once every 5 years.

For hazards that are affected by climate conditions, the assumption that future behavior will be equivalent to past behavior is not valid if climate conditions are changing. As flooding is generally associated with precipitation frequency and quantity, for example, the frequency of flooding will not remain constant if broad precipitation patterns change over time. Specifically, as hydrology changes, storms currently considered to be a 1 percent annual chance event (100-year flood) might strike more often, leaving many communities at greater risk. The risks of, landslide, severe storms, extreme heat and wildfire are all affected by climate patterns as well. For this reason, an understanding of climate change is pertinent to efforts to mitigate natural hazards. Information about how climate patterns are changing provides insight on the reliability of future hazard projections used in mitigation analysis.

## Section 4: Risk Assessment and Vulnerability Analysis

At the end of each hazard profile is a discussion on climate change. The information provides insight on how the hazard may be impacted by climate change and how these impacts may alter current exposure and vulnerability for the population, property, and critical facilities.

### 4.1.5 Hazard Ranking and Priorities

In ranking the hazards, the MHMP Planning Team completed a Calculated Priority Risk Index (CPRI) Work Sheet. The CPRI examines five criteria for each hazard (probability, magnitude/severity, economic impact, warning time, and duration); the risk index for each, according to four levels, then applies a weighting factor (**Table 4.1-1**). The result is a score that has been used to rank the hazards. Each hazard profile presents its CPRI score with a cumulative score sheet included in **Appendix C-1**. **Table 4.1-2** presents the results of the CPRI scoring for all hazards.

**Table 4.1-1. Calculated Priority Risk Index**

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
<b>Probability</b>	Unlikely	Rare with no documented history of occurrences of events. Annual probability of less than 0.01.	1	30%
	Possible	Infrequent occurrences with at least one documented or anecdotal historic event. Annual probability that is between 0.1 and 0.01	2	
	Likely	Frequent occurrences with at least two or more documented historic events Annual probability that is between 1 and 0.1	3	
	Highly Likely	Common events with a well-documented history of occurrence. Annual probability that is greater than 1	4	
<b>Magnitude/ Severity</b>	Negligible	Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure).	1	25%
		Injuries or illnesses are treatable with first aid and there are no deaths.		
		Negligible quality of life lost.		
		Shut down of critical facilities for less than 24 hours.		
	Limited	Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure).	2	
		Injuries or illnesses do not result in permanent disability and there are no deaths.		
		Moderate quality of life lost		
		Shut down of critical facilities for more than 1 day and less than 1 week.		
	Critical	Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure).	3	
		Injuries or illnesses result in permanent disability and at least one death.		
		Shut down of critical facilities for more than 1 week and less than 1 month		
Catastrophic	Severe property damages (greater than 50% of critical and non-critical facilities an infrastructure).	4		
	Injuries or illnesses result in permanent disability and multiple deaths.			
	Shut down of critical facilities for more than 1 month.			

## Section 4: Risk Assessment and Vulnerability Analysis

**Table 4.1-1. Calculated Priority Risk Index**

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
<b>Economic Impact</b>	Negligible	Little to no annual economic impact.	1	20%
	Limited	<\$1 million annual economic impact.	2	
	Critical	<\$1 billion but >\$1 million in annual economic impact.	3	
	Catastrophic	>\$1 billion annual economic impact.	4	
<b>Warning Time</b>	Less than 6 hours	Self-explanatory.	4	15%
	6 to 12 hours	Self-explanatory.	3	
	12 to 24 hours	Self-explanatory.	2	
	More than 24 hours	Self-explanatory.	1	
<b>Duration</b>	Less than 6 hours	Self-explanatory.	1	10%
	Less than 24 hours	Self-explanatory.	2	
	Less than one week	Self-explanatory.	3	
	More than one week	Self-explanatory.	4	

**Table 4.1-2. Calculated Priority Ranking Index Summary; Rosebud County**

Hazard	Probability	Magnitude/Severity	Economic Impact	Warning Time	Duration	CPRI Score
Wildfire >10 acres	Highly Likely	Critical	Limited	<6 hours	>1 week	3.35
Terrorism/Violence/Civil Unrest	Unlikely	Catastrophic	Catastrophic	<6 hours	>1 week	3.1
Severe Summer Weather	Highly Likely	Limited	Critical	<6 hours	<6 hours	3.0
Communicable Disease (human)	Highly Likely	Critical	Limited	>24 hours	>1 week	2.9
Dam Failure	Unlikely	Catastrophic	Catastrophic	6-12 hours	<1 week	2.85
Highway Accidents	Highly Likely	Critical	Negligible	<6 hours	<6 hours	2.85
Structure Fire (urban fire)	Likely	Critical	Limited	<6 hours	<24 hours	2.85
Severe Winter Weather	Highly Likely	Critical	Negligible	12-24 hours	<1 week	2.75
Flooding	Highly Likely	Limited	Limited	12-24 hours	<1 week	2.7
Drought	Likely	Limited	Critical	>24 hours	>1 week	2.55
Hazardous Materials Incidents	Highly Likely	Negligible	Negligible	<6 hours	<6 hours	2.35
Aircraft Accidents	Possibly	Critical	Negligible	<6 hours	<6 hours	2.25
Pipeline Spills	Possibly	Limited	Negligible	<6 hours	<24 hours	2.1
Railroad Accidents w impacts	Possibly	Negligible	Negligible	<6 hours	<24 hours	1.85
Communicable Disease (livestock)	Possibly	Negligible	Limited	>24 hours	>1 week	1.8
Landslides	Possibly	Negligible	Negligible	<6 hours	<6 hours	1.75
Volcanic Ash	Unlikely	Negligible	Negligible	6-12 hours	<1 week	1.5
Earthquake	Unlikely	Negligible	Negligible	<6 hours	<6 hours	1.45

The Calculated Priority Risk Index scoring method has a range from 0 to 4. “0” being the least hazardous and “4” being the most hazardous situation.

The MHMP Planning Team felt that the CPRI ranking did not accurately represent hazard priorities for Rosebud County. As such, the hazards were prioritized, and the top eight hazards are profiled in this Plan. Hazards profiled in the 2021 MHMP update include those from the 2013 PDM Plan with a few changes. The 2021 MHMP profiled three new hazards including Communicable Disease, Transportation Accidents, and Structure Fire. The MHMP Planning Team decided that the Earthquake hazard should be de-emphasized in the 2021 MHMP because it is not considered a large risk in Rosebud County. The hazard profile for Earthquake from the 2013 PDM Plan is included in **Appendix C-3**. All natural hazards commonly recognized to affect Rosebud County are included in the Plan. **Table 4.1-3** shows the hazard priority for the 2021 MHMP compared to how hazards were ranked in 2013.

**Table 4.1-3. Prioritized Hazards for 2021 MHMP**

2021 Hazard Rank	Hazard Profile	2013 Hazard Rank / Comments	Section in 2021 Plan
#1	Wildfire	#3 in 2013 PDM Plan.	Section 4.2
#2	Drought	#1 in 2013 PDM Plan.	Section 4.3
#3	Severe Summer Weather	#2 in 2013 PDM Plan.	Section 4.4
#4	Communicable Disease	New hazard for 2021 MHMP.	Section 4.5
#5	Severe Winter Weather	#4 in 2013 PDM Plan.	Section 4.6
#6	Flooding & Dam Failure	#5 in 2013 PDM Plan.	Section 4.7
#7	Structure Fire	New hazard for 2021 MHMP.	Section 4.8
#8	Hazardous Material & Transportation Accidents	Haz-Mat #6 in 2013 Plan. Transportation Accidents new hazard for 2021 MHMP	Section 4.9

### 4.1.6 Assessing Vulnerability – Estimating Potential Losses

The methodology used in the vulnerability analysis to estimate loss presents a quantitative assessment of the building stock, population, and critical facility exposure to the individual hazards. For hazards that are not uniform across the jurisdiction and instead occur in specific areas (e.g. wildfire, drain and ditch failure, hazardous material incidents/transportation accidents, flooding, dam failure, landslide and rock falls) the hazard area factored into loss estimation calculations. Building stock data, available from the NRIS Structures Framework and MDOR Cadastral Mapping Program was used in the analysis. Linking these two data sources enabled the location of structures within land parcels to be connected to their appraised value. Using GIS, hazard risk areas were intersected with the building stock data to identify the number of structures and exposure due to each hazard. Hazard risk areas were also intersected with critical facility, infrastructure and bridge data to determine the number and exposure to each hazard. Using the number of residential structures in each hazard area, vulnerable population was estimated by assigning U.S. Census estimates on number of persons residing in each structure, percent of population over age 65 years, and under age 18.

For hazards that are uniform across the jurisdiction with damage data (i.e. severe weather) the methodology presented below was used to determine annualized property loss.

- Exposure x Frequency x Magnitude

Where:

- Exposure = building stock, vulnerable population, or critical facilities at risk
- Frequency = annual number of events determined by calculating the number of hazard events / period of record
- Magnitude = percent of damage expected calculated by: (property damage/# incidents)/ building stock or critical facility exposure

For hazards without documented property damage (i.e. communicable disease, terrorism/cyber security), magnitude could not be calculated and therefore, exposure was determined to be the total value of the critical facilities and infrastructure, general building stock or population at risk. Annualized loss estimates cannot be calculated without property damage using this risk assessment approach.

## *Section 4: Risk Assessment and Vulnerability Analysis*

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Economic losses associated with the drought hazard were qualitatively analyzed by looking at crop production (winter wheat) statistics and comparing these across drought and non-drought years. Secondary impacts to retail sales in the community were not evaluated.

### **4.1.7 Data Limitations**

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Risk assessment and vulnerability analysis results are only a general representation of the potential loss that may be experienced from a hazard event and there are many inherent inaccuracies with the methodology used. Output is only as good as the data sources used and Rosebud County may wish to consider alternate data for future MHMP updates.

The remainder of this section presents hazard profiles organized in accordance with county priority followed by a risk assessment summary. Vulnerability analysis results for each of the hazards, are compiled at the end of this section for Rosebud County, Forsyth and Colstrip.

4.2 Wildfire

CPRI SCORE = 3.35

*Description and History*

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires, both man-caused and natural in origin. Severe wildfire conditions, often brought on by drought, have historically represented a threat of potential destruction to the agricultural economy within the region. Negative impacts of wildfire include loss of life, property and resource damage or destruction, severe emotional crisis, widespread economic impact, disrupted and fiscally impacted government services, and environmental degradation.

Wildfire risk is the potential for a wildfire to adversely affect things that resident’s value - lives, homes, their agricultural livelihood, or ecological functions and attributes. Wildfire risk in a particular area is a combination of the chance that a wildfire will start in or reach that area and the potential loss of human values if it does. Human activities, weather patterns, wildfire fuels, agricultural practices, values potentially threatened by fire, and the availability (or lack) of resources to suppress a fire all contribute to wildfire risk. The Conservation Reserve Program (CRP) land and the change of agricultural practices, i.e. no-till farming, have contributed to the wildland fire risk in Rosebud County. In 2012, Rosebud County had 31,000 acres participating in the CRP.

Fire season is the result of low rainfall, high temperatures, low humidity, and thunderstorms, high winds and lightning. Varied topography, semi-arid climate, and numerous human-related sources of ignition make this possible. Most of fire starts in Rosebud County are caused by lightning. Man-made fire starts account for the remainder of the wildfire ignitions including debris burning, downed powerlines, and heated farm equipment in dry grass or crops. Burning coal seams, which are difficult to extinguish, also ignite wildfires in Rosebud County.

Major wildfires can occur at any time of year. **Table 4.2-1** presents warning and advisory criteria for wildfire and a description of prohibitions that land management agencies can put into effect to reduce fire risk and prevent wildfires during periods of high to extreme danger.

**Table 4.2-1. Warning, Advisories and Restrictions for Wildfire**

Warning/Advisory/Restriction	Description
Fire Weather Watch	A fire weather watch is issued when Red Flag conditions (see Red Flag Warning) are expected in the next 24 to 72 hours.
Red Flag Warning	A red flag warning is issued when Red Flag criteria are expected within the next 12 to 24 hours. A Red Flag event is defined as weather conditions that could sustain extensive wildfire activity and meet one or more of the following criteria in conjunction with “Very High” or “Extreme” fire danger: <ul style="list-style-type: none"> <li>• Sustained surface winds, or frequent gusts, of 25 mph or higher;</li> <li>• Unusually hot, dry conditions (relative humidities less than 20%);</li> <li>• Dry thunderstorm activity forecast during an extremely dry period;</li> <li>• Anytime the forecaster foresees a change in weather that would result in a significant increase in fire danger. For example, very strong winds associated with a cold front even though the fire danger is below the “Very High” threshold.</li> </ul>
Fire Warning	A fire warning may be issued by local officials when a spreading wildfire or structure fire threatens a populated area. Information in the warning may include a call to evacuate areas in the fire’s path as recommended by officials according to state law or local ordinance.
Dense Smoke Advisory	Dense smoke advisories are issued when the widespread visibilities are expected at a ¼ mile or less for a few hours or more due to smoke.

## Section 4: Risk Assessment and Vulnerability Analysis

**Table 4.2-1. Warning, Advisories and Restrictions for Wildfire**

Warning/Advisory/ Restriction	Description
Stage 1 Fire Restriction	No building, maintaining, attending, or using a fire, campfire, or stove fire without a permit except in Forest Service developed camp or picnic grounds. No smoking unless in an enclosed vehicle or building, a developed recreation site, or while stopped in an area at least three feet in diameter that is barren or cleared of all flammable material. No operation of welding, acetylene, or other torch with an open flame. No operation or using any internal or external combustion engine without a spark arresting device properly installed, maintained and in effective working order.
Stage 2 Fire Restriction	No building, maintaining, attending or using open fire campfires or stove fires. No smoking unless in an enclosed vehicle or building, a developed recreation site, or within a three-foot diameter cleared to mineral soil. No operation of welding, acetylene, or other torch with an open flame. No operation or using any internal or external combustion engine without a spark arresting device properly installed, maintained and in effective working order.

Source: National Weather Service, 2021; National Interagency Fire Center, 2021  
[https://gacc.nifc.gov/rmcc/dispatch\\_centers/r2ftc/documents/Fire\\_Restriction\\_Chart.pdf](https://gacc.nifc.gov/rmcc/dispatch_centers/r2ftc/documents/Fire_Restriction_Chart.pdf)

Rosebud County has witnessed a number of large wildfires that have destroyed property and affected agricultural assets, scenic resources, and air quality. Between 1994 and 2021, over 85 fires greater than 200 acres in size burned almost one million acres in the county. In 2012 alone, 14 wildfires burned over 500,000 acres. **Table 4.2-2** presents wildfire listings over 200 acres in Rosebud County from 1994 through 2021.

**Table 4.2-2. Wildfire Listings >200 Acres in Rosebud County**

Date	Name	Cause	Acres	Date	Name	Cause	Acres
8/22/1994	Grierson	Lightning	6,400	6/5/2012	Bascomb Road	Lightning	1,382
7/28/1996	Wolf	Lightning	350	6/25/2012	Ash Creek	Lightning	249,562
8/5/1996	Rosebud Creek	Lightning	30,700	7/3/2012	Power Line	Lightning	5,266
8/9/1996	Four Corner	Lightning	306	7/5/2012	Boyce	Lightning	730
8/10/1996	Clubfoot	Miscellaneous	412	7/14/2012	Emile	Lightning	1,917
8/19/1996	Scarface II	Lightning	1,074	7/21/2012	Cherry	Lightning	446
8/31/1996	Sweeney Creek	Lightning	600	7/31/2012	Sand Creek	Lightning	758
8/31/1996	Colstrip	Lightning	1,000	8/1/2012	Beaver	Lightning	1,362
5/13/1998	South Fork	Lightning	1,033	8/1/2012	Juniper	Lightning	4,024
7/14/1998	Garfield	Lightning	2,050	8/1/2012	Sweeney	Lightning	11,940
8/21/1998	Smith Creek	Lightning	500	8/1/2012	Sand Creek	Lightning	18,522
7/24/1999	Fishel Creek	Lightning	33,000	8/1/2012	Chalky	Lightning	114,372
7/5/2000	Wyant Coulee	Lightning	700	8/2/2012	Rosebud Complex	Lightning	152,261
7/28/2000	Wild Hog Butte	Lightning	831	9/21/2012	Rough Creek	Lightning	317
8/16/2000	Green Leaf	Lightning	400	9/22/2012	Eagle Creek	Miscellaneous	4,150
9/2/2000	Wild Horse	Lightning	375	7/25/2014	Montgomery	Powerline	9,363
9/2/2001	Spistols	Debris Burning	200	3/28/2015	Slough	Lightning	3,203
8/12/2003	Cow Creek	Lightning	600	7/29/2015	Charlie	Lightning	2,291
8/13/2003	Cow Creek 2	Lightning	275	7/31/2015	Chalky Butte	Coal Seam	3,507
8/13/2003	Aspen	Lightning	300	8/14/2015	Lay Creek	Lightning	205
8/13/2003	Rez Creek	Lightning	2,500	8/15/2015	Richards Coulee	Lightning	1,967
8/14/2003	Craig II	Lightning	9,180	8/16/2015	Rough Draw	Lightning	294
8/15/2003	E Mt Complex	Lightning	13,533	6/18/2016	Wall	Lightning	1,659
8/17/2003	Boundary	Lightning	300	7/9/2016	Harris	Lightning	3,394
8/20/2003	Smith Creek	Lightning	657	7/12/2016	Mud Draw	Lightning	341
4/13/2004	Well	Lightning	305	7/30/2016	Butte	Lightning	1,544
5/8/2004	Rimrock	Lightning	650	7/4/2017	Howard	Arson	375
5/9/2004	Lacy Gulch	Debris Burning	3,040	7/10/2017	McGinnis Creek	Unknown	629
4/5/2005	Sawmill Gulch	Lightning	1,199	7/15/2017	Baseline	Miscellaneous	363
8/7/2005	Paget	Lightning	423	7/16/2017	Turtle	Unknown	1,000



## Section 4: Risk Assessment and Vulnerability Analysis

**Table 4.2-2. Wildfire Listings >200 Acres in Rosebud County**

Date	Name	Cause	Acres	Date	Name	Cause	Acres
7/12/2006	Spring Creek	Lightning	546	7/29/2017	Trembling	Coal Seam	972
7/12/2006	Sage	Lightning	903	8/9/2017	N. Reservation Crk	Miscellaneous	200
7/12/2006	Horton Hay	Lightning	25,237	8/24/2017	1026	Lightning	8,043
7/29/2006	Coal Creek	Lightning	287	8/24/2017	Mitchell	Lightning	1,247
7/29/2006	Sand Creek	Lightning	2,378	8/24/2017	Sweeny	Unknown	727
8/8/2006	Lee Creek	Lightning	557	8/31/2017	Snider	Lightning	6,643
8/15/2006	Danny	Lightning	300	8/31/2017	Alpha	Unknown	325
8/29/2006	Hole In The Wall	Equipment Use	256	9/1/2017	Sarpy Fork	Miscellaneous	362
7/18/2007	Walk In	Lightning	398	9/1/2017	Quarter	Unknown	308
8/10/2007	Goodale	Lightning	301	9/2/2017	River	Miscellaneous	258
8/10/2007	Ball Ranch	Lightning	628	8/15/2018	Bradshaw	Lightning	265
8/14/2007	Salesbury	Lightning	2,600	9/4/2019	Cut Across	Miscellaneous	1,700
9/10/2007	Joe Leg	Lightning	388	9/2/2020	Snider-Rice	Lightning	47,000
3/21/2010	Charlie	Arson	345	8/10/2021	Richard Spring	Coal Seam	150,000
8/22/2011	Boss Ribs	Lightning	4,537	8/12/2021	Lame Deer	Unknown	1,700
				TOTAL			<b>967,748</b>

Source: BLM, 2018; DNRC, 2021.

The Montana MHMP (DES, 2018) indicates that the largest wildfire in the state was in Rosebud County and included the Ash Creek, Rosebud Complex, Chalky, and Sartin Draw fires. Between 1992 and 2017, Rosebud County had more acres burned (612,218) than any other Montana county.

Federal disaster declarations for wildfire were authorized in Rosebud County in 2000 (DR-1340-MT) and in 2012 (DR-4074-MT). In addition, Rosebud County received federal Fire Management Assistance Grants in 2012 for the Ash Creek Fire (FM-2989-MT) and in 2020 for the Montana Snider/Rice Fire Complex (FM-5345-MT). Descriptions of several significant wildfires in Rosebud County are presented below.

**2021 Richard Spring and Lame Deer Fires** – A coal seam started the Richard Spring fire which grew tens of thousands of acres in one day, displacing residents of Ashland, Lame Deer and numerous rural homes along Highway 212. The fire also knocked out power for as many as 2,000 people in the region. Evacuation notices encompassed Lame Deer, Ashland, North Tongue River Road, Rabbit Town, the St. Labre campus, Ashland Divide, Muddy Cluster and Rosebud Cut Across. The fire began southwest of Colstrip and burned over several dozen transmission lines maintained by Tongue River Electric Cooperative. Burning through brush, short grass and timber, the fire exhibited extreme fire behavior



including running, torching, and wind-driven runs. Meanwhile the Lame Deer fire was threatening the Rosebud Creek and Rosebud Creek Road areas. The fire grew within one ridge from the town of Lame Deer endangering the health clinic, hospital, and whole north side of Lame Deer. The Lame Deer fire was approximately 1,700 acres and began west of Lame Deer in the Lynch Coulee area. The Richard Spring Fire was the largest fire in four years in Rosebud County; nearly triple the size of 2020's largest wildfire. The fire

burned over at least four secondary structures. No injuries were reported, nor additional structures destroyed. (Billings Gazette, *Hundreds Evacuated as Wind Fans Flames*, August 12, 2021).

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2020 Snider/Rice Fire Complex - Two fires north of Ashland combined burned nearly 69 square miles and destroyed four structures in Rosebud County's southeastern corner. The fire grew quickly, driven by erratic winds, temperatures in the mid-90s and bone dry vegetation. At their peak nearly 1,000 structures were threatened, and evacuations were ordered across a broad swath of land north and east of Ashland. No lives were lost, but a combined area of more than 47,000 acres were blackened in just a matter of days. Smoldering cottonwood trees along the banks of the Tongue River posed a special challenge because of their unpredictability. The Snider Fire burned about 31,600 acres and the Rice Fire, about 15,500 acres. (Billings Gazette, *Bullock Surveys Rice, Snider Fires in Southeast Montana*, September 5, 2020; Great Falls Tribune, *Seven Most Destructive Wildfires of Montana's 2020 Fire Season*, October 3, 2020).

2012 Ash Creek Fire - Montana's cattle industry saw a large part of their resources decimated with the Ash Creek Fire in Rosebud County. The wildfire began June 25 from a lightning strike and swept through timber, grassland and wheat fields before it was stopped on July 5. The fire destroyed 120,000 acres of Forest Service land and 110,000 acres of private land. The damage left 5,785 cows and 2,739 yearlings without adequate food or water. The wildfire wreaked havoc on the region's economically fragile livestock industry. Ranchers said they could be grappling with the devastation for years to come. Hay was in short supply. Hundreds of miles of fence and numerous corrals and water tanks had to be rebuilt. Thousands of head of displaced livestock had to be shipped to temporary pastures because of the lost grazing resource. The fire burned almost 250,000 acres on public and private land. (Cattle Business Weekly, *Ash Creek Fire Engulfs Land, Cattle*, July 19, 2012; Billings Gazette, *Dead Cattle, Devastation in Wake of Western Fires*, July 26, 2012).



2006 Walt Draw Fire - The Walt Draw Fire burned about 17,552 acres 13 miles southeast of Ashland in Powder River and Rosebud Counties from July 14-22 for a total firefighting cost of approximately \$1,700,000. Fuels included grass, timber, and sagebrush. Three residences, several outbuildings, and grazing allotments were threatened.

2003 Wildfires - The Buffalo Creek and Willey Fires and part of the Eastern Montana Complex, burned about 9,486 acres during August. The Booth Fire of early August 2003 burned about 1,650 acres in timber and grass 17 miles south of Colstrip.

2000 Wildfires - The largest wildfire during this active season was the Fort Howes Complex that burned roughly 61,711 acres south of Ashland in the Custer National Forest. Rosebud County received a Presidential Disaster Declaration for individual assistance and a USDA declaration for agricultural production and physical losses for wildfires from July 13 through September 25, 2000.

August 1996 Colstrip Fire - A 1,000 acre fire started by lightning occurred near Colstrip in August 1996. Two local people were killed while fighting fire from their truck with a tank and a hose. When their truck got a flat tire, the fire changed direction and overtook them as they tried to out run the blaze (Rosebud County PDM Plan, 2013).

## *Section 4: Risk Assessment and Vulnerability Analysis*

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Rosebud County has a large area of government-owned lands managed by the U.S. Forest Service. A large portion of southern Rosebud County is managed by the Northern Cheyenne Tribe. Scattered across the county are tracts of land managed by the BLM and state government. This scattering of government and private ownership can present unique firefighting challenges. Fighting wildland fires on private and state land in Rosebud County is primarily the responsibility of the County Fire Department and Montana DNRC. The Northern Cheyenne Tribe, BIA, Forest Service and BLM are responsible for providing wildland fire protection on federal lands within Rosebud County.

Rosebud County completed a Community Wildfire Protection Plan (CWPP) in 2004 (Firelogistics, 2004). This document is presented in **Appendix E**. Mitigation projects identified in the CWPP are incorporated herein by reference.

### *Vulnerability and Area of Impact*

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The light, flashy fuels and timber present in the region are capable of sustaining large, fast moving wildfires. Southern Rosebud County regularly experience wildfires and the timber and rugged terrain of that area make firefighting especially difficult. Timber areas, native grasses, and non-irrigated lands in the remainder of the county also present wildfire hazards. Because of the high frequency of thunderstorm activity in southeast Montana, erratic winds increase the potential for large wildland fire growth.

People and structures near wildfires are threatened unless adequately protected through evacuation or mitigation. Should fires occur, structures within the wildland urban interface (WUI) are very vulnerable. The WUI is the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. A WUI exists anywhere that structures are located close to natural vegetation and where a fire can spread from vegetation to structures, or vice versa. The Rosebud County CWPP lists the following areas as part of the WUI: the Wildhorse Subdivision, the Hidden Meadow Subdivision, the Bascom Subdivision, Ashland, Birney, Lame Deer, Colstrip, Forsyth, and Rosebud. According to WUI mapping done in 2011 by the Montana DNRC, the properties surrounding the City of Forsyth are at a high risk for wildfire, particularly to the south.

According to the Rosebud County CWPP, most working ranches have adequate clearing around them to protect them from crown fire or a running surface fire. Subdivision structures are inherently more vulnerable. People who own them often fail to recognize the relationship between the amount of vegetation around their structures and the threat to that structure from a wildfire. Some are even obstinate about that point refusing to remove any vegetation even through its continued presence reduces the probability that their home will survive a wildfire to almost zero.

MHMP Planning Team members indicated that they have tried campaigns on fuel reduction numerous times, but private landowners are not interested. After the 2012 fires, a meeting was held to discuss wildfire mitigation with federal, state, and local stakeholders including insurance companies. Only eight private property owners attended out of 50 invited.

Comments from the MHMP Planning Team revealed that more important than losses in the WUI is the economic loss of the grass resource for agricultural producers in Rosebud County. When the grass burns, producers often must reduce their livestock inventory. It can take many years for the pasture to recover and requires a significant financial investment to build back herds. Livestock is not insured whereas homes are, and can be rebuilt. Rosebud County has thousands of acres of non-irrigated fields

## Section 4: Risk Assessment and Vulnerability Analysis

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and rangeland scattered with sagebrush, juniper, and native grasses due to the generally arid climate. Rangeland and fallow fields in CRP also provide fuel for wildfire.

Often regional electric infrastructure pass through wildland and non-irrigated agricultural areas. In particular, the electric substations, transmission lines, fuel tanks, and radio transmission towers are not often equipped to withstand the heat from a wildfire. A wildfire could disrupt electricity or communications should this infrastructure be damaged.

Health effects associated with forest fire smoke exposure has been studied by the Centers for Disease Control (CDC). Researchers found the risk of hospital admission for respiratory and circulatory illness was greater during periods of heavy smoke than unexposed areas (CDC, 2001). Smoke blows into Custer County from the west and Canada. Montana Department of Environmental Quality (MDEQ) sends health warnings to schools on hazardous smoke conditions recommending the suspension of athletic events. Smoke also affects things like road safety and tourism.

Wildfires dramatically change landscape and ground conditions, which can lead to increased risk of flooding during heavy rains because the burned ground is unable to absorb the falling rain, producing runoff conditions. Because of this, even modest rainstorms over a burned area can result in flash flooding downstream.

### Probability and Magnitude

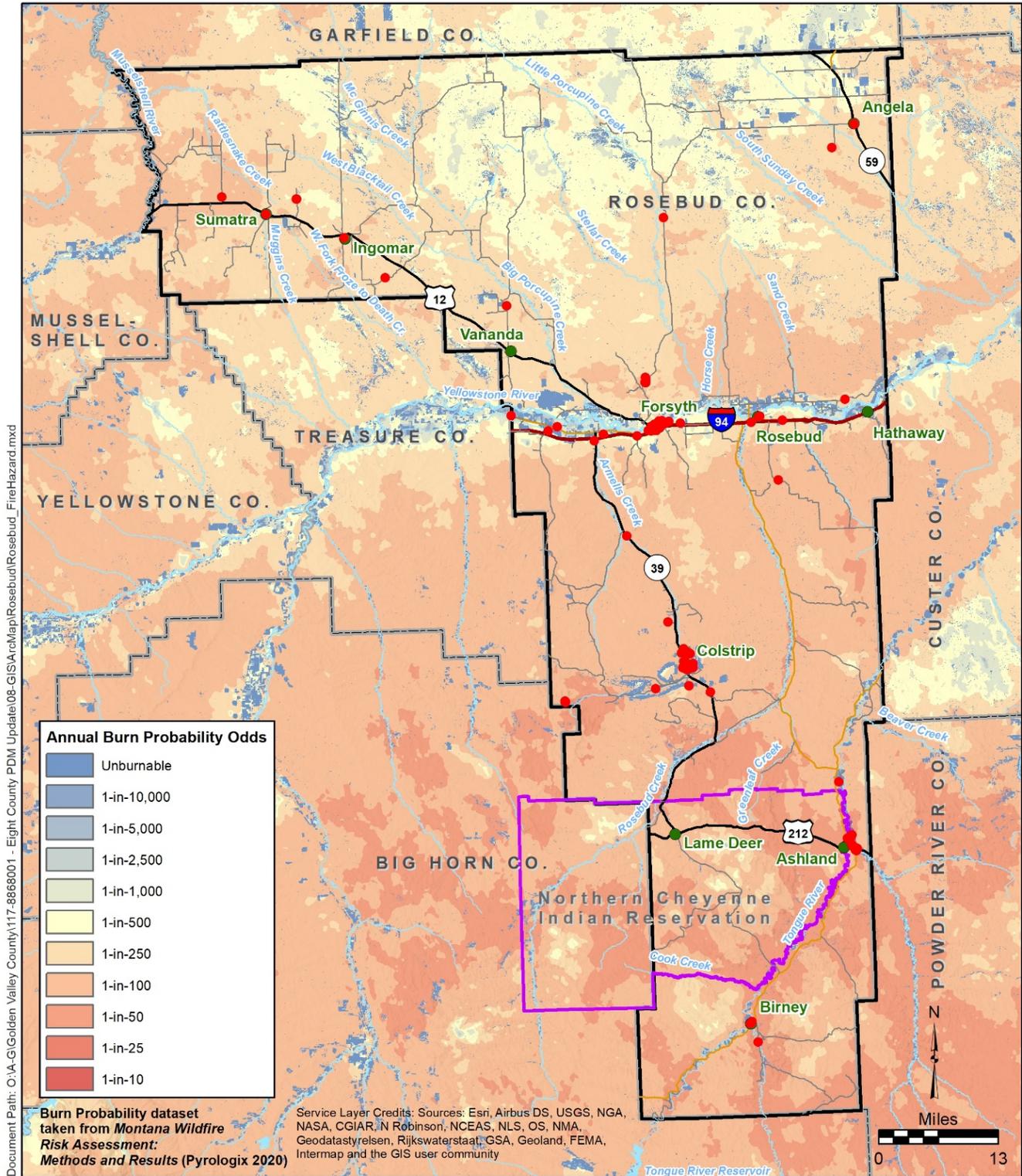
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**Figure 5** presents a Wildfire Potential Map for Rosebud County from the *Montana Wildfire Risk Assessment* (Pyrologix, 2020) for DNRC. The data for this map was compiled considering the likelihood of a fire burning, the intensity of a fire if one should occur, the exposure of assets and resources based on their location, and the susceptibility of those assets and resources to a wildfire. The data indicates the probability for wildfire is generally highest in the southern portion of the county, south of Interstate-94 and the Yellowstone River. Areas in the northern portion of the county have a lower probability of wildfire, especially the area bounded by McGinnis Creek on the west and South Sunday Creek on the east.

Wildfire does not present a uniform risk across Rosebud County. The wildfire hazard area used in the MHMP analysis consisted of the WUI layer from the 2018 State of Montana MHMP which was comprised of the U.S. Forest Service's *Community Zones Threatened by Large Fire*, the WUI layer from the Region 1 Healthy Forest Restoration Act, and by buffering interface communities with a population density equal or greater than 250 people by four miles. The Forsyth and Colstrip city limits were excluded from the wildfire hazard area because they are protected by municipal fire departments. **Figure 5A** presents a wildfire risk map showing the wildfire hazard area used for the MHMP analysis.

To complete the vulnerability analysis for this project, GIS was used to intersect the wildfire hazard area with both the critical facility and NRIS Structures dataset. Estimates of vulnerable population were calculated using U.S. Census estimates. Exposure values are presented in **Table 4.2-3**. Building exposure reflects only the monetary structure value and does not account for improvements or personal effects that may be lost to wildfire.

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Document Path: C:\A-G\Golden Valley County\117-8668001 - Eight County PDM Update\08-GIS\ArcMap\Rosebud\Rosebud\_FireHazard.mxd

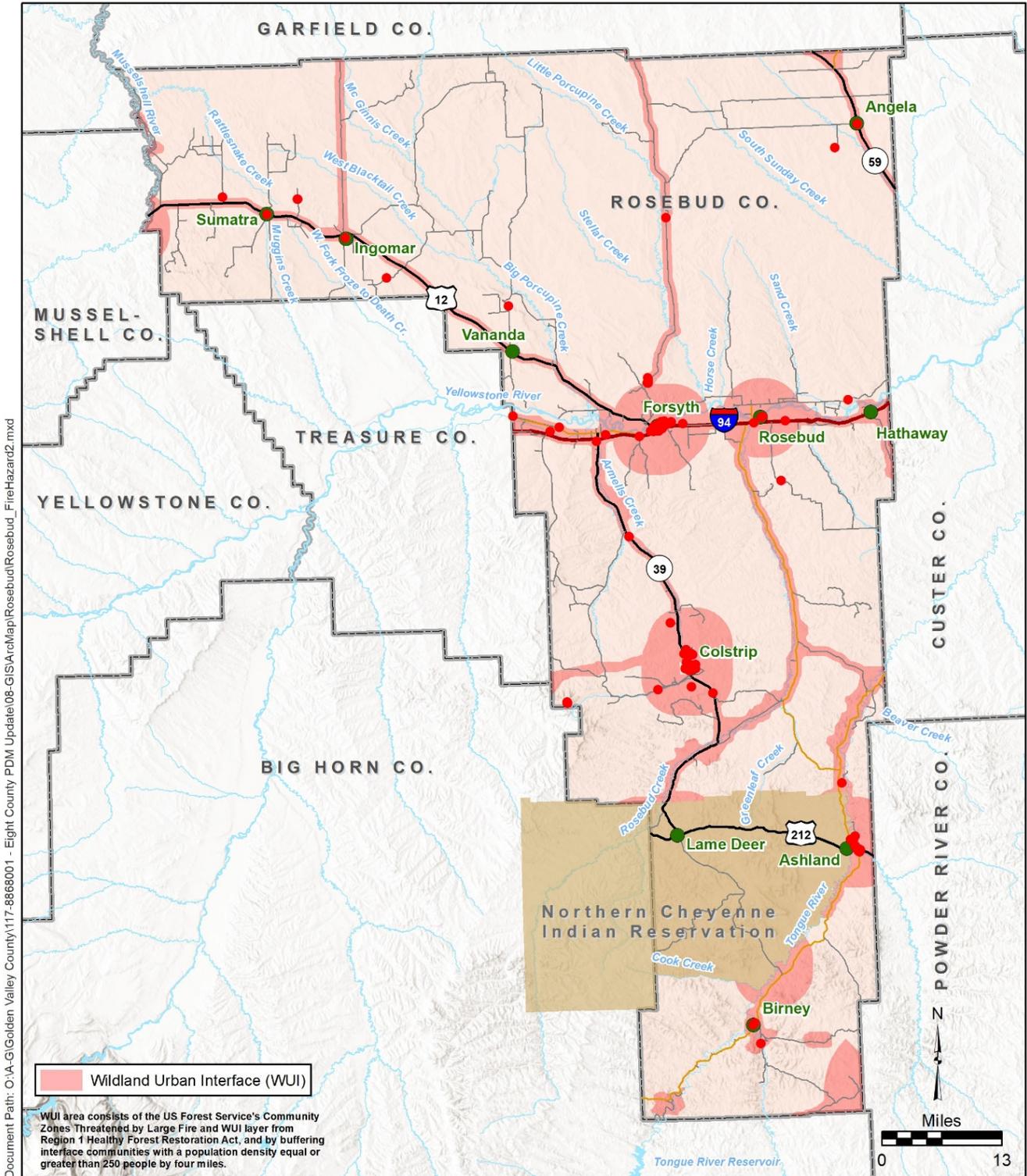
**Legend**

- Critical Facility
- Town
- Interstate
- Primary
- Secondary
- City-County
- Rosebud County
- County Boundary
- ~ Stream
- ~ Lake
- Northern Cheyenne Indian Reservation
- County Boundary

**Figure 5**  
**Wildfire Probability**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



Section 4: Risk Assessment and Vulnerability Analysis



Legend

- Critical Facility
- Town
- Wildland Urban Interface (WUI)
- Primary Road
- Secondary Road
- City-County Road
- Stream
- Lake
- Northern Cheyenne Indian Reservation
- County Boundary

Figure 5A  
**Wildfire Hazard Area**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



*Section 4: Risk Assessment and Vulnerability Analysis*

**Table 4.2-3. Rosebud County Vulnerability Analysis; Wildfire**

Category	Rosebud Co. (balance)	Forsyth (City)	Colstrip (City)
Residential Property Exposure \$	\$146,677,782	\$0	\$0
# Residences At Risk	1,452	0	0
Commercial, Industrial & Agricultural Property Exposure \$	\$66,651,842	\$0	\$0
# Commercial, Industrial & Agricultural Properties At Risk	513	0	0
Critical Facilities Exposure Risk \$	\$41,717,433	\$0	\$0
# Critical Facilities At Risk	51	0	0
Bridge Exposure \$	\$70,360,547	\$0	\$0
# Bridges At Risk	114	0	0
Persons At Risk	3,996	0	0
Persons Under 18 At Risk	1,139	0	0
Persons Over 65 At Risk	656	0	0

GIS analysis of the wildfire risk to Rosebud County indicates that 567,189 acres (17.6 percent) are within the wildfire hazard area (WUI). According to the vulnerability analysis, 1,452 residences, 513 commercial, industrial and agricultural buildings, and 51 critical facilities are located in the wildfire hazard area. The Wildfire Section in **Appendix C-4** lists the critical facilities and bridges within wildfire hazard area.

Wildfires generally occur more than once per year in Rosebud County and therefore, the probability of future events are rated as “highly likely”. With the loss in production of grazing land, reduced livestock inventory, and the loss of revenue to main street businesses, property damage associated with wildfire is difficult to ascertain. With over 800,000 acres of agricultural land burned in the past 25 years, the loss in revenue is unquantifiable.

***Future Development***

Wildfire’s impact to structures can be mitigated through comprehensive land use planning that includes housing development design, fuels management, and public education. Land use regulations can reduce the incidence of wildland fire by addressing defensible space, access for emergency vehicles, and on-site firefighting water supplies.

The Rosebud County Subdivision Regulations describe fire protection requirements for all proposed subdivisions. They stipulate that all premises have a reasonable level of fire protection and life-safety for the public and firefighters, fire apparatus access roads, and an approved water supply capable of providing the required water flow for fire protection. In areas with high fire danger, defensible space requirements apply. In the event that the proposed subdivision is located within the WUI, the subdivider must submit a plan to mitigate fire hazards in accordance with the fire department having jurisdiction.

### *Climate Change*

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Montana has been on a steady warming trend for decades, up over 3°F since 1950, and all projections are that it will continue. The summer of 2017 was the second warmest on record since 1950 at 4°F above average, and the persistent high temperatures coupled with the record lowest rainfall in July and August shifted the relatively wet conditions of spring into extreme drought by mid-summer followed by a severe wildfire season (Whitlock et.al., 2017).

The climate future with respect to wildfire will include additional warming with less precipitation in the summer months which set the stage for drier conditions and more fires. Over the next century, extreme heat days (above 90°F) are projected to increase by an additional 5-35 days across the state. And, as a result of greater drought, forest fires will likely increase in size, frequency, and possibly severity.

In a given year, warmer weather and less precipitation dries out fuel loads and creates conditions for rapid fire spread. Fire records dating back decades to millennia show a clear link between warmer temperatures, lower precipitation and an increase in the number of fires and acres burned. Since 1986, wildfire seasons are nearly 80 days longer, with increases in large fires and fires at high elevations (Whitlock et.al., 2017).

Larger, more severe, and more frequent fires may impact the people, property and critical facilities by increasing the risk from ignition from nearby fire sources. Climate change also may increase winds that spread fires. Faster fires are harder to contain, and thus are more likely to expand into residential neighborhoods.

Secondary impacts, such as air quality concerns and public health issues, will likely increase due to smoke from wildfire. Wildfire smoke generates a lot of particulate matter 2.5 microns or less in diameter. Those particles are so small, they easily bypass most of the human body's defenses and move directly from the lungs into the bloodstream. A recent study demonstrates that smoke waves are likely to be longer, more intense, and more frequent under climate change, which raises health, ecologic and economic concerns.

4.3 Drought

CPRI SCORE = 2.55

*Description and History*

Drought is an extended period of unusually dry weather and is a special type of disaster because its occurrence does not require evacuation of an area nor does it constitute an immediate threat to life or property. People are not suddenly rendered homeless or without food and clothing. The basic effect of a drought is economic hardship, but it does, in the end, resemble other types of disasters in that victims can be deprived of their livelihoods and communities can suffer economic decline.

The effects of drought become apparent when they are in longer duration because more and more moisture-related activities are affected. Non-irrigated croplands are most susceptible to moisture shortages. Rangeland and irrigated agricultural lands do not feel the effects as quickly as the non-irrigated, cultivated acreage, but their yields can also be greatly reduced due to drought.

In periods of severe drought, range fires can destroy the economic potential of the agricultural industry, and wildlife habitat in, and adjacent to, the fire areas. Under extreme drought conditions, lakes, reservoirs, and rivers can be subject to severe water shortages. Insect infestation is an additional hazard resulting from drought.

Typically, droughts are not declared disasters in the same way as a Presidential Disaster Declaration; rather, they are declared by the Secretary of the U.S. Department of Agriculture. CRP grazing may be opened to livestock owners for feed but other than this, the only real help for producers and growers is the fact that federal low interest loans are made available.

Table 4.3-1 presents the National Weather Service warnings and advisories that relate to drought:

**Table 4.3-1. Warning and Advisory Criteria for Drought**

Summer Weather Warning	Warning Description
Blowing Dust Advisory	Issued for widespread or localized blowing dust reducing visibilities to less than a mile but greater than ¼ mile with sustained winds of 25 mph or greater.
Dust Storm Warning	Issued when widespread or localized blowing dust reduces visibilities to less than ¼ mile with sustained winds of 25 mph or greater.
Heat Advisory	Issued within 12 hours of the onset of extremely dangerous heat conditions; i.e. when the maximum heat index temperature is expected to be 100° or higher for at least 2 days, and night time air temperatures will not drop below 75°.
Heat Warning	Issued within 12 hours of the onset of extremely dangerous heat conditions; i.e. when the maximum heat index temperature is expected to be 105° or higher for at least 2 days and night time air temperatures will not drop below 75°.

Source: National Weather Service, 2021.

The State of Montana established a Drought Advisory Committee and developed a Drought Plan to address the hazard. Information from the National Drought Mitigation Center also identifies Montana as a drought prone state. Temperatures can reach 100°F in the summer with extremely low humidities and high winds. Such dry, hot conditions contribute to drought conditions. The history of drought in Montana, as presented in the State of Montana Natural Hazards Mitigation Plan (DES, 2001), is summarized below.

In the 1930's, the “Dust Bowl” drought affected the State of Montana, including Rosebud County. This nationwide drought produced erosion problems in the creation of dust storms throughout the state.



## *Section 4: Risk Assessment and Vulnerability Analysis*

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Drought struck Montana again in 1961, and by July, the State's Crop and Livestock Reporting Service called it the worst drought since the 1930's. Better conservation practices such as strip cropping were used to lessen the impacts of the water shortages. Five years later in 1966, the entire state was experiencing yet another episode of drought. Although water shortages were not as great as in 1961, a study of 10 weather recording stations across Montana showed all had recorded below normal precipitation amounts for a 10-month period.

Then in the 1970's, a seven-month survey ending in May of 1977 estimated that over 250,000 acres of Montana farmland had been damaged by winds. Inadequate crop cover and excessive tillage practices had resulted in exaggerated soil damage due to low soil moisture. The State of Montana began taking protective measures to conserve water.

Montana was severely affected by drought again in 1985 and received a federal drought disaster declaration. For a typical 2,500-acre Montana farm/ranch, the operator lost more than \$100,000 in equity over the course of that year. The state's agriculture industry lost nearly \$3 billion in equity. History remembers the 1988 drought as the year fire burned through almost 800,000 acres of Yellowstone National Park, but it was also a brutal year for Montana's dryland farmers.

Montana had drought conditions from 2000 through 2008 and received a total of \$152.4 million in disaster assistance from the Farm Service Agency in 2004, 2005, and 2006.

The drought of 2017 was of epic proportions stretching 680 miles west to east across the state. This was the first summer in 10 years that so much of the state experienced drought at the same time and the first year since 2004 that more than 10 percent of the state was in extreme drought. The summer of 2017 was the second warmest on record since 1950 at 4 degrees above average, and the persistent high temperatures coupled with the record lowest rainfall in July and August shifted the relatively wet conditions of spring into extreme drought by mid-summer. The speed of the transition from wet to dry was so rapid that the term "flash drought" has been coined. (Billings Gazette, *Montana Drought Drives Cattle to Market Early*, October 14, 2017; Billings Gazette, *Nearly all of Montana is in Drought*, August 19, 2017; Bozeman Daily Chronical, *The Worst Drought We've Ever Had: Farmers, Ranchers Across the State Struggle with Historic Dry Spell*, September 3, 2017).

Then Governor Bullock signed an Executive Order declaring a drought disaster in eastern and central Montana and stated that the drought had caused "significant and widespread injury to agricultural crops, including livestock forage, imposing economic hardships on Montana's farmers and ranchers". USDA authorized emergency grazing on CRP lands stating, "Due to reduced availability of forage, ranchers in the hardest hit locations have already been culling their herds. Without alternative forage options like grazing CRP lands, livestock producers are faced with the economically devastating potential of herd liquidation."

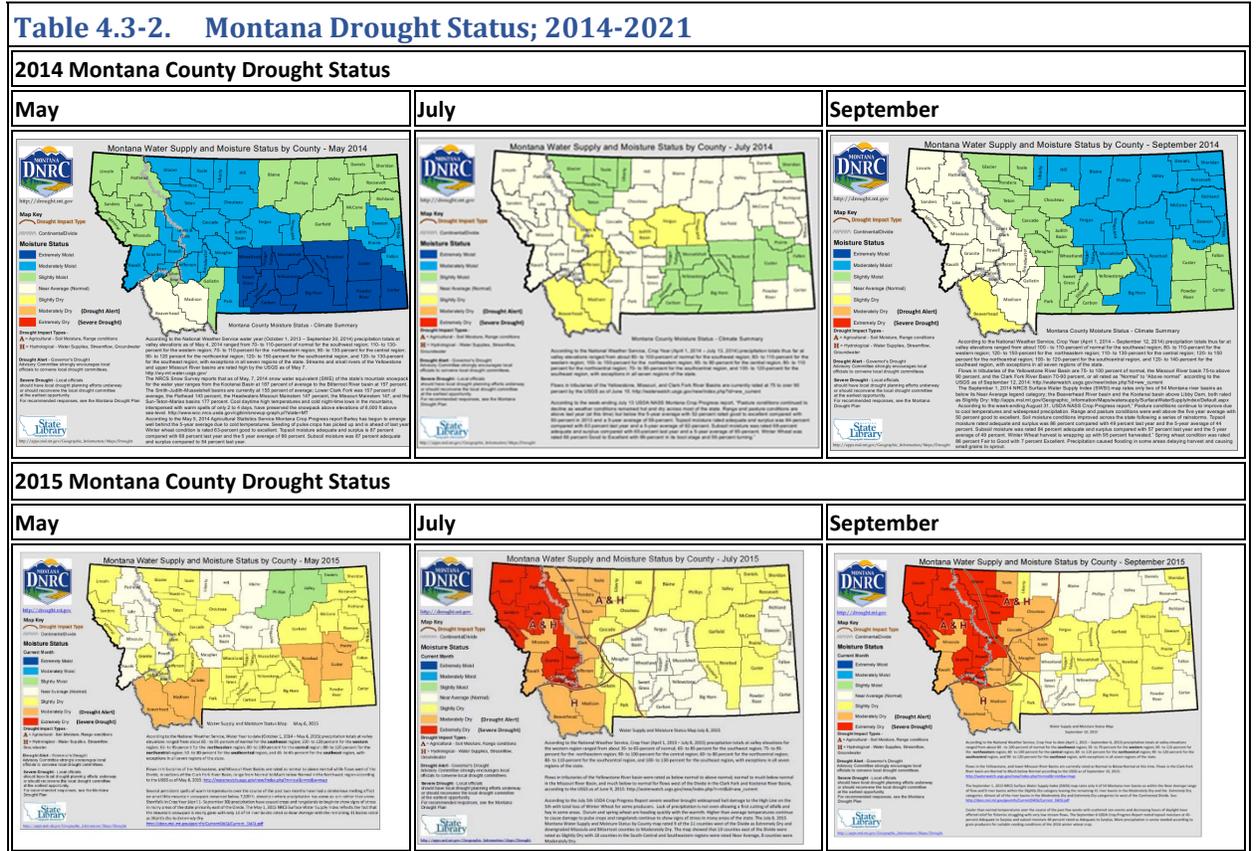
The drought of 2021 is being tagged "historic". By July 27<sup>th</sup>, 100 percent of the state was either abnormally dry or in a state of exceptional drought. Dry conditions during fall 2020 and limited snowpack over the winter, coupled with extended temperatures over 90 degrees during July, put the state in significant drought. The state has "substantially worse" drought conditions than in 2017, because those 2017 conditions didn't arrive until the end of August. Many cities deployed mitigation plans which put in place time-of-day and day-of-week watering restrictions. The forecast for months ahead showed little sign of relief. Conditions already caused total crop failures, dried out stock ponds, and a grasshopper population that's reducing hopes some producers had of eking out a crop. (Helena

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Independent Record, *July Drought Rages on as Montana Cities Deploy Mitigation Plans*, July 28, 2021). The state, which normally ranks third in the nation for wheat production, has suffered steep declines in yield as nearly 99 percent of Montana is in severe to exceptional drought in the final weeks of harvest. (Billings Gazette, *Cutting Their Losses*, August 26, 2021.)

In coordination with the Montana Governor’s Drought and Water Supply Advisory Committee, the Montana State Library publishes monthly maps of moisture status by county. This webpage allows users to easily download, view, and compare moisture status maps between months and years beginning in 2002. New maps are published approximately the first half of each month. <https://mslservices.mt.gov/geographic-information/maps/drought/>

**Table 4.3-2** shows the Montana drought status from 2014 to 2021. **Table 4.3-3** summarizes drought conditions in Rosebud County from 2002 through 2019. Since the Rosebud County PDM Plan was completed in 2013, severe drought conditions impacted the county in 2017 and 2021. U.S. Department of Agriculture, Disaster Designations were declared in Rosebud County in 2012, 2013, 2015, 2016, 2017, 2019, 2020, and 2021.



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Table 4.3-2. Montana Drought Status; 2014-2021

2016 Montana County Drought Status		
May	July	September
<p>Montana Water Supply and Moisture Status by County - May 2016</p>	<p>Montana Water Supply and Moisture Status by County - July 2016</p>	<p>Montana Water Supply and Moisture Status by County - September 2016</p>
2017 Montana County Drought Status		
May	July	September
<p>Montana Drought Status by County - May 1, 2017</p>	<p>Montana Drought Status by County - July 1, 2017</p>	<p>Montana Drought Status by County - September 1, 2017</p>
2018 Montana County Drought Status		
May	July	September
<p>Montana Drought Status by County - May 1, 2018</p>	<p>Montana Drought Status by County - July 1, 2018</p>	<p>Montana Drought Status by County - September 1, 2018</p>
2019 Montana County Drought Status		
May	July	September
<p>Montana Drought Status by County - May 16, 2019</p>	<p>Montana Drought Status by County - July 25, 2019</p>	<p>Montana Drought Status by County - September 12, 2019</p>

Section 4: Risk Assessment and Vulnerability Analysis

Table 4.3-2. Montana Drought Status; 2014-2021

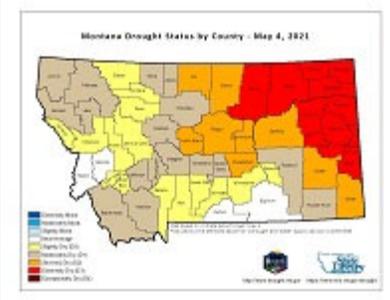
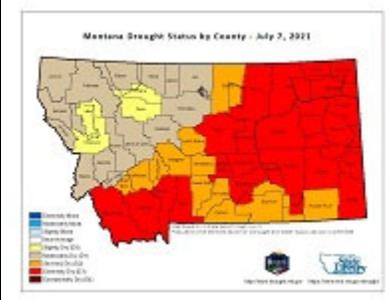
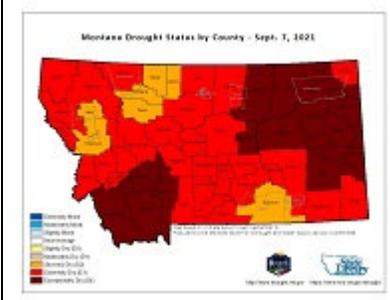
2020 Montana County Drought Status		
May	July	September
		
2021 Montana County Drought Status		
May	July	September
		

Table 4.3-3. Rosebud County Drought Summary

Moisture	Alerts	2002			2003			2004			2005			2006			2007			2008			2009			2010		
		May	July	Sept																								
No Drought	Moist																											
No Drought																												
Slightly Dry																												
Moderately Dry	Drought Alert																											
Severely Dry																												
Extremely Dry	Severe Drought																											
Moisture	Alerts	2011			2012			2013			2014			2015			2016			2017			2018			2019		
Extremely Moist																												
Moderately Moist																												
Slightly Moist																												
Near Average	Normal																											
Slightly Dry																												
Moderately Dry	Drought Alert																											
Extremely Dry	Severe Drought																											

Federal agencies have mobilized to provide improved information and data, emergency and planning assistance, landscape-scale land management improvements, and investments in new technologies and approaches to water resource management. Continued drought conditions in the West and projections of more extreme droughts in the future underscore the urgency to pursue long term solutions for protecting water resources and the communities and ecosystems that depend on them. The State of Montana has established a Drought Advisory Committee and developed a Drought Plan to help mitigate the drought hazard.



## Section 4: Risk Assessment and Vulnerability Analysis

### Vulnerability and Area of Impact

Drought evolves slowly, and therefore, the direct impact to the population (i.e. loss of life, injuries) and structure damage would be low. Drought, however, can have significant impacts on drinking water security. Several Rosebud County communities rely on surface water for public water supplies and a reduction in river flows could cause water intake infrastructure to be compromised resulting in water shortages.

Drought is a hazard that has a significant economic effect on the agricultural community and as such, Rosebud County residents are at risk of losing their way of life. Agriculture relies on water for irrigation and when stream flows are low irrigation is reduced resulting in lower crop yields. Ranchers also rely on pasture land to feed their livestock. Without moisture, pastures dry up and the food source is diminished. Rancher's face a difficult decision whether to reduce their livestock inventory or provide supplemental feed which is expensive.

Another major impact of drought is to the natural resources of the area. As river and stream levels drop and water temperatures increase, fish populations are impacted.

A hazard directly related to drought is wildfire. With increased temperatures and drought conditions, moisture content in vegetation is reduced making fuel for wildfire.

Based on review of historic drought data, all of Rosebud County has been classified with a uniform risk for severe drought events.

### Probability and Magnitude

Drought affects all facets of society, from food production to water quality to public health, and there is a growing need to help communities, agriculture, businesses, and individuals threatened by drought to plan accordingly. From 1980-2000, major droughts and heat waves within the U.S. alone resulted in costs exceeding \$100 billion. In 2012, approximately two-thirds of the continental U.S. was affected by chronic drought. Severe droughts are projected for the next several decades, impacting the nation's communities and economy (NDRP, 2016).

Drought impacts include crop losses and decrease in livestock inventory. The value of inventory on hand may decrease because producers are forced to sell rather than purchase expensive feed. Drought can dry up of reservoirs and other water sources for people and livestock. Agriculture supports Main Street businesses which experience indirect economic effects from drought. Drought can increase the chances of wildland fire. Multi-year droughts have cost Rosebud County many millions of dollars.

The National Drought Mitigation Center tracks indemnity payments for losses suffered due to drought on a county basis. **Table 4.3-4** presents drought damages for a 25-year period (1989 to 2014) for Rosebud County and the State of Montana. Adjusted for inflation, drought insurance claims in Rosebud County for the period 1989 to 2014 was over \$4.5 million.

**Table 4.3-4. Drought Insurance Claims; Rosebud County 1989 - 2014**

Year	Montana	Rosebud Co.	Year	Montana	Rosebud Co.	Year	Montana	Rosebud Co.
1989	\$14,361,948	\$52,273	1998	\$18,201,060	\$64,563	2007	\$22,015,676	\$795
1990	\$29,146,575	\$79,276	1999	\$19,189,328	\$6,209	2008	\$74,979,811	\$68,350
1991	\$2,775,746	\$26,676	2000	\$44,989,149	\$103,387	2009	\$30,435,526	\$165,200
1992	\$37,767,835	\$245	2001	\$131,976,513	\$84,195	2010	\$5,289,266	\$417



## Section 4: Risk Assessment and Vulnerability Analysis

**Table 4.3-4. Drought Insurance Claims; Rosebud County 1989 - 2014**

Year	Montana	Rosebud Co.	Year	Montana	Rosebud Co.	Year	Montana	Rosebud Co.
1993	\$344,432	\$0	2002	\$108,139,519	\$498,898	2011	\$52,075,321	\$0
1994	\$5,539,598	\$61,502	2003	\$41,148,170	\$172,510	2012	\$10,055,101	\$694,627
1995	\$2,413,758	\$3,605	2004	\$29,427,194	\$441,034	2013	\$11,670,134	\$55,349
1996	\$10,637,521	\$32,505	2005	\$5,905,724	\$22,027	2014	\$5,289,266	\$12,423
1997	\$3,830,310	\$12,123	2006	\$41,483,327	\$158,092	<b>TOTAL</b>	<b>\$759,087,808</b>	<b>\$2,816,281</b>

Source: National Drought Mitigation Center, 2021.

(<https://drought.unl.edu/droughtplanning/DroughtImpacts/IndemnityData.aspx>)

The MHMP risk assessment looked at the economic impact of drought in Rosebud County. **Table 4.3-5** shows how drought has impacted the yield of spring wheat for four documented drought years. The year 2010, considered a non-drought year, is used for comparison purposes and prices are adjusted for inflation. Yield data was obtained from the USDA National Agricultural Statistics Service. The analysis shows that drought has caused over 11 million dollars in lost winter wheat revenue in four drought years in Rosebud County.

**Table 4.3-5. Estimate of Economic Loss from Drought; Rosebud County**

Year	Winter Wheat					
	Winter Wheat Yield (bu/acre)	Winter Wheat (acres harvested)	Price Per Bushel (2020\$)	Economic Value in 2020\$	Drought Yield Reduction	Drought Loss in Adjusted 2020 \$
2010 ND	46.7	25,500	\$5.10	\$6,073,335.00		
2017	27.6				40.90%	\$2,483,955
2004	27				42.18%	\$2,561,985
2002	22				52.89%	\$3,212,235
2000	23				50.75%	\$3,082,185
					<b>TOTAL</b>	<b>\$11,340,360</b>

Source: USDA National Agricultural Statistics Service, 2021; Notes: ND = No Drought

The NOAA’s Paleoclimatology Program has studied drought by analyzing records from tree rings, lake and dune sediments, archaeological remains, historical documents, and other environmental indicators to obtain a broader picture of the frequency of droughts in the United States. According to their research, “...paleoclimatic data suggest that droughts as severe as the 1950’s drought have occurred in central North America several times a century over the past 300-400 years, and thus we should expect (and plan for) similar droughts in the future. The paleoclimatic record also indicates that droughts of a much greater duration than any in the 20th century have occurred in parts of North America as recently as 500 years ago.” Based on this research, the 1950’s drought situation could be expected approximately once every 50 years or a 20 percent chance every 10 years. An extreme drought, worse than the 1930’s “Dust Bowl” has an approximate probability of occurring once every 500 years or a 2 percent chance of occurring each decade (NOAA, 2004).

Given the number of historic and recent past drought disaster declarations, Rosebud County is very vulnerable to drought. Based on historic conditions, the probability of future drought events in Rosebud County are ranked as “likely”, occurring more than once every 10 years but not every year. The MHMP Planning Team ranked drought as having a “likely” probability.

### Future Development

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Drought could have an effect on future development with regards to groundwater availability. New domestic water wells and sewer systems could use up more of the groundwater resource, particularly during periods of drought.

### Climate Change

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The effects of climate change can harm agricultural activities, both crops and livestock. The changes in temperature and precipitation brought on by climate change can make it harder to grow some crops. Evaporation and the higher rate at which plants lose moisture through their leaves both increase with temperature. Unless higher evapotranspiration rates are matched by increases in precipitation, environments will tend to dry, promoting drought conditions. Intense rains can increase runoff and deprive plants of nutrient-rich topsoil and changes in temperatures may cause crops to mature earlier, which can expose them to harsh weather. Warmer temperatures can introduce new agricultural pests to the region or make conditions better for pests already present, including weeds and invasive plants that can crowd out crops. Maintaining agricultural activities on marginal lands may no longer be sustainable (FEMA, 2016).

According to a 2016 report prepared for the Montana Farmers Union, by the middle of the century the effects of climate change are projected to reduce cattle and grain production in Montana by 20 and 25 percent, respectively, resulting in a loss of 25,000 jobs and \$736 million in earnings (Bozeman Daily Chronical, *The Worst Drought We've Ever Had: Farmers, Ranchers Across the State Struggle with Historic Dry Spell*, September 3, 2017). Farmers and others directly affected by drought are figuring out how to make it through. Some ranchers are declaring an end to their farming days. With irrigation too expensive for small farming operations, it leaves crops at the mercy of climate. It's a lot of pressure and taking a toll on farmers and ranchers psychologically (The Guardian, *The Unprecedented Drought That's Crippling Montana and North Dakota*, September 7, 2017).

Short-term drought during the season of highest demand can have severe consequences for natural systems. Changes in stream temperature due to lower flows and rising air temperature are likely to have catastrophic impacts on some aquatic species, with ripple effects on Montana's important river-based recreation industry. Studies show that distributions of brown trout and bull trout have shifted upstream as fish seek to access cooler habitats. In larger rivers at lower elevations, warming trends may result in more frequent fishing season closures and disease outbreaks. Some sections of rivers that currently support trout fisheries may transition gradually into bass fisheries (Whitlock, et.al, 2017).

Maintaining stream flows during warm season months will likely necessitate reconsideration of water storage practices and reservoir management. Changing seasonality of water availability will likely put additional stress on the water rights system, making it difficult to access water at crucial times (Whitlock, et.al, 2017).

Population exposure to drought is likely to increase as a result of climate change. Some people without access to backup water supplies may suffer water shortages and a greater number of people may need to engage in behavior change such as water conservation.

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Property exposure and vulnerability may increase as a result of increased drought resulting from climate change. Indirect impacts of drought, such as wildfire, may increase the threat to structures.

Critical facility exposure to drought is not expected to increase as a result of climate change; however, facility operators may need to alter standard management practices and actively manage resources, particularly in the water-related service sector.

## 4.4 Severe Summer Weather

CPRI SCORE = 3.7

### *Description and History*

Severe summer weather hazards have become more significant in recent years due to climate change. Severe summer weather includes thunderstorms, wind, hail, lightning, tornadoes, and microbursts that typically occur between May and October of each year. The Drought hazard is profiled separately in *Section 4.3* of this plan.

A severe thunderstorm is defined by the National Weather Service as a thunderstorm that produces wind gusts at or greater than 58 mph (50 knots), hail 1-inch or larger, and/or tornadoes. Thunderstorms can also produce intense downbursts, lightning, and microburst wind. Strong winds can occur outside of thunderstorms when the overall weather conditions are favorable. Thunderstorms can produce deadly and damaging tornadoes.

Tornadoes are the most concentrated and violent storms produced by the earth's atmosphere. They are created by a vortex of rotating wind and strong vertical motion, which possess remarkable strength and can cause widespread damage. The most violent tornadoes are capable of tremendous destruction with wind speeds of 300 mph or more. Maximum wind speeds in tornadoes are confined to small areas and vary over short distances. Thunderstorms can produce deadly and damaging tornadoes.

A microburst is a very localized column of sinking air, producing damaging divergent and straight-line winds at the surface that are similar to, but distinguishable from, tornadoes. The scale and suddenness of a microburst makes it a great danger to aircraft due to the low-level wind shear caused by its gust front, with several fatal crashes having been attributed to the phenomenon over the past several decades. Microbursts in forested regions have flattened acres of standing timber.

Lightning is an electrical discharge between positive and negative regions of a thunderstorm. Lightning is one of the more dangerous weather hazards in the U.S. and in Montana. Each year, lightning is responsible for deaths, injuries, and millions of dollars in property damage, including damage to buildings, communications systems, power lines, and electrical systems. Lightning also causes forest and brush fires, and deaths and injuries to livestock and other animals.

Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat.

The National Weather Service provides short-term forecasts and warnings of severe summer weather to the public by producing regularly scheduled severe weather outlooks and updates, as shown in **Table 4.4-1**. Although not considered severe by the National Weather Service definition, lightning and heavy rain can also accompany thunderstorms.

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**Table 4.4-1. Warning and Advisory Criteria for Severe Summer Weather**

Summer Weather	Weather Advisory
Heat Advisory	Issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be 100° or higher for at least 2 days, and night time air temperatures will not drop below 75°;
Excessive Heat Watch	Issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
Excessive Heat Warning	Issued within 12 hours of the onset of extremely dangerous heat conditions; i.e. when the maximum heat index temperature is expected to be 105° or higher for at least 2 days and night time air temperatures will not drop below 75°
Hazardous Weather Outlook	Hazardous weather outlooks alert the public to the possibility for severe weather in the area from one to seven days in advance.
Severe Thunderstorm Watch	Issued when conditions for severe thunderstorms appear favorable for an area over the next several hours. Watches are typically in effect for 4-6 hours.
Severe Thunderstorm Warning	Issued when Doppler radar indicates or the public reports a thunderstorm with wind gusts of 58 mph or greater and/or hail 1-inch or larger in diameter. The warning is usually valid for 30-60 minutes.
High Wind Watch	Issued when conditions are favorable for non-thunderstorm sustained winds of 40 mph or greater or gusts of 58 mph or greater for a period of one hour or more, but the timing, location, and/or magnitude are still uncertain.
High Wind Warning	Issued when non-thunderstorm sustained winds of 40 mph or greater or gusts of 58 mph or greater for a period of one hour or more are expected.
Tornado Watch	Issued when conditions for tornadoes appear especially favorable for an area over the next several hours. Watches are typically in effect for 4-6 hours.
Tornado Warning	Issued when Doppler radar indicates or the public reports a tornado. The warning is usually valid for 15-45 minutes.

Source: National Weather Service, 2021.

There have been no federal disaster or state emergency declarations for severe summer weather in Rosebud County. However, since the 2013 PDM Plan was completed, numerous incidents of severe summer weather have affected the county, as summarized in **Table 4.4-2**.

**Table 4.4-2. Rosebud County Severe Summer Weather Reports (~May-October)**

Date	Location	Event	Magnitude	Date	Location	Event	Magnitude
6/19/2005	Ingomar	Hail	1 inch	6/26/2014	Ashland	Hail	1 inch
6/23/2005	Lame Deer	Tstorm Wind	70 knots	7/22/2014	Rock Springs	Hail	1.25 inch
6/24/2005	Colstrip	Hail	1 inch	7/24/2014	Forsyth	Tstorm Wind	51 knots
6/25/2005	Sumatra	Hail	1 inch	6/17/2015	Brandenberg	Hail	1 inch
6/28/2005	Forsyth	Tstorm Wind	70 knots	6/18/2015	Birney	Tstorm Wind	63 knots
7/2/2005	Birney	Tstorm Wind	60 knots	6/19/2015	Birney	Hail	2.5 inch
7/22/2005	Ashland	Tstorm Wind	70 knots	6/21/2015	Forsyth	Tstorm Wind	52 knots
4/16/2006	Rock Springs	Tstorm Wind	67 knots	6/24/2015	Colstrip	Hail	1.5 inch
6/4/2006	Forsyth	Tstorm Wind	70 knots	7/1/2015	Dowlin	Tstorm Wind	52 knots
6/8/2006	Colstrip	Hail	2.75 inch	7/27/2015	Rock Springs	Tstorm Wind	54 knots
6/14/2006	Colstrip	Hail	4 inch	9/5/2015	Birney	Hail	1 inch
7/12/2006	Lame Deer	Tstorm Wind	75 knots	5/21/2016	Rock Springs	Hail	1.5 inch
8/30/2006	Rosebud Co.	High Wind	60 knots	6/11/2016	Brandenberg	Hail	1 inch
9/17/2006	Rosebud Co.	High Wind	63 knots	6/13/2016	Colstrip	Hail	1.75 inch
5/13/2007	Hathaway	Hail	1.75 inch	7/15/2016	Brandenberg	Tstorm Wind	61 knots
5/19/2007	Colstrip	Hail	1 inch	7/27/2016	Brandenberg	Hail	2.5 inch
6/17/2007	Forsyth	Hail	1.75 inch	8/7/2016	Brandenberg	Tstorm Wind	55 knots
6/24/2007	Vananda	Hail	1.25 inch	7/10/2017	Forsyth	Tstorm Wind	55 knots
7/14/2007	Forsyth	Tstorm Wind	61 knots	7/16/2017	Rock Springs	Tstorm Wind	50 knots
8/19/2007	Forsyth	Tstorm Wind	56 knots	10/22/2017	Rosebud Co.	High Wind	50 knots
6/1/2008	Vananda	Hail	1 inch	4/29/2018	Ashland	Hail	1 inch

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**Table 4.4-2. Rosebud County Severe Summer Weather Reports (~May-October)**

Date	Location	Event	Magnitude	Date	Location	Event	Magnitude
6/19/2008	Ashland	Hail	1 inch	5/23/2018	Ashland	Hail	1.25 inch
7/18/2008	Lame Deer	Tstorm Wind	52 knots	5/31/2018	Sumatra	Hail	1.75 inch
7/22/2008	Forsyth	Tstorm Wind	52 knots	6/1/2018	Forsyth	Hail	1.5 inch
8/2/2008	Vananda	Tstorm Wind	52 knots	6/4/2018	Sumatra	Hail	1 inch
8/5/2008	Ashland	Hail	1.75 inch	6/7/2018	Forsyth	Tstorm Wind	61 knots
10/25/200	Rosebud Co.	High Wind	51 knots	6/28/2018	Birney	Hail	1 inch
8/7/2009	Birney	Hail	1.75 inch	7/2/2018	Forsyth	Hail	1.5 inch
6/2/2011	Vananda	Hail	1 inch	8/3/2018	Rock Springs	Tstorm Wind	56 knots
6/6/2011	Sumatra	Hail	1.75 inch	6/18/2019	Ingomar	Tstorm Wind	56 knots
6/15/2011	Colstrip	Tstorm Wind	70 knots	6/26/2019	Birney	Hail	1.75 inch
7/3/2011	Forsyth	Tstorm Wind	61 knots	7/1/2019	Sumatra	Hail	1.75 inch
7/14/2011	Colstrip	Hail	1.75 inch	7/3/2019	Ashland	Hail	1 inch
9/19/2011	Rosebud Co.	High Wind	54 knots	7/7/2019	Lame Deer	Hail	1 inch
6/8/2012	Rock Springs	Tstorm Wind	77 knots	7/14/2019	Rock Springs	Tstorm Wind	54 knots
5/25/2013	Forsyth	Hail	2.5 inch	8/11/2019	Brandenberg	Tstorm Wind	54 knots
6/13/2013	Lame Deer	Tstorm Wind	58 knots	8/22/2019	Brandenberg	Hail	1.5 inch
7/7/2013	Ingomar	Tstorm Wind	56 knots	8/25/2019	Rock Springs	Tstorm Wind	56 knots
7/8/2013	Ingomar	Tstorm Wind	65 knots	10/22/2019	Rosebud Co.	High Wind	58 knots
7/26/2013	Dowlin	Hail	1.5 inch	5/3/2020	Rock Springs	Tstorm Wind	50 knots
8/3/2013	Angela	Hail	1 inch	5/20/2020	Rock Springs	Tstorm Wind	65 knots
8/7/2013	Ashland	Hail	1 inch	7/3/2020	Ingomar	Tstorm Wind	51 knots
8/28/2013	Rock Springs	Hail	1.25 inch	7/6/2020	Vananda	Hail	1.75 inch
9/5/2013	Carterville	Tstorm Wind	61 knots	7/7/2020	Birney	Tstorm Wind	54 knots
5/18/2014	Colstrip	Hail	2.75 inch	10/11/2020	Rosebud Co.	High Wind	50 knots
5/28/2014	Lame Deer	Tstorm Wind	52 knots	10/30/2020	Rosebud Co.	High Wind	55 knots
5/31/2014	Birney	Hail	1.75 inch	5/28/2021	Lame Deer	Hail	0.88 inch
6/3/2014	Big Sky	Hail	1.5 inch	6/5/2021	Rock Springs	Tstorm Wind	54 knots
6/17/2014	Angela	Hail	1.75 inch	6/10/2021	Rock Springs	Tstorm Wind	65 knots

Source: NCDC, 2021. Notes: Tstorm = Thunderstorm

Severe summer weather can be punishing. In June 2005 and June 2006, Rosebud County saw 70 knot (80 mph) thunderstorm winds. In July 1999, wind gusts as high as 92 mph were reported seven miles west of Forsyth. This event destroyed three buildings 10 miles west of Forsyth and there were widespread power outages. Corn and beet crops sustained heavy losses.

Colstrip had 4.0 inch hail in 2006, and 2.75 inch hail was reported there in 2014. Baseball-sized hail covered the ground on the north side of Ashland on June 30, 2001. Reports of this event indicate that hail smashed many windows and windshields, stripped trees of branches, bark, and leaves, and birds were knocked out of trees and killed. The St. Labre School in Ashland suffered many broken windows.

Tornadoes have the potential to impact urban structures, farm and ranch land, private and public structures, utilities, and individuals. Since 1950, there have been nine confirmed tornadoes and four funnel clouds reported in Rosebud County. The Montana MHMP (DES, 2018) indicates that three injuries occurred, and two mobile homes were destroyed two miles south of Lame Deer from a tornado July 20, 1993. Further details on this and other tornadoes in Rosebud County are presented in **Table 4.4-3**, below.

**Table 4.4-3. Reported Tornadoes and Funnel Clouds**

Location	Date	Magnitude	Location	Date	Magnitude
Rosebud County	6/14/1980	F1	Forsyth	8/15/1999	F0
Rosebud County	6/19/1991	F0	Ashland	5/26/2010	Funnel Cloud
Rosebud County	6/21/1991	F0	Joppa	6/16/2010	Funnel Cloud
Rosebud County	6/21/1991	F0	Birney	6/21/2010	Funnel Cloud
Rosebud County	6/29/1991	F0	Rock Springs	5/31/2014	EF0
Rock Springs	6/24/1996	F0	Forsyth	6/8/2021	Funnel Cloud
Ingomar	8/15/1999	F0			

Source: NCDC, 2021.

**Table 4.4-4** presents temperature extremes in Rosebud County.

**Table 4.4-4. Rosebud County Summer Temperature Records**

Summer Weather		Forsyth - 1975-2012	Colstrip 1927-2012	Birney 1954 - 1999
May	Highest Temperature	99° F - 5/22/1980	99° F - 5/29/1934	99° F - 5/29/1988
	Avg. # Days over 90° F	1.1 days	0.9 days	1.3 days
June	Highest Temperature	106° F - 6/26/1988	108° F - 6/27/1936	108° F - 6/26/1988
	Avg. # Days over 90° F	5.2 days	3.9 days	5.6 days
July	Highest Temperature	110° F - 7/14/2002	110° F - 7/5/1936	107° F - 7/24/1959
	Avg. # Days over 90° F	15.5 days	14.5 days	17.0 days
August	Highest Temperature	105° F - 8/11/1983	111° F - 8/6/1961	107° F - 8/3/1961
	Avg. # Days over 90° F	14.1 days	13.2 days	15.7 days
September	Highest Temperature	102° F - 9/1/1983	102° F - 9/4/1950	104° F - 9/4/1960
	Avg. # Days over 90° F	3.8 days	3.3 days	3.7 days
October	Highest Temperature	93° F - 10/2/1997	94° F - 10/4/1963	94° F - 10/1/1992
	Avg. # Days over 90° F	0.1 days	0.1 days	0.2 days

Source: Western Regional Climate Center, 2021.

Climate change projections outlined in the Montana MHMP (DES, 2018) illustrate how extended heat may impact Rosebud County in the future. According to data from NOAA and FEMA, Rosebud County is projected to have an average 39 days/year over 95 degrees by mid-century and 45 days/year over 95 degrees at the end of the century (see *Section 3.2* for details).

### ***Vulnerability and Area of Impact***

Based on review of historic weather data, all of Rosebud County has been classified with a uniform risk for severe summer weather events. Structures, utilities, and vehicles are most at risk from the wind component of these storms, with crops and livestock being additionally threatened by hail.

High winds can damage trees in urban areas with broken branches falling into vehicles and causing damage roofs. Hail can also cause considerable damage to roofs and vehicles.

Extended heat during summer months has become unprecedented. For the physically and socially vulnerable, heat can prove very dangerous and even fatal. Some populations do not have cooling program capabilities like air conditioned buildings and public swimming pools.

### ***Probability and Magnitude***

According to the Montana MHMP (DES, 2018), Rosebud County is one of the top counties in the state for hail damage and losses from thunderstorm winds. **Table 4.4-5** presents severe summer weather events with reported damages in Rosebud County.

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**Table 4.4-5. Rosebud County Severe Summer Weather Events with Damages**

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
7/1960	0	0	\$2,225	\$22,250	Wind/Hail
5/1961	0	0	\$469	\$4,686	Severe Storm/Hail/Thunderstorm
6/1961	0	0	\$312	\$3,124	Severe Storm/Hail/Wind/Thunderstorm
7/1961	0	1	\$0	\$0	Severe Storm/Thunderstorm
7/1962	0	0	\$15,245	\$159,720	Hail
7/1962	0	0	\$10,884	\$116,105	Severe Storm/Thunderstorm
7/1962	0	0	\$8,158	\$88,845	Wind
7/1965	0	0	\$13,938	\$13,938	Hail
7/1965	0	0	\$3,485	\$3,485	Severe Storm/Thunderstorm
7/1965	0	0	\$13,938	\$13,938	Wind
6/1966	0	0	\$1,694	\$1,694	Severe Storm/Hail/Wind/Thunderstorm
7/1966	0	0	\$0	\$193,588	Lightning
6/1967	0	0	\$492,953	\$492,953	Severe Storm/Thunderstorm
7/1967	0	0	\$3,944	\$39,436	Hail
7/1968	0	0	\$3,785	\$378,498	Hail
6/1970	0	0	\$36,115	\$36,115	Wind/Hail
6/1971	0	0	\$1,084	\$108,409	Hail
10/1971	0	0	\$11,615	\$11,615	Severe Storm/Thunderstorm
6/1972	0	0	\$6,060	\$0	Severe Storm/Thunderstorm
6/1973	0	0	\$659	\$0	Wind
8/1973	1	0	\$2,967	\$0	Lightning
8/1975	0	0	\$255	\$2,550	Wind/Hail
7/1976	0	0	\$28,936	\$289,361	Severe Storm/Hail/Thunderstorm
6/1977	0	0	\$0	\$21,736	Hail
6/1980	0	0	\$1,598,509	\$0	Severe Storm/Thunderstorm
7/1980	0	0	\$39,963	\$39,963	Wind/Hail
7/1983	9	0	\$13,225	\$132	Wind
9/1983	0	0	\$3,480	\$348	Severe Storm/Thunderstorm
6/1984	0	0	\$634	\$0	Severe Storm/Hail/Thunderstorm
6/1984	0	0	\$12,677	\$0	Tornado
8/1985	0	0	\$612,069	\$61	Wind/Hail
8/1989	0	0	\$354,078	\$354,078	Severe Storm/Hail/Wind/Thunderstorm
6/1990	0	0	\$55,428	\$100,778	Severe Storm/Wind/Thunderstorm
6/1991	0	0	\$106,380	\$149,898	Hail
6/1991	0	0	\$1,934	\$967	Severe Storm/Thunderstorm
10/1991	0	0	\$189,625	\$0	Wind
7/1992	0	0	\$9,388	\$9,388	Hail
6/1993	0	0	\$912	\$912	Hail
6/1993	0	0	\$9,115	\$0	Severe Storm/Thunderstorm
7/1993	0	0	\$18,231	\$18,231	Hail
7/1993	0	0	\$91,154	\$45,577	Severe Storm/Wind/Thunderstorm
7/1993	3	0	\$91,154	\$0	Tornado
8/1993	0	0	\$20,000	\$5,000	Hail
8/1993	0	0	\$912	\$0	Severe Storm/Thunderstorm
8/1994	0	0	\$5,000	\$0	Severe Storm/Thunderstorm
7/1998	0	0	\$1,616	\$0	Hail
7/1998	0	0	\$16,162	\$0	Lightning
7/1998	0	0	\$10,000	\$0	Severe Storm/Wind/Thunderstorm
8/1998	0	0	\$8,081	\$0	Hail
8/1998	0	0	\$1,000	\$0	Severe Storm/Wind/Thunderstorm
7/2000	0	0	\$15,000	\$0	Severe Storm/Wind/Thunderstorm
5/2001	3	0	\$0	\$0	Lightning
<b>TOTAL</b>	<b>16</b>	<b>1</b>	<b>\$3,944,448</b>	<b>\$2,727,379</b>	

Source: SHEL DUS, 2017 (adjusted to 2020 dollars); NCDC, 2021.

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Windstorms can affect areas with significant tree stands, as well as areas with exposed property, major infrastructure, and aboveground utilities. Severe hailstorms can also cause considerable damage to buildings and automobiles, but rarely result in loss of life. Nationally, hailstorms cause nearly \$1 billion in property and crop damage annually.

Annual loss was computed for the severe summer weather hazards in Rosebud County using SHELDUS data and the formula: Frequency x Magnitude x Exposure = Annual Loss, as further explained in Section 4.1.6. **Table 4.4-6** presents the results of these calculations.

**Table 4.4-6. Rosebud County Severe Summer Weather Annual Loss**

No. of Events	Period of Record (Yrs)	Frequency	Property Damage	Magnitude	Exposure	Annual Loss
108	40	2.7	\$3,944,448	0.006217%	\$587,442,731	\$98,497

Severe summer weather occurs in Rosebud County multiple times each year. Therefore, the probability of a severe storm in either the winter or summer is rated as “highly likely”.

### Future Development

The State of Montana has adopted the 2012 International Building Codes (IBC) which include a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph and must be designed to withstand a snow load of 30 pounds per square foot minimum. The IBC does not cover single-family residences.

The State of Montana has adopted the 2012 International Residential Code (IRC) for one and two-family residences and townhouses. Local jurisdictions (cities, counties and towns) can elect to become certified to take on enforcement of single-family residences. The Cities of Forsyth and Colstrip are certified to enforce building codes. Rosebud County does not have a building department and therefore, has no enforcement capabilities to ensure State building codes are followed.

### Climate Change

The frequency of severe weather events has increased steadily over the last century. The number of weather-related disasters during the 1990s was four times that of the 1950s, and cost 14 times as much in economic losses. Historical data shows that the probability for severe weather events increases in a warmer climate. There has been a sizable upward trend in the number of storms causing large financial and other losses.

According to the National Climate Change Assessment (2018), climate change can and has altered the risk of certain types of extreme weather events. The number of heat waves has been increasing in recent years with the number being almost triple the long-term average. These increases in extreme heat will have many negative consequences, including increases in surface water losses, heat stress, and demand for air conditioning. Montana has seen an uptick in average temperature of about 2 degrees F in the last 50 years, while precipitation has stayed largely the same.

Rising temperatures are leading to increased demand for water and energy. In parts of the region, this will constrain development, stress natural resources, and increase competition for water among communities, agriculture, energy production, and ecological needs. Changes in average temperatures can impact vegetation growth and the location and extent of pests. Higher temperatures may also

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lead to increases in wildfire occurrences. Extreme heat will have a profound effect on vulnerable populations, as most Montana homes do not have air conditioning.

Changing extremes in precipitation are projected across all seasons, including higher likelihoods of both increasing heavy rain. Spring precipitation is projected to increase in the northern states of the Great Plains, relative to the 1971-2000 average. Projected changes in summer and fall precipitation are small; however, the number of days with heavy precipitation is expected to increase by mid-century. For other types of extreme weather events, such as tornadoes and severe thunderstorms, more research is needed to understand how climate change will affect them.

The effects of climate change can harm agricultural activities, both crops and livestock. The changes in temperature and precipitation brought on by climate change can make it harder to grow some crops. Evaporation and the higher rate at which plants lose moisture through their leaves both increase with temperature. Unless higher evapotranspiration rates are matched by increases in precipitation, environments will tend to dry, promoting drought conditions. Intense rains can increase runoff and deprive plants of nutrient-rich topsoil and changes in temperatures may cause crops to mature earlier, which can expose them to harsh weather. Warmer temperatures can introduce new agricultural pests to the region or make conditions better for pests already present, including weeds and invasive plants that can crowd out crops. Maintaining agricultural activities on marginal lands may no longer be sustainable (FEMA, 2016).

Population exposure and vulnerability to severe summer weather are likely to increase as a result of climate change. Severe weather events may occur more frequently which would lead to increased exposure and vulnerability. Although all people may be affected by the health-related impacts of climate change, the elderly, young children, and people with weakened immune systems are often the most susceptible.

Property exposure and vulnerability may increase as a result of increased severe summer weather resulting from climate change. Increased structure damage from high winds and hail could result as well as damage to crops and landscaping. Secondary impacts, such as wildfire, may increase and threaten structures.

Critical facility exposure and vulnerability are unlikely to increase as a result of climate change impacts associated with severe weather and drought; however, critical facility owners and operators may experience more frequent disruption to the services they provide. For example, extreme heat can decrease the effectiveness of electrical equipment, including power lines, which can lead to blackouts during very hot conditions. An increase in requests for medical assistance during a heat wave may challenge emergency response capabilities. The need for community cooling centers could result in an increase in number of critical facilities.

## 4.5 Communicable Disease

CPRI SCORES  
HUMAN DISEASE = 2.9  
LIVESTOCK DISEASE = 1.8

### *Description and History*

Communicable diseases, sometimes called infectious diseases, are illnesses caused by organisms such as bacteria, viruses, fungi and parasites. Sometimes the illness is not due to the organism itself, but rather a toxin that the organism produces after it has been introduced into a human host. Communicable disease may be transmitted (spread) either by one infected person to another, from an animal to a human, from an animal to an animal, or from some inanimate object (doorknobs, tabletops, etc.) to an individual. A pandemic is a global disease outbreak. At the time the Rosebud County MHMP was being updated, the coronavirus (COVID-19) pandemic continued with the Delta variant surging and vaccinations available for most county residents but many reluctant to receive it. This is after 15 months of the virus ravaging populations in Montana and around the world. Further details on the pandemic are presented below.

Communicable disease or biological agents could be devastating to the population or economy of Rosebud County. Human diseases when on an epidemic scale, can lead to high infection rates in the population causing isolation, quarantines and potential mass fatalities. Diseases that have been eliminated from the U.S. population, such as smallpox, could be used in bioterrorism.

The following list gives examples of biological agents or diseases that could occur naturally or be used by terrorists as identified by the Centers for Disease Control (CDC) and Prevention (2021).

### **Category A**

Definition - The U.S. public health system and primary healthcare providers must be prepared to address various biological agents, including pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they:

- Can be easily disseminated or transmitted from person to person;
- Result in high mortality rates and have the potential for major public health impact;
- Might cause public panic and social disruption; and
- Require special action for public health preparedness.

Agents/Diseases:

- Anthrax (*Bacillus anthracis*)
- Botulism (*Clostridium botulinum* toxin)
- Plague (*Yersinia pestis*)
- Smallpox (*variola major*)
- Tularemia (*Francisella tularensis*)
- Viral hemorrhagic fevers (Ebola, Marburg, Lassa, Machupo)

### **Category B**

Definition - Second highest priority agents include those that:

- Are moderately easy to disseminate;
- Result in moderate morbidity rates and low mortality rates; and

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- Require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance.

### Agents/Diseases:

- Brucellosis (*Brucella* species)
- Epsilon toxin of *Clostridium perfringens*
- Food safety threats (e.g., *Salmonella* species, *Escherichia coli* O157:H7, *Shigella*)
- Glanders (*Burkholderia mallei*)
- Melioidosis (*Burkholderia pseudomallei*)
- Psittacosis (*Chlamydia psittaci*)
- Q fever (*Coxiella burnetii*)
- Ricin toxin from *Ricinus communis* (castor beans)
- Staphylococcal enterotoxin B
- Typhus fever (*Rickettsia prowazekii*)
- Viral encephalitis (alphaviruses [e.g., Venezuelan equine encephalitis, eastern equine encephalitis, western equine encephalitis])
- Water safety threats (e.g., *Vibrio cholerae*, *Cryptosporidium parvum*)

### Category C

Definition - Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of:

- Availability;
- Ease of production and dissemination; and
- Potential for high morbidity and mortality rates and major health impact.

### Agents:

- Emerging infectious diseases such as Nipah virus and hantavirus

These diseases and bioterrorism agents can infect populations rapidly, particularly through groups of people in close proximity such as multi-generational homes, schools, assisted living facilities, and workplaces.

Influenza is a highly contagious viral infection of the nose, throat, and lungs that occurs most often in the late fall, winter, and early spring. It is a serious infection that affects, in an average year, between 5-20 percent of the U.S. population. Each year, more than 200,000 individuals are hospitalized and 3,000-49,000 deaths occur from influenza-related complications (IDSA, 2016). The Montana Department of Public Health and Human Services (DPHHS), maintains statistics of influenza cases in Montana counties. Data for Rosebud County is summarized below.

- 2014-2015 season: 152 influenza cases in Rosebud County with 24 fatalities across the State.
- 2015-2016 season: 68 influenza cases in Rosebud County with 33 fatalities across the State.
- 2016-2017 season: 68 influenza cases in Rosebud County with 56 fatalities across the State.
- 2017-2018 season: 82 influenza cases in Rosebud County with 67 fatalities across the State.
- 2018-2019 season: 271 influenza cases in Rosebud County with 38 fatalities across the State.
- 2019-2020 season: 207 influenza cases in Rosebud County with 41 fatalities across the State.

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The Spanish influenza outbreak after World War I in 1918-1919 caused 9.9 deaths per 1,000 people in the State of Montana (Brainerd and Siegler, 2002). Historical records from newspapers show that the influenza outbreak was so bad in 1918 that residents were quarantined from November 30 to December 17 after 18 people died and 53 new cases were discovered.

On January 27, 2020, the U.S. Dept. of Health and Human Services Secretary declared a public health emergency for COVID-19, the disease causing the novel coronavirus outbreak, first identified in Wuhan China. On March 11, 2020, the World Health Organization recognized the spread of COVID-19 as a pandemic. As of September 3, 2021, there were almost 40 million confirmed COVID-19 cases in the United States with 643,744 deaths. The pandemic and response measures have contributed to social and economic disruption and has led to the postponement or cancellation of events. Educational institutions have been partially or fully closed during the 2020/2021 school year.

COVID-19 is a respiratory disease not previously seen in humans that can result in serious illness or death. The virus is thought to spread mainly from person-to-person. Between people who are in close contact with one another (within about 6 feet). Through respiratory droplets produced when an infected person coughs, sneezes or talks. These droplets can land in the mouths or noses of people who are nearby or possibly be inhaled into the lungs. Some recent studies have suggested that COVID-19 may be spread by people who are not showing symptoms. Recommended preventative measures for COVID-19 include hand washing, covering one's mouth when sneezing or coughing, social distancing, wearing a face mask in public, disinfecting surfaces, air-filtering, and monitoring and self-isolation for people exposed or with symptoms. Travel restrictions, lockdowns, workplace hazard controls, and facility closures were implemented to control the spread. Many places worked to increase testing capacity and trace contacts of the infected. Currently, three high-effective vaccines have been approved by the U.S. Food and Drug Administration (two for emergency use) and vaccination of the population is taking place.

On March 15, 2020, the Governor of the State of Montana declared a state of emergency in Montana due to the global outbreak of COVID-19 which closed schools, suspended nursing home visitation, and Mitigation involved requirements that persons wear masks or face covering when they're out in public. Personal Protective Equipment (PPE) protocol (handwashing, social distancing, etc.) was encouraged.

Vector-borne diseases are also a concern in Rosebud County. These are diseases that results from an infection transmitted to humans and other animals by blood-feeding arthropods, such as mosquitoes, ticks, and fleas. Examples of vector-borne diseases include West Nile Virus, Lyme disease, Dengue fever, and malaria.

The Montana DPHHS manages a database of reportable communicable disease occurrences. A summary for Rosebud County, including the Northern Cheyenne Indian Reservation, is presented in **Table 4.5-1** for the years 2009 to 2018.

**Table 4.5-1. Communicable Disease Summary for Rosebud County/N. Cheyenne; 2009 - 2018**

Disease	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Viral Hepatitis</b>										
Hepatitis, B, chronic	-	-	-	1	-	-	-	-	-	-
Hepatitis C, acute	-	-	-	-	-	1	-	-	-	-
Hepatitis C, chronic	-	-	-	15	10	17	29	39	45	40

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**Table 4.5-1. Communicable Disease Summary for Rosebud County/N. Cheyenne; 2009 - 2018**

Disease	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<b>Vaccine Preventable Diseases</b>										
Pertussis	1	16	3	33	4	-	-	-	-	-
Varicella	-	5	-	-	-	1	-	1	--	-
<b>Invasive Diseases</b>										
Meningitis, Bacterial	-	-	-	1	-	-	-	-	-	-
Meningitis, Viral	-	-	-	2	-	-	-	-	-	-
Strep Pneumonia	-	-	-	-	1	2	-	1	1	1
Transmissible Spongiform Encephalopathies (TSE)	-	-	-	1	1	-	-	-	-	-
<b>Enteric Diseases</b>										
Campylobacteriosis	-	2	2	1	2	-	2	5	10	7
Cryptosporidiosis	-	1	-	-	1	-	-	-	2	-
Giardia	-	-	1	-	2	-	2	-	-	1
Salmonella	3	-	3	3	-	3	4	2	-	4
Shiga-toxin <i>E. coli</i> (STEC)	-	-	-	-	1	1	2	3	1	1
Shigellosis	-	-	1	1	14	-	-	-	-	-
<b>Zoonotic and Vector-Borne Diseases</b>										
Lyme Disease	-	-	-	1	-	-	-	-	-	-
Rabies	-	1	2	2	4	1	-	-	-	-
Spotted Fever	-	1	-	-	-	-	1	-	-	-
Tularemia	-	-	1	1	-	-	-	1	-	1
West Nile Virus	-	-	-	-	-	-	-	1	-	-
<b>Other Communicable Diseases</b>										
Coccidiomycosis	-	-	-	-	1	-	1	-	-	-
STD	41	69	65	74	168	118	152	202	223	274
Tuberculosis	-	-	-	3	-	3	-	-	-	1

Source: Montana DPHHS Communicable Disease Summaries, 2009– 2018; Notes: STD = Sexually Transmitted Disease

Rosebud County participates in CDC’s Public Health Emergency Preparedness (PHEP) Program. CDC’s experience and expertise helps U.S. communities prepare for, withstand, and recover from emergencies. They are committed to training and growing a strong public health workforce by providing technical assistance, funding, and partnerships to rapidly identify and respond to public health threats. The PHEP program provides:

- Guidance: Annual evidence-based guidance to ensure state, local, and territorial jurisdictions have the most current information to better protect their communities.
- Technical Assistance: Operational know-how to ensure public health departments are ready to respond.
- Evaluation: Measurement and evaluation of state, local, and territorial jurisdictions’ capabilities to prepare for any public health emergency.

The PHEP Program works to advance six main areas of preparedness so state and local public health systems are better prepared for emergencies that impact the public’s health.

- Community Resilience: Preparing for and recovering from emergencies.
- Incident management: Coordinating an effective response.
- Information Management: Making sure people have information to take action.
- Countermeasures and Mitigation: Getting medicines and supplies where they are needed.
- Surge Management: Expanding medical services to handle large events.
- Biosurveillance: Investigating and identifying health threats.

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In addition to public health emergencies, livestock and animal disease could have a devastating effect on the economy and food supply in Rosebud County and beyond. According to the Montana Department of Livestock, known livestock and animal diseases such as Foot and Mouth, Bovine Spongiform Encephalopathy (Mad Cow Disease), Chronic Wasting Disease, Exotic Newcastle, Rabies, Scabies, and Brucellosis could have damaging effects on the livestock and/or wildlife populations. Losses from these diseases would be devastating and could have an economic effect across the county.

Brucellosis is a nonnative, bacterial disease that induces abortions in pregnant cattle, elk, and bison. Cattle brought brucellosis to the Yellowstone National Park area in the early 1900s and transmitted it to local wildlife populations. The bacteria that cause the disease can be transmitted between animals if they come into contact with infected birth tissues.

Chronic wasting disease (CWD) is a fatal, infectious central nervous system disease that affects cervid species such as deer, elk, moose, and caribou. CWD can only be confirmed by testing specific tissues from an animal after it is dead. There is no known cure. Although there has yet to be a human case of CWD identified, government officials are recommending hunters avoid eating meat from animals found to be CWD-positive. CWD has been found to exist in deer populations in parts of Montana.

### ***Vulnerability and Area of Impact***

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Diseases threaten the population of Rosebud County as opposed to structures. The entire population is at risk for contracting disease. Given the uncertain nature of diseases, Rosebud County is assumed to have the same communicable disease risk across the county. The number of fatalities in the county would depend on the mortality (disease/agent attack) rate and the percentage of the population affected. The ability to control the spread of disease will be dependent on the contagiousness of the disease and movement of the population.

### ***Probability and Magnitude***

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The magnitude of a communicable disease outbreak varies from common viral outbreaks to widespread bacterial infection. During the 1918 influenza pandemic, infection rates approached 28 percent in the United States (Billings, 1997). Other pandemics produced infection rates as high as 35 percent of the total population (World Health Organization, 2009).

During 2020, the COVID-19 virus entered the regional population and overwhelmed local health resources with over 4,600 hospitalization statewide. At this time, there are three vaccines available and cases of COVID-19 appear to be remission; however, several highly contagious variants have emerged. The pandemic represents a severe magnitude event. As of September 3, 2021, there were 128,835 confirmed cases of COVID-19 in Montana and 1,807 deaths. As of this date, in Rosebud County there were 1,248 confirmed COVID-19 cases and 50 deaths.

The probability of a future disease outbreak in Rosebud County is difficult to assess. Individual infectious diseases will likely be reported on an annual basis giving this hazard a probability rating of “highly likely”. The Rosebud County MHMP Planning Team rated the communicable disease hazard to livestock as “possible”.

### *Future Development*

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There are no land use regulations for future development that could impact the communicable disease hazard. New residents and population add to the number of people threatened in the county, but the location of such population increases would not increase their vulnerability to the hazard.

### *Climate Change*

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The effects of climate change on the communicable disease hazard are mainly to the population. Outbreaks of insect- and water-borne infection associated with higher temperatures could increase population exposure; especially vulnerable would be the young and elderly. Property and critical facilities are not expected to have an increase in disease exposure or vulnerability due to the effects of climate change.

Although some evidence indicates that warming may be causing infectious disease to spread, predicting how climate change will ultimately influence the incidence of diseases transmitted by insects remains challenging. More predictable as climate change unfolds is the spread of waterborne infections. These infections most often cause diarrheal illness and flourish in the wake of heavy rainfalls as runoff from land enters into and may contaminate water supplies. Many pathogens that cause diarrheal disease reproduce more quickly in warmer conditions as well (Harvard School of Public Health, 2016).

Awareness has been growing in recent years about zoonotic diseases— that is, diseases that are transmissible between animals and humans, such as Lyme disease and West Nile virus. The rise of such diseases results from closer relationships among wildlife, domestic animals, and people, allowing more contact with diseased animals, organisms that carry and transmit a disease from one animal to another (vectors), and people. Disease vectors include insects, such as mosquitoes, and arachnids, such as ticks. Thus, it is impossible to separate the effects of global warming on wildlife from its effects on the health of domestic animals or people (USGS, 2012).

Warmer water temperatures are likely to cause the habitat ranges of many fish species to shift, which could disrupt ecosystems. Fisheries will be affected by changes in water temperature that make waters more hospitable to invasive species and shift the ranges or lifecycle timing of certain fish species (EPA, 2017).

4.6 Severe Winter Weather

CPRI SCORE = 3.15

*Description and History*

Winter weather hazards typically occur from November through April in Rosebud County. Snow, blizzards, extended cold and high winds frequently occur together but also occur independent of one another during these months.

Winter storms and blizzards follow a seasonal pattern that begins in late fall and lasts until early spring. These storms have the potential to destroy property and kill livestock and people. Winter storms may be categorized as sleet, ice storms or freezing rain, heavy snowfall or blizzards, and low temperatures. Blizzards are most commonly connected with blowing snow and low visibility. Winter also brings sustained straight-line winds that can be well over 50 mph.

A severe winter storm is generally a prolonged event involving snow or ice and extreme cold. The characteristics of severe winter storms are determined by the amount and extent of snow or ice, air temperature, wind speed, and event duration. A combination of temperatures to 30 below zero, snow conditions and high winds can close roads, threaten disruption of utilities and regional telecommunications, limit access to rural homes, impede emergency services delivery and close businesses. Such storms also create hazardous travel conditions, which can lead to increased vehicular accidents and threaten air traffic. Additionally, motorists stranded due to closed roads and highways may present sheltering needs.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly scheduled severe weather outlooks and updates on various forms of hazardous weather including blizzards and wind chill. Warning and Advisory Criteria for winter weather is presented in **Table 4.6-1**.

**Table 4.6-1. Warning and Advisory Criteria for Severe Winter Weather**

Winter Weather	Weather Advisory
Winter Storm Watch	Issued to give the public 12-48 hours of advance notice of the potential for snow 6 inches or more in 12 hours or 8 inches or more in 24 hours AND sustained or frequent wind gusts of 25 - 34 mph occasionally reducing visibilities to ¼ mile or less for three hours or more.
Winter Weather Advisory	Issued when a combination of winter weather elements that may cause significant inconveniences are occurring, imminent, or have a high probability of occurring.
Winter Storm Warning	Issued when snow 6 inches or more in 12 hours or 8 inches or more in 24 hours AND sustained or frequent wind gusts of 25-34 mph occasionally reducing visibilities to ¼ mile or less for three hours or more are occurring, imminent, or have a high probability of occurring.
Blizzard Watch	Issued to give the public 12-48 hours of advance notice of possible blizzard conditions (sustained winds or frequent gusts of 35 mph or greater and visibilities of less than a quarter mile from falling and/or blowing snow for 3 hours or more).
Blowing Snow Advisory	Issued for visibilities intermittently at or below ½ mile because of blowing snow.
Blizzard Warning	Issued when blizzard conditions (sustained winds or frequent gusts of 35mph or greater and visibilities of less than a quarter mile from falling and/or blowing snow for 3 hours or more) are occurring, imminent, or have a high probability of occurring.
Freezing Rain Advisory	Issued when an accumulation of ice will make roads and sidewalks slippery, but significant and damaging accumulations of ice are not expected.
Ice Storm Warning	Issued when a significant and damaging accumulation of ice is occurring, imminent or has a high probability of occurring.
Snow Advisory	Issued when snow accumulations of 2-5 inches in 12 hours are expected.
Sleet Advisory	Issued when sleet accumulations causing hazardous conditions are expected.
Heavy Snow Warning	Issued when snow accumulations of 6 inches or more in 12 hours or 8 inches or more in 24 hours are expected.



## Section 4: Risk Assessment and Vulnerability Analysis

**Table 4.6-1. Warning and Advisory Criteria for Severe Winter Weather**

Winter Weather	Weather Advisory
Wind Chill Watch	Issued to give the public 12-48 hours advanced notice of the potential for wind chills of -40°F or colder with a wind speed of 10 mph or higher and a duration of 6 hours or more.
Wind Chill Advisory	Issued when wind chills of -20°F to -39°F with a wind speed of 10 mph or higher and a duration of 6 hours or more are expected.
Wind Chill Warning	Issued when wind chills of -40°F or colder with a wind 10 mph wind in combination with precipitation.

Source: National Weather Service, 2021.

Snowstorms and bitterly cold temperatures are common occurrences in Rosebud County and generally do not cause any problems as residents are used to winter weather and are prepared for it. Sometimes, however, blizzards can occur and overwhelm the ability to keep roads passable. Heavy snow and ice events also have the potential to bring down power lines and trees. Extreme wind chill temperatures may harm residents if unprotected outdoors or if heating mechanisms are disrupted.

**Table 4.6-2** presents winter weather records for Rosebud County.

**Table 4.6-2. Rosebud County Winter Weather Records**

Winter Weather	Forsyth 1975-2016	Colstrip 1927-2012
Lowest Temperature Recorded	-44°F - 12/22/1989	-50°F - 2/15/1936
Average # Days Dropping Below Freezing	171.6 days	173.3 days
Average # Days Staying Below Freezing	40.4 days	39.0 days
Average # Days Below Zero	24.1 days	24.1 days
Average Annual Snowfall	50.7 inches	41.6 inches
Highest Annual Snowfall	124.7 inches - 1984	85.8 inches - 2003
Highest Daily Snowfall	23.0 inches - December 1984	28.5 inches - March 2003

Source: Western Regional Climate Center, 2021.

There have been no federal disaster or state emergency declarations for severe winter weather in Rosebud County. However, since the 2013 PDM Plan was completed, numerous incidents of severe summer weather have affected the county, as summarized in **Table 4.6-3**.

**Table 4.6-3. Rosebud County Severe Winter Weather Reports (~November-April)**

Date	Event / Magnitude	Date	Event / Magnitude	Date	Event / Magnitude
12/28/1996	Heavy Snow	2/16/2007	High Wind – 52 kts.	1/4/2015	Winter Storm
4/5/1997	Heavy Snow	3/28/2007	Blizzard	3/28/2015	High Wind – 62 kts.
3/28/1998	Heavy Snow	1/17/2008	Winter Storm	4/14/2015	High Wind – 56 kts.
12/18/1998	Cold/Wind Chill	1/19/2008	Winter Storm	11/18/2015	High Wind – 52 kts.
12/29/1998	Ice Storm	2/9/2008	Heavy Snow	2/6/2016	High Wind – 53 kts.
1/10/1999	Ice Storm	3/24/2008	High Wind – 41 kts.	4/5/2016	High Wind – 62 kts.
2/2/1999	High Wind – 58 kts.	5/1/2008	Winter Storm	12/15/2016	Winter Storm
4/1/1999	Heavy Snow	10/9/2008	Winter Storm	12/25/2016	Winter Storm
12/18/1999	High Wind – 42 kts.	12/13/2008	Blizzard	3/8/2017	Winter Storm
2/26/2000	Blizzard	12/26/2008	Winter Storm	4/9/2017	Winter Storm
4/2/2000	High Wind – 44 kts.	12/30/2008	High Wind – 54 kts.	12/5/2017	High Wind – 50 kts.
4/5/2000	High Wind – 66 kts.	1/8/2009	Ice Storm	12/28/2017	Winter Storm
9/22/2000	Heavy Snow	2/19/2009	Winter Weather	12/29/2017	Winter Storm
11/7/2000	Heavy Snow	2/26/2009	Winter Storm	1/10/2018	Winter Storm
12/15/2000	Extreme Cold/Wind	3/23/2009	Winter Storm	1/13/2018	Winter Weather
4/21/2001	Heavy Snow	3/29/2009	Blizzard	2/3/2018	Winter Storm
1/13/2002	High Wind – 40 kts.	2/13/2011	High Wind – 35 kts.	2/7/2018	Winter Storm
2/11/2002	High Wind – 41 kts.	2/19/2011	Winter Storm	3/4/2018	Winter Storm
3/14/2002	Heavy Snow	2/20/2011	Winter Storm	3/16/2018	Winter Storm

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**Table 4.6-3. Rosebud County Severe Winter Weather Reports (~November-April)**

Date	Event / Magnitude	Date	Event / Magnitude	Date	Event / Magnitude
3/20/2002	Heavy Snow	3/26/2011	Heavy Snow	4/1/2018	Winter Storm
4/18/2002	Heavy Snow	4/30/2011	High Wind – 35 kts.	4/2/2018	Winter Storm
3/7/2003	Heavy Snow	11/18/2011	Winter Storm	4/12/2018	Winter Storm
3/8/2003	Heavy Snow	1/18/2012	Winter Storm	1/21/2019	Winter Storm
3/18/2003	Heavy Snow	11/9/2012	Winter Storm	2/24/2019	Winter Storm
3/19/2003	Heavy Snow	1/10/2013	Winter Storm	11/24/2019	High Wind – 52 kts.
12/26/2003	Blizzard	4/14/2013	Winter Storm	11/29/2019	Winter Storm
2/29/2004	Heavy Snow	10/3/2013	Heavy Snow	1/4/2020	High Wind – 50 kts.
3/6/2005	High Wind – 42 kts.	12/2/2013	Winter Storm	1/30/2020	Winter Weather
3/17/2005	Heavy Snow	12/9/2013	High Wind – 51 kts.	3/3/2020	High Wind – 52 kts.
3/24/2005	Heavy Snow	12/28/2013	High Wind – 52 kts.	3/4/2020	High Wind – 53 kts.
4/9/2005	High Wind – 41 kts.	1/3/2014	High Wind – 52 kts.	3/11/2020	High Wind – 56 kts.
5/12/2005	Heavy Snow	1/13/2014	High Wind – 54 kts.	4/11/2020	Winter Storm
10/4/2005	Heavy Snow	2/18/2014	High Wind – 51 kts.	10/23/2020	Winter Storm
10/5/2005	Heavy Snow	2/23/2014	Winter Storm	10/24/2020	Winter Storm
2/1/2006	High Wind – 81 kts.	2/27/2014	Winter Storm	1/13/2021	High Wind – 66 kts.
12/13/2006	High Wind – 68 kts.	3/20/2014	High Wind – 50 kts.	2/5/2021	Winter Storm
1/8/2007	High Wind – 52 kts.	3/30/2014	Winter Storm	2/22/2021	High Wind – 55 kts.

Source: NCDC, 2021. Notes: kts. = knots

Highway accidents occur for a number of reasons including winter weather. Black ice and blowing snow can create dangerous driving conditions. Statistics on winter weather-related highway accidents in Rosebud County over the most recent 10 years period are presented in **Table 4.6-4**.

**Table 4.6-4. Rosebud County Vehicular Crashes Data Due to Winter Weather**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
<b>Winter Crashes (Nov, Dec, Jan, Feb)</b>											
Fatal Crash	6	0	3	0	1	1	1	2	1	2	<b>11</b>
Serious Injury	2	5	6	8	2	2	1	6	3	1	<b>34</b>
Total # of Crashes	125	142	141	123	93	98	103	65	75	132	<b>972</b>

Source: Montana Dept. of Transportation, 2021

(<http://www.mdt.mt.gov/publications/datastats/crashdata.shtml>).

There is no history of a mass casualty accident in Rosebud County involving a school bus; however, school events use bus transportation during winter months when severe weather can pose an extreme risk.

### *Vulnerability and Area of Impact*

Based on review of historic weather data, all of Rosebud County has been classified with a uniform risk for severe winter weather events. Structures, utilities, and vehicles are most at risk from the wind component of these storms while unseasonable cold and snow can interrupt calving season and result in livestock losses.

Snow storms and bitterly cold temperatures are common occurrences in Rosebud County and generally do not cause any problems as residents are used to winter weather and are prepared for it. Sometimes, however, blizzards can occur and overwhelm the ability to keep roads passable. Residents can get isolated and need to be plowed out. Law enforcement has had to get to homes of special needs individuals to deliver medication when severe winter weather has impacted the area. Many of the roads in Rosebud County do not have all-weather surfaces which makes response during

## *Section 4: Risk Assessment and Vulnerability Analysis*

severe weather extremely difficult or impossible. Highway accidents due to poor road conditions can result in mass casualties.

Heavy snow and high winds can damage trees in urban areas. Broken branches can fall into vehicles and damage roofs. Hail can also cause considerable damage to roofs and vehicles.

The greatest threat to the population is the potential for utility failure when high winds, heavy snow or ice bring down power lines and trees. Although cold temperatures and snow are normal in the county, handling the extremes can go beyond the capabilities of the community. Should the temperatures drop below -15 for over 30 days or several feet of snow fall in a short period of time, the magnitude of frozen water pipes and sewer lines or impassable streets could result in disastrous conditions for many people. If power lines were to fail due to snow/ice load, winds, or any other complicating factor, the situation would be compounded. In the event power or other utilities were disrupted, many homes could be without heat. With temperatures frequently dropping below zero in a typical winter, an event where heating systems failed could send many residents to shelters for protection. Other residents may try to heat their homes through alternative measures and increase the chance for structure fires or carbon monoxide poisoning. Telephone and internet services are most critical for 9-1-1 communications, and the rapid dispatch of needed emergency services. Any of these disruptions can be handled in a short time frame, but are quickly problematic in long-term situations.

### *Probability and Magnitude*

Snow generally does not cause Rosebud County communities to shut down or disrupt activities. Occasionally though, extreme winter weather conditions can cause problems. The most common incident in these conditions are motor vehicle accidents due to poor road conditions. Such incidents normally involve passenger vehicles; however, an incident involving a commercial vehicle transporting hazardous materials or a vulnerable population such as a school bus is also possible. **Table 4.6-5** presents severe winter weather events with reported damages from the SHELDC and NCEM databases.

**Table 4.6-5 Rosebud County Severe Winter Weather Events with Damages**

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
2/1961	0	0	\$937	\$937	Wind
7/1962	0	0	\$8,158	\$88,845	Wind
12/1964	0	0	\$37,271	\$0	Winter Weather
7/1965	0	0	\$13,938	\$13,938	Wind
6/1966	0	0	\$1,694	\$1,694	Wind
1/1969	0	0	\$630	\$0	Winter Weather
4/1969	0	0	\$512,718	\$0	Winter Weather
6/1970	0	0	\$36,115	\$36,115	Wind
10/1971	0	0	\$11,615	\$11,615	Winter Weather
4/1973	0	0	\$61,804	\$0	Winter Weather
6/1973	0	0	\$659	\$0	Wind
4/1975	0	0	\$51,006	\$0	Winter Weather
8/1975	0	0	\$255	\$2,550	Wind
2/1978	0	0	\$481,000	\$481,000	Winter Weather
7/1980	0	0	\$39,963	\$39,963	Wind
10/1980	0	0	\$7,993	\$0	Winter Weather
11/1981	0	2	\$0	\$0	Winter Weather
9/1982	0	0	\$7,583	\$7,583	Winter Weather
7/1983	9	0	\$13,225	\$132	Wind
9/1983	0	0	\$3,480	\$348	Winter Weather

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**Table 4.6-5 Rosebud County Severe Winter Weather Events with Damages**

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
4/1984	0	0	\$90,552	\$91	Winter Weather/Wind
1/1988	0	0	\$856	\$0	Winter Weather
9/1988	0	0	\$53,020	\$0	Winter Weather
12/1988	0	0	\$17,497	\$3,181	Wind
1/1989	0	0	\$29,507	\$295	Winter Weather
2/1989	0	1	\$186,357	\$186	Winter Weather
4/1989	0	0	\$272	\$0	Winter Weather
5/1989	0	0	\$3,319	\$0	Winter Weather
11/1989	0	0	\$759	\$0	Wind
12/1989	0	0	\$1,517	\$0	Winter Weather
3/1990	0	0	\$219	\$0	Winter Weather
4/1990	0	0	\$3,149	\$0	Winter Weather
11/1990	0	0	\$33,165	\$5,928	Wind
2/1991	0	0	\$5,373	\$0	Winter Weather
3/1991	0	0	\$495	\$0	Winter Weather
4/1991	0	0	\$5,373	\$0	Winter Weather
11/1991	0	0	\$691	\$0	Winter Weather
8/1992	0	0	\$0	\$1,647	Winter Weather
10/1992	0	0	\$408	\$0	Winter Weather
12/1992	0	0	\$7,222	\$0	Wind
12/1992	0	0	\$376	\$0	Winter Weather
12/1993	0	0	\$13,022	\$0	Winter Weather
2/1994	0	0	\$15,593	\$0	Winter Weather
1/1995	0	0	\$270	\$0	Winter Weather
9/2000	0	0	\$2,142	\$0	Winter Weather
2/2009	0.5	2	\$0	\$0	Winter Weather
<b>TOTAL</b>	<b>9.5</b>	<b>5</b>	<b>\$1,761,198</b>	<b>\$696,048</b>	

Source: SHELUS, 2017 (adjusted to 2020 dollars). Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from this event.

The data shows that there have been 5 fatalities in Rosebud County from severe winter weather in the past 60 years, as well as over \$1.7 million in property damage, and almost \$700,000 in crop damage.

Sheltering of community members could present significant logistical problems when maintained over a period of more than a day. Transportation, communication, energy (electric, natural gas, and vehicle fuels), shelter supplies, medical care, food availability and preparation, and sanitation issues all become exceedingly difficult to manage in extreme weather conditions. The American Red Cross has a presence in Rosebud County and has the capacity to provide care for the duration of a severe weather event if needed through pre-determined sheltering agreements.

Annual loss was computed for the severe winter weather hazard in Rosebud County using SHELUS data and the formula: Frequency x Magnitude x Exposure = Annual Loss, as further explained in Section 4.1.6. **Table 4.6-6** presents the results of these calculations.

**Table 4.6-6. Rosebud County Severe Winter Weather Annual Loss**

No. of Events	Period of Record (Yrs)	Frequency	Property Damage	Magnitude	Exposure	Annual Loss
108	25	4.32	\$1,761,198	0.002776%	\$587,442,731	\$70,448

## *Section 4: Risk Assessment and Vulnerability Analysis*

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Severe winter weather occurs in Rosebud County multiple times each year. Therefore, the probability of a severe storm in either the winter or summer is rated as “highly likely”.

### *Future Development*

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The State of Montana has adopted the 2012 International Building Codes (IBC) which include a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph and must be designed to withstand a snow load of 30 pounds per square foot minimum. The IBC does not cover single-family residences.

The State of Montana has adopted the 2012 International Residential Code (IRC) for one and two-family residences and townhouses. Local jurisdictions (cities, counties and towns) can elect to become certified to take on enforcement of single-family residences. The Cities of Forsyth and Colstrip are certified to enforce building codes. Rosebud County does not have a building department and therefore, has no enforcement capabilities to ensure state building codes are followed.

### *Climate Change*

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The frequency of severe weather events has increased steadily over the last century. The number of weather-related disasters during the 1990s was four times that of the 1950s, and cost 14 times as much in economic losses. Historical data shows that the probability for severe weather events increases in a warmer climate. There has been a sizable upward trend in the number of storms causing large financial and other losses.

Changing extremes in precipitation are projected across all seasons, including higher likelihoods of both increasing snow events. Winter and spring precipitation is projected to increase in the northern states of the Great Plains, relative to the 1971-2000 average. Winter storms have increased in frequency and intensity since the 1950s, and their tracks have shifted northward over the U.S.

Population exposure and vulnerability to severe winter weather is likely to increase as a result of climate change. Severe weather events may occur more frequently which would lead to increased exposure and vulnerability. Although all people may be affected by the health-related impacts of climate change, the elderly, young children, and people with weakened immune systems are often the most susceptible.

Property exposure and vulnerability may increase as a result of increased severe winter weather resulting from climate change. Increased structure damage from high winds and snow load could result as well as damage to crops and landscaping.

Critical facility exposure and vulnerability are unlikely to increase as a result of climate change impacts associated with severe winter weather; however, critical facility owners and operators may experience more frequent disruption to the services they provide.

## 4.7 Flooding and Dam Failure

CPRI SCORES:  
DAM FAILURE = 2.9  
FLOODING = 2.55

### Description and History

A flood is a natural event for rivers and streams. Excess water from snowmelt and rainfall accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers and lakes that are subject to recurring floods. A flash flood generally results from a torrential (short duration) rain or cloudburst on a relatively small drainage area. Ice jam flooding occurs when pieces of floating ice carried by the rivers current accumulate at an obstruction to the river. The water held back can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can then occur downstream as well. Dam failure can also cause flooding.

Warming periods, which may be accompanied by rainfall, cause tributaries to swell rapidly. The resulting flood flows may be localized or basin-wide and may last from hours to several days depending on temperature, amount of rainfall, soil moisture content, and soil permeability.

The National Weather Service provides short-term forecasts and warnings of hazardous weather to the public by producing regularly scheduled severe weather outlooks and updates on various forms of hazardous weather including heavy rain and flooding. A “watch” is issued when conditions are favorable for severe weather in or near the watch area. A “warning” is issued when the severe weather event is imminent or occurring in the warned area. Warning and Advisory Criteria for flooding is presented in **Table 4.7-1**.

**Table 4.7-1. Warning and Advisory Criteria for Flooding**

Flooding	Warning Description
Flash Flood Watch	Issued when conditions are favorable for flash flooding. It does not mean that flash flooding will occur, but it is possible
Flash Flood Warning	Flash flooding is imminent, water levels rise rapidly with inundation occurring in less than 6 hours.
Flood Watch	Issues when conditions are favorable for flooding. It does not mean flooding will occur, but it is possible.
Flood Warning	Flooding is expected to occur more than 6 hours after the causative event.

Source: National Weather Service, 2021.

Three rivers pass through Rosebud County, the Yellowstone, Tongue, and Musselshell Rivers, along with many creeks and streams. Low-level flooding of farmland across the county is a yearly event. Accounts of several flood events are presented in **Table 4.7-2**, below. Rosebud County received Presidential Disaster Declarations for flooding in 1997 (DR-777-MT), 2011 (DR-1996-MT), and in 2014 (DR-4172).

**Table 4.7-2. Rosebud County Flood Reports**

Date	Location	Event Description
7/14/1999	Vananda	Two inches of rain fell in less than one hour just south of Vananda as a slow moving thunderstorm moved over the area. The water was up to a foot deep.
6/30/2001	Colstrip	3 feet of water covered Olive Street
6/30/2001	Ashland	Several roads washed out
7/31/2001	Hathaway	Excessive rain with water running over some roads and creeks running bankfull.
5/13/2007	Forsyth	Spotter in Broadus heard report over police scanner of flash flooding on Interstate 94 between Miles City and Forsyth.
5/13/2007	Forsyth	A foot of water was reported at Exit 93 on Interstate 94. Traffic was rerouted.
6/6/2007	Lame Deer	Lame Deer was under 3 to 4 feet of water, with homes flooded, people stranded, and a propane tank floating in the street.

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**Table 4.7-2. Rosebud County Flood Reports**

Date	Location	Event Description
6/6/2007	Forsyth	Highway 39 was covered with water and mud in spots.
6/6/2007	Colstrip	Water and mud were over Highway 39 at mile marker 31.
7/6/2008	Nichols	Water was reported flowing over Brandenburg and Tongue River Roads with 2.45 inches of rain being reported in two hours.
5/10/2011	Countywide	An area of slow-moving thunderstorms brought heavy rain to portions of Rosebud County with rainfall amounts of 2-4 inches. Widespread flooding across the northern half of Rosebud County, resulted in road closures. Flooding in low lying areas along Reservation Creek west of Forsyth was reported and flooding on Home Creek resulted in significant water over Bascom Road. The county sheriff reported flash flooding on the north side of the Yellowstone River near Forsyth. Dry Gulch Creek, near Porcupine Creek, filled up and flooded.
5/21/2011	Rosebud, Ingomar to Forsyth	Heavy rainfall caused rivers and streams to rise significantly resulting in some flooding. High water caused difficult passage on the road going into the town of Rosebud and water covered Highway 12 in the Hammond Valley. At the height of the flooding, Highway 12 was closed due to flooding from Ingomar to Forsyth.
5/23/2011	Forsyth	Heavy rainfall combined with snowmelt runoff resulted in significant rises on the Yellowstone River near Forsyth. The river fluctuated above and below flood stage from the 9 <sup>th</sup> through the end of the month.
5/29/2013	Lame Deer	Flash flooding occurred across a portion of the Chalky Fire burn scar area between Colstrip and Lame Deer. Water was reported to be over Highway 39.
8/2/2013	Ashland	Very heavy rains from several thunderstorms during the late evening hours of the 1st into the early morning hours of the 2nd resulted in flash flooding across portions of the Ash Creek Burn Scar area around Highway 212 near mile marker 55. Rainfall was estimated to be around an inch in about a 30 minute time period. In addition, a significant amount of small hail fell. Power outages also occurred as a result of the series of thunderstorms. Water around 4 inches deep flowed across the road bringing a significant number of large pieces of burned wood, trash and silt.
5/10/2011	Brandenburg	Widespread flooding resulting in road closures occurred across the northern half of Rosebud County. Flooding in low lying areas along Reservation Creek west of Forsyth was reported. Across northwest Rosebud County, flooding on Home Creek resulted in significant water over Bascom Road.
5/21/2011	Nichols	Heavy rainfall caused rivers and streams to rise significantly resulting in some flooding. High water caused difficult passage on the road going into the town of Rosebud and water covered Highway 12 in the Hammond Valley. At the height of the flooding, Highway 12 was closed due to flooding from Ingomar to Forsyth. The Yellowstone River at Forsyth went above flood stage with minor lowland flooding reported from May 22nd through May 29th. The river crested at 12.35 feet on the 24th and 12.18 feet on the 28th.
5/23/2011	Lame Deer	Highway 212 was closed on Lame Deer Divide due to the road sliding down a hill. Significant lowland flooding was also reported along Rosebud Creek. Sandbagging efforts were required on the Tongue River to avoid flooding of homes in the St Labre and Ashland areas.
6/9/2011	Birney	Rainfall combined with snow melt caused the Tongue River near Birney to fluctuate above and below flood stage throughout the entire month. The river crested at 6.34 feet on the 1st, 7.30 feet on the 12th, 6.94 feet on the 18th and 6.95 feet on the 27th. The 7.30 crest on June 12th was the highest crest on record at the gauge site near Birney. Sandbagging efforts avoided flooding downstream in the St Labre and Ashland areas. Otherwise, mainly lowland ranch and farm land was impacted.
6/9/2011	Forsyth	Heavy rainfall combined with snowmelt runoff resulted in significant rises on the Yellowstone River near Forsyth. The river fluctuated above and below flood stage from the 9th through the end of the month. The river crested at 10.95 feet on the 11th, 10.79 feet on the 18th and 11.88 feet on the 28th.
2/22/2012	Lame Deer	County officials reported that minor flooding occurred across portions of southern Rosebud County. Up to an inch of rain had fallen along with several inches of snow over the higher hills. The rain falling on frozen ground, combined with snow melt, resulted in minor flooding of low lying areas. Several ice jams were reported on Rosebud, Lame Deer and Muddy Creeks resulting in water over the roads in some locations, as well as the main road in the town of Birney. In addition, an ice jam was reported on the Tongue River and Hanging Woman Creek north and west of Birney. One rancher had to rescue calves from a flooded area. Another rancher had a chicken coop flooded killing 4 hens, as well as a stranded horse.

**Table 4.7-2. Rosebud County Flood Reports**

Date	Location	Event Description
5/30/2013	Brandenberg	Observations across the area indicated widespread 3 to 6 inches of rain fell across the area over the course of a few days. Emergency management reported that Home Creek along Highway 212 experienced some flooding. In addition, flooding of small streams and creeks occurred across the area along with debris flows on the Ash Creek burn scar area.
5/30/2013	Angela	County officials reported culverts washed out across the northeastern portions of the county, especially near Angela Road. Reservation Creek water was over the road between Old Hwy 10 and I-94. Minor flooding also occurred on River Basin Creek and other small streams and rivers in Rosebud County. In addition, some road closures occurred in the town of Forsyth.
3/6/2014	Sumatra	County officials and the Montana Department of Transportation reported small stream and low land flooding. Numerous roads and some highways were reported to have water flowing across them.
3/8/2014	Vananda	Flooding as a result of an ice jam on the Yellowstone River was reported a few miles east of Hysham along Gibson and Van Olsen Roads. Some farm structures were damaged by the high water.
6/1/2019	Birney	Very heavy rain over the Big Horn Mountains resulted in significant runoff into the Tongue River. The river crested just over 11 feet which was 4 feet higher than the record crest of 7.3 feet set in 2011. Flooding occurred along the Tongue River from the Birney area to just southeast of Colstrip.  One home was inundated by the flood waters. A levee in Ashland flooded at St Labre which resulted in homes in the Cheyenne Village near St Labre being accessed only by boat for a period of time. Water inundation of these homes was confined to crawl spaces and not up to floor level. Six homes on the Northern Cheyenne Tribe Reservation were inundated by floodwaters. The American Red Cross set up a shelter at the Ashland Public School.  The Tongue River was also out of its banks at Brandenberg, mainly in the grassy areas, but it did cover about 3 feet of the gravel on Tongue River Road.

Source: NCDC, 2021.

Ice jam floods arise when frigid air masses linger over the lower elevations of the Yellowstone River, while tributaries thaw. The warmer tributary streams then flow into the lower and still frozen mainstem Yellowstone River, producing ice jam flooding. Ice jam floods frequently produce locally higher flood levels than free flowing floods. The U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory maintains records of historic ice jams, as shown in **Table 4.7-3** for Rosebud County. Recent historical records do not indicate damages from ice jams.

**Table 4.7-3. Rosebud County Ice Jams; 1943-2012**

Date	Location	Date	Location
2/15/1943	Rosebud Creek near Rosebud	2/7/1996	Yellowstone River near Forsyth (break-up jam)
3/5/1949	Rosebud Creek near Forsyth	2/7/1996	Yellowstone River near Hathaway (break-up jam)
2/26/1950	Rosebud Creek near Forsyth	2/20/1997	Yellowstone River near Hathaway (freeze-up jam)
2/10/1952	Rosebud Creek near Forsyth	2/3/1998	Yellowstone River near Hathaway (break-up jam)
3/20/1969	Tongue River near Ashland	3/15/2003	Yellowstone River near Hathaway (break-up jam)
2/16/1971	Tongue River near Ashland	2/2/2012	Rosebud, Lame Deer, Muddy and Hanging Woman Creeks, Tongue River

Source: Rosebud County PDM Plan, 2013.

### **Dam Failure**

Dams have been placed around Montana for many reasons including recreation, flood control, irrigation, water supply, hydroelectricity, and mining. Dams are built and owned by a variety of entities such as private individuals, corporations, utilities, and the government. Dams come in all shapes and sizes from small earthen dams to large concrete structures. The structural integrity of a dam depends on its design, maintenance, and weather/drainage situation. Problems arise when a dam fails and people and/or property lie in its inundation area. Dams can fail for a variety of reasons including seismic activity, poor maintenance, overwhelming weather and flow conditions, or by an

## Section 4: Risk Assessment and Vulnerability Analysis

intentional act. Dam failure can be compared to riverine or flash flooding in the area downstream from the dam, and sometimes for long distances from the dam, depending on the amount of water retained and the drainage area. Other dams may be located in areas that result in little if any damages during a failure.

The U.S. Army Corps of Engineers, National Inventory of Dams website keeps a record of dams across the country. Hazard ratings are given to those dams for emergency management planning purposes. These ratings, high, significant, and low, are based on the potential for loss of life and property damage from the failure of the dam, not the condition or probability of the dam failing, as described in **Table 4.7-4**.

**Table 4.7-4. Hazard Ratings for Dams**

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

Source: FEMA, 2004

There are four high hazard dams in Rosebud County; all associated with the Colstrip Power Plant. The Yellowtail and Tongue River dams in Big Horn County are high hazard dams with the potential to impact Rosebud County. **Table 4.7-5** presents details on these dams. Rosebud County DES keeps copies of Emergency Action Plans (EAPs) for the high hazard dams that could impact the county. There is no record of failure of a high hazard dam impacting Rosebud County.

**Table 4.7-5. High Hazard Dams in or Potentially Impacting Rosebud County**

Dam Name	County	Drainage	Height (feet)	Maximum Storage (acre-ft)	Dam Type/ Purpose	Owner
Colstrip Evaporation Pond Dam	Rosebud	Trib. E. Fork Armells Creek	88	3,834	Earth/Public Utility	PP&L Montana LLC
Colstrip Diversion Dam	Rosebud	Trib. E. Fork Armells Creek	44	260	Earth/Public Utility	PP&L Montana LLC
Castle Rock Saddle Dam	Rosebud	Trib. E. Fork Armells Creek	20	2,280	Earth/Public Utility	PP&L Montana LLC
Castle Rock Reservoir Dam	Rosebud	Trib. E. Fork Armells Creek	67	3,540	Earth/Power Generation	PP&L Montana LLC
Yellowtail Dam	Big Horn	Big Horn River	491	1,427,340	Concrete Arch/ Hydroelectric, Irrigation	USBR
Yellowtail Afterbay Dam	Big Horn	Big Horn River	59	3,141	Concrete Gravity/ Hydroelectric, Irrigation	USBR
Tongue River Dam	Big Horn	Tongue River	93	127,655	Earth/ Flood Control, Irrigation	Montana DNRC

Source: DNRC, 2018. Notes: DNRC = MT Dept. of Natural Resources and Conservation; USBR = US Bureau of Reclamation

The Yellowtail Dam is located in Bighorn Canyon in Big Horn County. The mid-1960's era concrete arch dam services to regulate the flow of the Big Horn River for irrigation purposes and to generate hydroelectric power. The dam stands at 525 feet high and is 1,480 feet long. The reservoir extends 72 miles upstream into Wyoming. The dam's hydroelectric plant has a capacity of 250 mega-watts.

## *Section 4: Risk Assessment and Vulnerability Analysis*

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The Tongue River Dam is in Big Horn County, a few miles north of the Wyoming border. The earthen dam was constructed in the river canyon in 1939, with a height of 93 feet and a length at its crest of 1,824 feet. It impounds the north-flowing Tongue River for flood control and irrigation water storage. The 12-mile long riverine reservoir it creates has a normal water surface of 5.5 square miles, a maximum capacity of approximately 128,000 acre-feet.

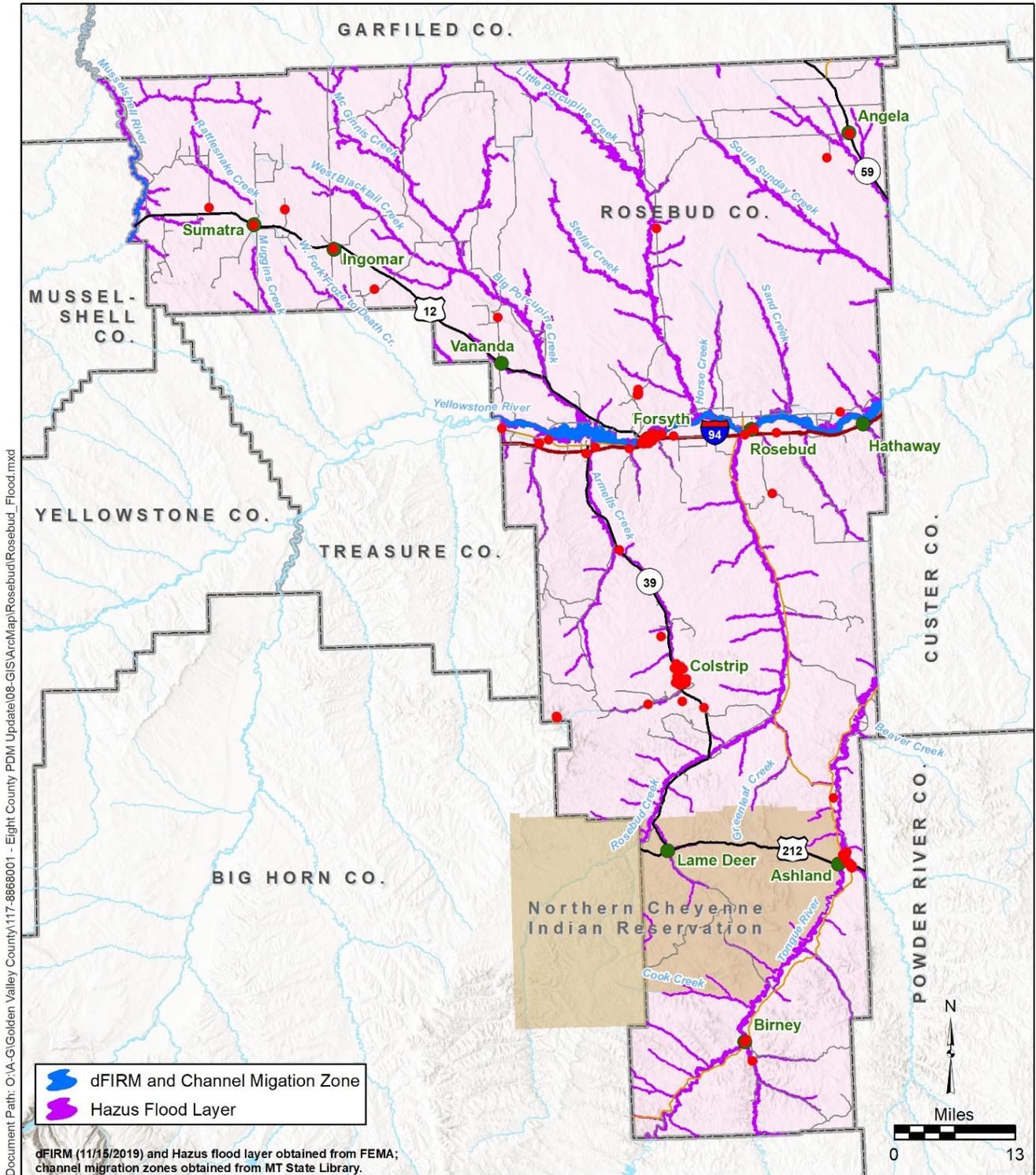
### *Vulnerability and Area of Impact*

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Development in floodplains results in a concurrent risk of property damage due to floods and impacts on city services for risk protection during flood season. MHMP Planning Team members indicated that continual low level flooding in farmland occurs every year in Rosebud County. Ranchers have grown accustomed to moving cattle and equipment to avoid floodwaters. **Figures 6 through 6C** present the flood hazard impact area developed for the MHMP for Rosebud County, Forsyth, Colstrip, and Ashland, respectively.

There is an increased risk of flooding during heavy rains after wildfire because the burned ground is unable to absorb the falling rain, producing runoff conditions much like a parking lot. Because of this, even modest rainstorms over a burned area can result in flash flooding downstream. These floods are typically much larger for a given sized storm than they were before the wildfire, so flooding is likely to be much more extensive following wildfire, endangering properties previously considered safe from flooding. These floodwaters typically transport surface debris such as down trees, boulders, and gravel.

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Legend

- Critical Facility
- Town
- Interstate
- Primary Road
- Secondary Road
- City-County Road
- ~ Stream
- Lake
- Northern Cheyenne Indian Reservation
- County Boundary

Figure 6  
**Flood Hazard Area**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



Section 4: Risk Assessment and Vulnerability Analysis

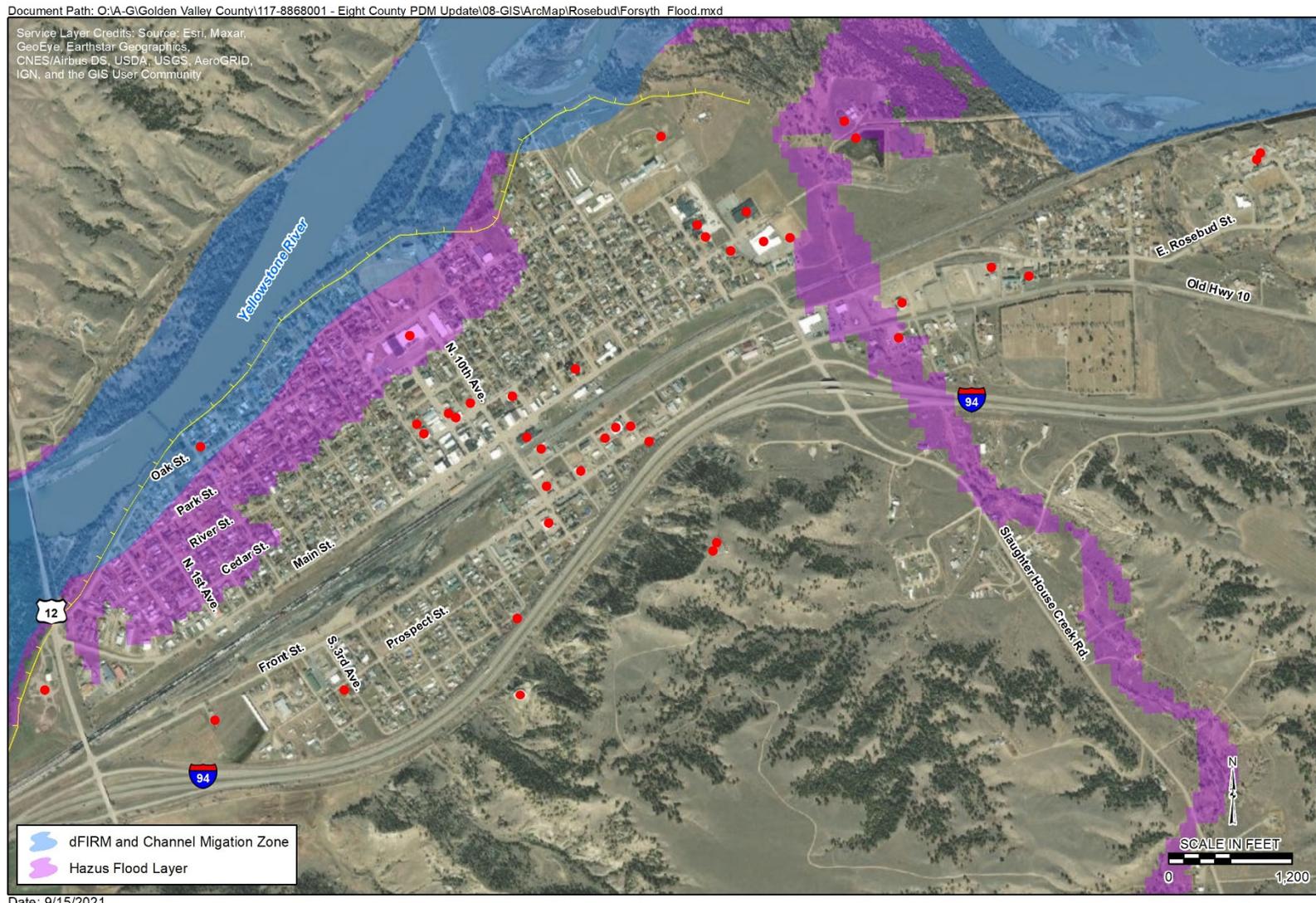
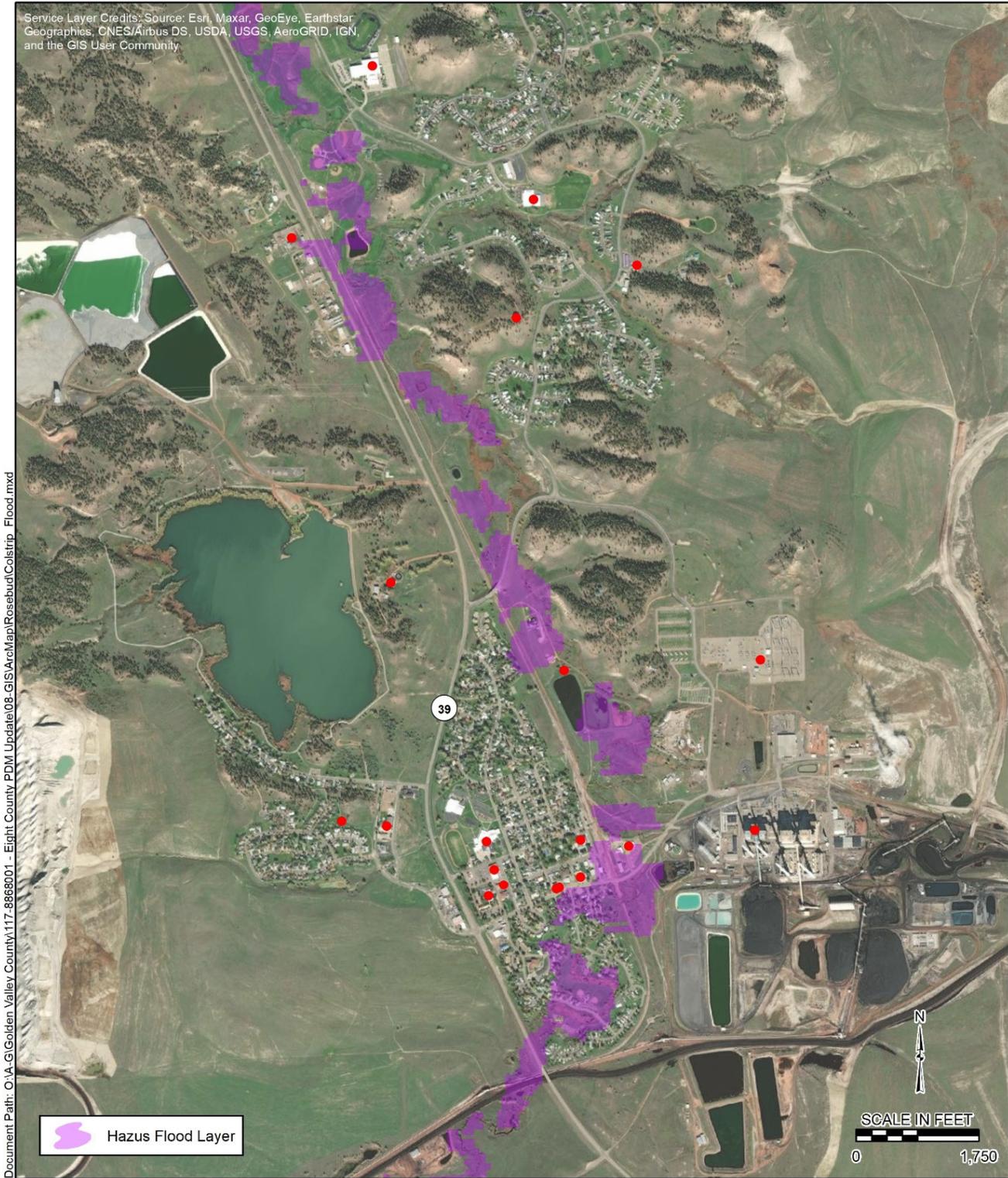


Figure 6A  
Flood Hazard Area - Forsyth  
Rosebud County, Montana  
Multi-Hazard Mitigation Plan

**Section 4: Risk Assessment and Vulnerability Analysis**

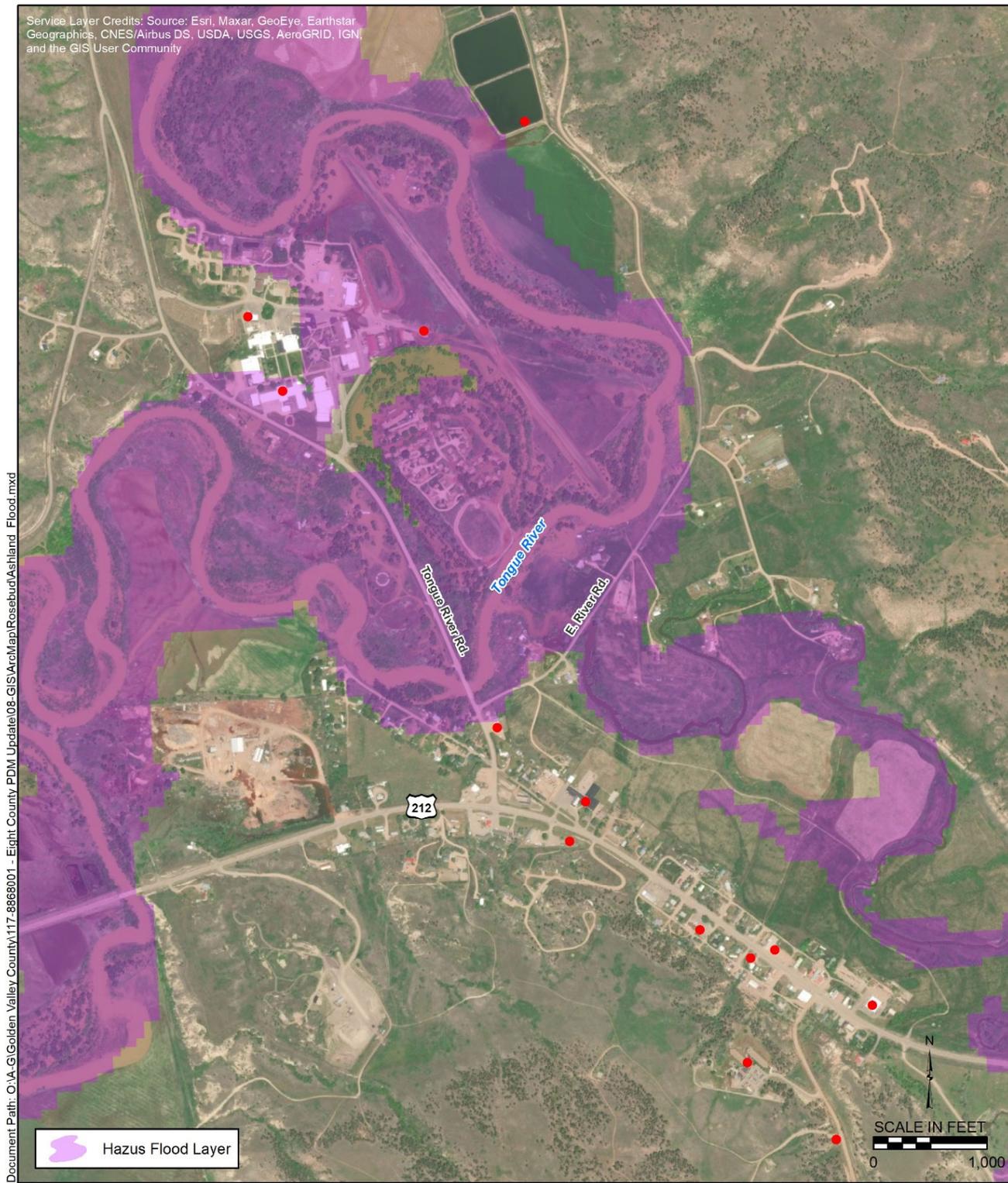


**Figure 6B  
Flood Hazard Area - Colstrip  
Rosebud County, Montana  
Multi-Hazard Mitigation Plan**

**Legend**  
● Critical Facility



**Section 4: Risk Assessment and Vulnerability Analysis**



**Figure 6C  
Flood Hazard Area - Ashland  
Rosebud County, Montana  
Multi-Hazard Mitigation Plan**



## ***Section 4: Risk Assessment and Vulnerability Analysis***

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Dams with the highest risk to life and property are rated as high hazard dams. Those areas directly downstream from high hazard dams would be the areas most at risk for loss of life and structural damage. Dam failures can potentially cause massive flooding and losses. MHMP Planning Team members indicated that a dam failure could wipe out the water system in Colstrip and threaten the community. First responders have not participated in dam failure exercises with Talen Energy, owners of the Colstrip dams.

**Figures 7 through 7C** show the dam failure hazard impact areas used for the MHMP analysis for Rosebud County, Forsyth, Colstrip, and Ashland, respectively. These consist of the inundation areas, available from EAPs, of the high hazard dams.

### ***Flood Protection Measures***

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The community of Forsyth is safeguarded from Yellowstone River flooding by a levee completed in 1948. The levee is approximately 2.4 miles long, extending from west of the solid waste station to east of the Rosebud County Fairgrounds. The levee was constructed to U.S. Army Corp of Engineer's (USACE) standards. Since construction of the levee, Forsyth has not experienced overland flooding events attributed to river flooding.

Over time, river migration damaged about 350 feet of the levee near the Rosebud County Fairgrounds. The USACE repaired the damage during the winter of 2010 and returned the levee to USACE standards.

Due to changing federal regulations, the USACE determined in 2012 that the levee was deficient in meeting new federal standards and would be decertified. Decertification by USACE, in essence, means that the levee does not legally exist, and that USACE has no responsibility or liability in the event of a levee failure. However, the City of Forsyth entered into an agreement with the USACE to address the deficiencies and reestablish full USACE certification of the levee.

The City of Forsyth has worked with the USACE on a System-wide Improvement Framework (SWIF) for their levee that involves an annual inspection. The city has invested in tree and brush removal, installing culverts, working with every property owner, the levee has been surveyed, and owners have removed anything that infringe. Rosebud County did tree removal and repair of washouts at the far east end of the levee.

In 2016, FEMA informed the City of Forsyth that a flood study must be completed, at the city's expense, within the next 10 years for areas inside the corporate city limits.

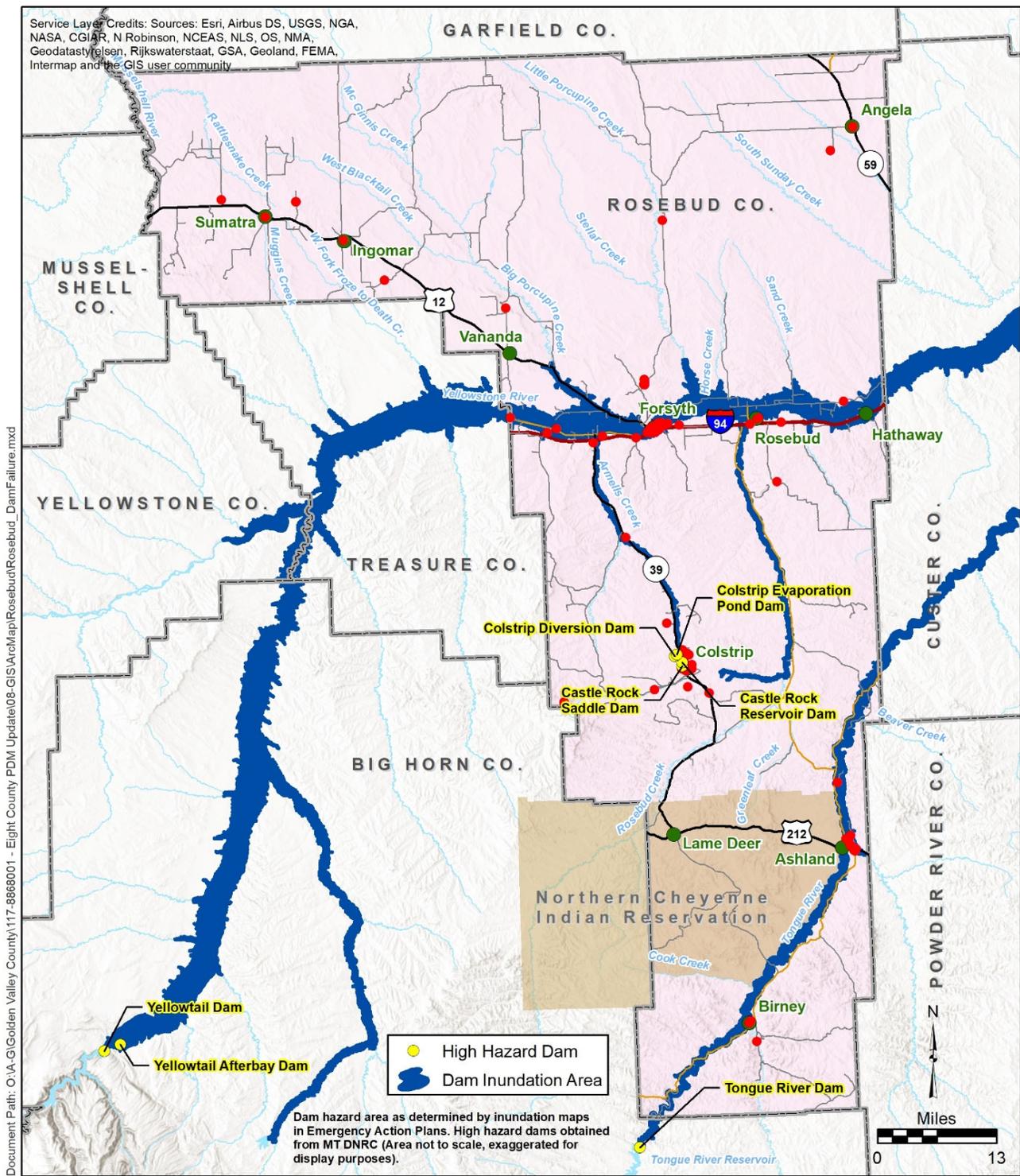
### ***Floodplain and Floodway Management***

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DFIRMs were completed for the Musselshell River along the northwest border of Rosebud County in 2019 and an updated *Flood Insurance Study* for Rosebud County and incorporated areas was released November 15, 2019. According to Montana DNRC, Rosebud County has only updated flood maps for the Musselshell River main stem but DNRC does have high accuracy light detection and ranging (LiDAR) data for the Yellowstone River in Rosebud County.

Rosebud County and the City of Forsyth have been working with FEMA and Montana DNRC to update and produce new floodplain maps for the Yellowstone and Tongue Rivers, several tributaries and all of the existing mapped floodplains in Rosebud County. Updated floodplain maps will depict the latest,

## Section 4: Risk Assessment and Vulnerability Analysis



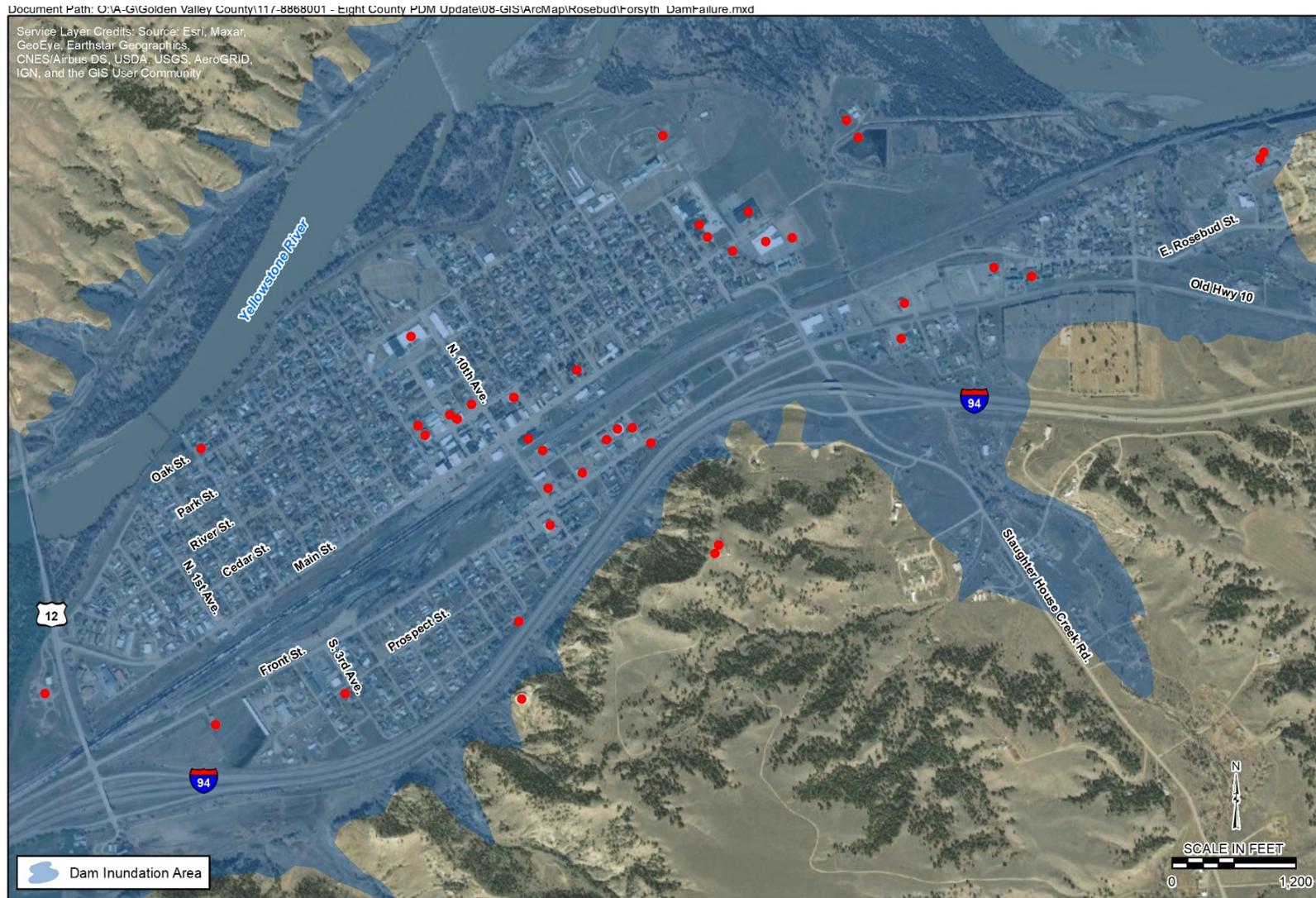
**Legend**

- Critical Facility
- Town
- Interstate
- Primary Road
- Secondary Road
- City-County Road
- ~ Stream
- Lake
- County Boundary
- Northern Cheyenne Indian Reservation

**Figure 7**  
**Dam Failure Hazard Area**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



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Date: 8/13/2021

Legend  
 ● Critical Facility

Figure 7A  
 Dam Failure Hazard Area - Forsyth  
 Rosebud County, Montana  
 Multi-Hazard Mitigation Plan



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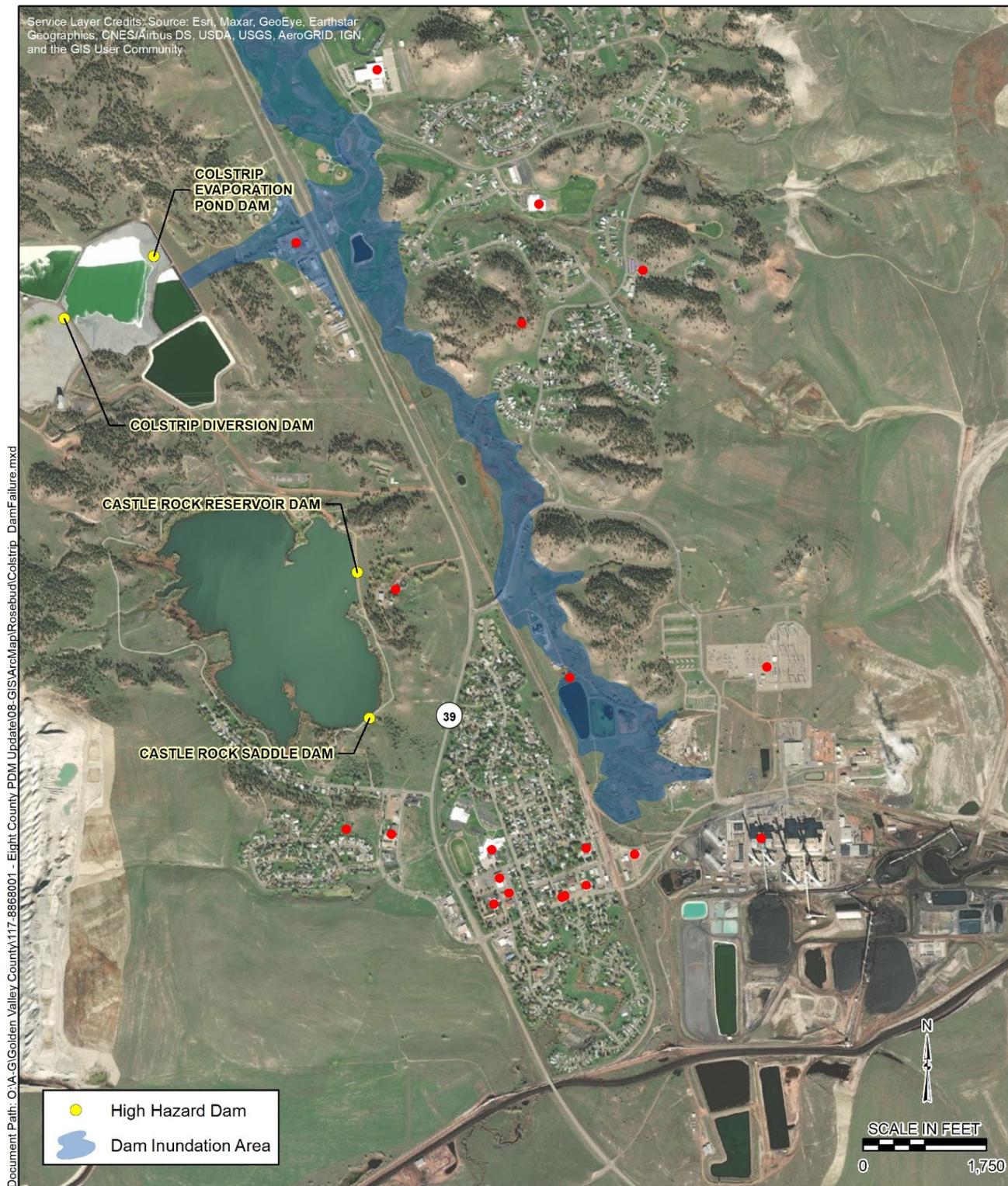


Figure 7B  
**Dam Failure Hazard Area - Colstrip  
 Rosebud County, Montana  
 Multi-Hazard Mitigation Plan**

**Section 4: Risk Assessment and Vulnerability Analysis**



**Figure 7C**  
**Dam Failure Hazard Area - Ashland**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**

## Section 4: Risk Assessment and Vulnerability Analysis

most accurate flood risk data, and will eventually result in updated FEMA floodplain maps. The new floodplain maps won't likely be finalized until 2025.

The National Flood Insurance Program encourages local governments to adopt "sound" floodplain management programs to reduce private and public property losses due to floods. Rosebud County and the City of Forsyth participate in the NFIP. The City of Colstrip does not participate in the NFIP because there is little flood risk and no regulated floodplains. **Table 4.7-6** presents statistics on flood insurance policies and losses.

**Table 4.7-6. National Flood Insurance Program Statistics (through 2/28/2021)**

Jurisdictions	Policies in Force	Insurance in Force	Number of Losses	Total Payments
Rosebud County	3	\$765,000	7	\$6,208
Forsyth, city	6	\$1,643,000	4	\$6,744

Source: FEMA, 2021a. <https://nfipservices.floodsmart.gov/reports-flood-insurance-data>

A repetitive loss property is any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling 10-year period, since 1978. There are no repetitive loss properties in Rosebud County or Forsyth. Severe repetitive loss properties have had at least four NFIP claim payments over \$5,000 each and the cumulative amount exceeding \$20,000; or, where at least two separate claim payments have been made with the cumulative amount exceeding the market value of the building. There are no severe repetitive loss properties in Rosebud County or Forsyth.

The NFIP's Community Rating System (CRS) recognizes community efforts (beyond minimum standards) by reducing flood insurance premiums for the community's property owners. CRS discounts on flood insurance premiums range from 5 percent up to 45 percent. Those discounts provide an incentive for new flood protection activities that can help save lives and property in the event of a flood. To participate in the CRS, a community can choose to undertake some of the 18-public information and floodplain management activities. Based on the total number of points a community earns, the CRS assigns you to one of 10 classes. Your discount on flood insurance premiums is based on your class. Neither Rosebud County nor the City of Forsyth participate in the CRS program.

### *Probability and Magnitude*

Hundreds of floods occur each year, making it one of the most common hazards in the U.S. Floods kill an average of 150 people a year nationwide. Most injuries and deaths occur when people are swept away by flood currents and most property damage results from inundation by sediment-laden water. Faster moving floodwater can wash buildings off their foundations and sweep vehicles downstream. Pipelines, bridges, and other infrastructure can be damaged when high water combines with flood debris. Basement flooding can cause extensive damage to the structure building systems.

Floods with associated property damage in Rosebud County from the SHELDDUS database are presented in **Table 4.7-7**.

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**Table 4.7-7. Flood Events with Damages in Rosebud County**

Month/ Year	Injuries	Fatalities	Property Damage	Crop Damage	Month/ Year	Injuries	Fatalities	Property Damage	Crop Damage
3/1969	0	0	\$6,297	\$0	6/1991	0	0	\$9,671	\$53,190
2/1971	0	0	\$12,509	\$0	7/1993	0	0	\$13,022	\$13,022
6/1972	0	0	\$6,060	\$0	3/1994	0	0	\$22,789	\$22,789
3/1989	0	0	\$6,248	\$0	5/2010	0	0	\$157,054	\$0
8/1990	0	0	\$14,397	\$1,440	5/2011	0	0	\$263,506	\$0
5/1991	0	0	\$1,451	\$0	<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>\$513,003</b>	<b>\$90,441</b>

Source: SHEL DUS, 2017 (adjusted to 2020 dollars). Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from this event.

The flood hazard impact map used for the MHMP analysis, as shown on **Figures 6 through 6C**, was a combination of DFIRM maps available for Rosebud County and a HAZUS model completed by FEMA in 2010. The HAZUS scenario was for a simulated 100-year flood using National Elevation Dataset, a flood frequency discharge table that references a specific discharge per return period for a given point (stream gage derived) and regression equations used between stream gage areas. The results of the vulnerability analysis are presented in **Table 4.7-8**.

**Table 4.7-8. Rosebud County Vulnerability Analysis; Flooding**

Category	Rosebud Co. (balance)	Forsyth (City)	Colstrip (City)
Residential Property Exposure \$	\$10,761,735	\$163,560	\$2,363,085
# Residences at Risk	184	6	50
Commercial, Industrial & Agricultural Property Exposure \$	\$10,544,812	\$0	\$89,315
# Commercial, Industrial & Agricultural Properties at Risk	103	0	1
Critical Facilities Exposure Risk \$	\$11,025,207	\$2,384,938	\$0
# Critical Facilities at Risk	6	2	0
Bridge Exposure \$	\$33,508,345	\$0	\$0
# Bridges at Risk	53	0	0
Persons at Risk	590	12	103
Persons Under 18 at Risk	168	3	29
Persons Over 65 at Risk	97	2	17

The GIS analysis indicates that 110,365 acres in Rosebud County (3.4 percent) are located within the flood hazard area including: 240 residences, 104 critical facilities. The *Flood* section in **Appendix C-4** presents the critical facilities and bridges located in the 100-year flood hazard area.

Based on the frequency of past events, the probability of flooding in Rosebud County is rated as “likely”; an event that occurs less than once per year but more than once every 10 years. MHMP Planning Team members indicated that somewhere in Rosebud County floods every year and ranked the flooding hazard as “highly likely”.

The dam failure hazard impact area is a compilation of inundation area of high hazard dams affecting Rosebud County, as available (**Figures 7 through 7C**). The MHMP analysis used the same methodology as described above under flooding. Results are shown in **Table 4.7-9**.

## Section 4: Risk Assessment and Vulnerability Analysis

**Table 4.7-9. Rosebud County Vulnerability Analysis; Dam Failure**

Category	Rosebud Co. (balance)	Forsyth (City)	Colstrip (City)
Residential Property Exposure \$	\$26,843,281	\$67,067,386	\$0
# Residences at Risk	369	780	0
Commercial, Industrial & Agricultural Property Exposure \$	\$29,872,021	\$12,502,774	\$0
# Commercial, Industrial & Agricultural Properties at Risk	311	63	0
Critical Facilities Exposure Risk \$	\$23,087,767	\$49,796,243	\$200,000
# Critical Facilities at Risk	22	36	1
Bridge Exposure \$	\$41,570,735	\$1,172,736	\$0
# Bridges at Risk	65	1	0
Persons at Risk	1,374	1,794	0
Persons Under 18 at Risk	392	512	0
Persons Over 65 at Risk	226	295	0

The GIS analysis indicates that 104,073 acres in Rosebud County (3.2 percent) are located in the dam inundation hazard area including 1,149 residences, 374 commercial, industrial and agricultural buildings, and 59 critical facilities. The *Dam Failure* section in **Appendix C-4** presents the critical facilities and bridges located in the dam inundation hazard area.

The probability of failure of a high hazard dam impacting Rosebud County was rated as “unlikely” by the MHMP Planning Team.

### *Future Development*

Rosebud County adopted floodplain development regulations that have established a permitting system for development within the 100-year floodplains of local streams. The regulations provide guidance for development in flood-prone areas by restricting uses that are dangerous to public health, safety and property. Floodplain development permits are required for all land use activities such as expansion or alteration of existing structures or facilities, streambank alteration, excavations or fills or utility or road crossings. Uses are delineated as to which uses are permitted, permitted conditionally or prohibited, as outlined in the current floodplain regulations.

Rosebud County Subdivision Regulations indicate that land located in the floodway of a 100-year flood event may not be subdivided for building or residential purposes, or other uses that may increase or aggravate flood hazards. If any portion of a proposed subdivision is within 2,000 horizontal feet and 20 vertical feet of a live stream draining an area of 25 square miles or more, and no official floodway delineation or floodway studies of the stream have been made, the subdivider must furnish survey data to Montana DNRC. Survey data must comply with the Standards for Flood Hazard Evaluations, including the calculated 100-year frequency water surface elevations and/or 100-year floodplain boundaries. This detailed evaluation must be performed by a licensed professional engineer experienced in this field of work. After Montana DNRC has prepared a report delineating the floodway, the subdivider must submit it to the subdivision administrator along with the Environmental Assessment required for the preliminary plat.

## *Section 4: Risk Assessment and Vulnerability Analysis*

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Rosebud County subdivision regulations do not currently prevent new construction in dam inundation areas. There are no disclosure requirements that advise developers what property is at risk from dam failure inundation.

### *Climate Change*

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Many scientists agree that climate change will increase heavy rainfall and storms across the U.S., which will result in elevated water levels that may lead to a higher frequency of flooding. The Montana Climate Assessment (Whitlock C., et.al., 2017) provides a well-referenced discussion on the effects of climate change on flooding, as summarized below.

Across Montana, precipitation is projected to increase in winter, spring, and fall. The largest increases are expected to occur during spring in the southern part of the state. Warming will continue to reduce mountain snowpack, and this could reduce flood risk related to rain-on-snow events by reducing the quantity of water available for release stored as snow. Warming is also likely to increase the amount of winter and spring precipitation that falls as rain (particularly in rain-snow transition zones), which will accelerate snowmelt and could increase flood risk, depending on snowpack, soil moisture, and other conditions. As such, rising temperatures alone will influence flood risk, regardless of trends in precipitation; yet the effects will likely be location- and event-specific and therefore, difficult to predict.

Some research suggests that extreme precipitation events can actually intensify more quickly than what is projected by general circulation models. Additionally, flood risk depends on specific storm characteristics that are difficult to capture in most models. Moreover, the particular effects of projected changes in temperature and precipitation on flood risk will depend on location, elevation, and weather conditions, as well as human practices (Whitlock C., et.al, 2017).

Population, property, and critical facility flood exposure may increase as a result of climate change. Runoff patterns may change resulting in flooding in areas where it has not previously occurred with an increased risk to facilities that have not historically flooded.

The significance of increased flooding is great. Besides impacting communities, destroying homes, and causing deaths, floods can cause drinking water to become contaminated. Floods can also cause hazards such as disease-carrying animals and spills of chemicals or other hazardous materials. Overall, if flooding is to increase from climate change it will also pose risks to people's health and to entire communities.

Small changes in rainfall, runoff, and snowpack conditions may have significant impacts for water resource systems, including dams. Dams are designed partly based on assumptions about a river's flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hydrograph changes, it is conceivable that the dam can lose some or all of its designed margin of safety, also known as freeboard. If freeboard is reduced, dam operators may be forced to release increased volumes earlier in a storm cycle in order to maintain the required margins of safety. Such early releases of increased volumes can increase flood potential downstream.

Dams are constructed with safety features known as "spillways." Spillways are put in place on dams as a safety measure in the event of the reservoir filling too quickly. Spillway overflow events, often referred to as "design failures," result in increased discharges downstream and increased flooding

#### ***Section 4: Risk Assessment and Vulnerability Analysis***

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potential. Although climate change will not increase the probability of catastrophic dam failure, it may increase the probability of design failures.

Population and property exposure to the dam failure hazard are not likely to change significantly as a result of climate change. The potential increase in probability of dam failure would not likely impact additional areas not already identified on inundation maps with the exception of spillway shadows which are not always captured on inundation maps. Dam owners and operators may need to alter maintenance and operations to account for changes in the hydrograph and increased sedimentation.

## 4.8 Structure Fire

CPRI SCORE =3.35

### Description and History

Structure fires are usually individual disasters and not community-wide events; however, the potential exists for widespread structure fires that displace businesses and families. Urban blocks, commercial structures, and apartment buildings are especially vulnerable. **Table 4.8-1** presents statistics on structure fires in Rosebud County from 2010 through 2020. This data, from the State Fire Marshal, represents those fires where the state participated in the investigation of causes. Local fire department statistics concurs with the data presented in the table below. Over the past 18 years (2002 – 2020), the City of Forsyth responded to 7 fires in dwellings, 2 in mobile homes, and 6 at storage units.

**Table 4.8-1. Rosebud County Structure Fire Statistics; 2010 - 2020**

Property Type	Fires	Fire Fighter Deaths	Fire Fighter Injuries	Civilian Deaths	Civilian Injuries	Property Loss
Dwellings	4	0	0	0	0	Not Reported
Mobile Homes	4	0	0	0	0	Not Reported
<b>Total Residential</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	Not Reported
Education	1	0	0	0	0	\$500,000
Stores, Offices	2	0	0	0	0	\$50,000
<b>Total Commercial</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$550,000</b>
Storage	6	0	0	0	0	Not Reported
<b>Total Industrial</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	Not Reported
<b>TOTALS</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$550,000</b>

Source: Montana Department of Justice, State Fire Marshal, 2021

Fire protection services are provided by several entities in Rosebud County. These organizations include the Rosebud County Fire Department and the Ashland, Colstrip, and Forsyth volunteer fire departments. There is no structure fire protection outside the city limits of the incorporated cities in Rosebud County. If a structure fire were to occur outside the city limits, Rosebud County Fire would request mutual aid from one of the incorporated cities to fight the structure fire.

The City of Colstrip maintains an active fire department with the latest equipment and training, as well as an adequate water infrastructure and supply to service the community of Colstrip. In a recent ISO evaluation (late summer/early fall 2020), Colstrip received an excellent Public Protection Classification grade which evaluated needed fire flows, emergency communications, fire department, and water supply. ISO is an independent company that serves insurance companies, communities, fire departments, insurance regulators and others by providing information about risk.

### Vulnerability and Area of Impact

Although structure fires are usually individual disasters and not community-wide ones, the potential exists for widespread structure fires that displace several businesses or families. Communities with buildings relatively close together are especially vulnerable. Fires that rage uncontrollably despite firefighting efforts and burn several structures or an important community facility could have significant economic and quality of life impacts. Strong winds common to the area are known to carry fire easily. Large fires of this nature have also been known to require significant community

## Section 4: Risk Assessment and Vulnerability Analysis

resources if lives are lost. Additionally, gases from heating fuels can build up in a structure, causing an explosion and subsequent fire.

Smoke detectors, automatic fire alarm systems, automatic sprinkler systems, fire doors, and fire extinguishers can all prevent deaths, injuries, and damages from fire. Automatic sprinkler systems are especially important in preventing a small fire from becoming a conflagration.

Based on review of historic structure fire data and consultation with the State Fire Marshal, the entire project area has been classified with a uniform risk for structure fire since vulnerable structures are not restricted to a specific area within the county. Structure fires have resulted in over half a million dollars in property loss over the past 10 years. **Table 4.8-2** present annual loss calculations for the structure fire hazard.

**Table 4.8-2. Rosebud County Structure Fire Annual Loss**

No. of Events	Period of Record (Yrs)	Frequency	Property Damage	Magnitude	Exposure	Annual Loss
17	10	1.7	\$550,000	0.005507%	\$587,442,731	\$55,000

### *Probability and Hazard Magnitude*

History has shown that structure fires are a serious concern in Forsyth. The losses, primarily covered by insurance, have not resulted in a federal disaster declaration, but have resulted in other negative impacts such as economic losses for the area. Structures lacking automatic sprinkler systems have a greater probability of a major structure fire. It should be noted that there have been significant improvements in fighting structure fires due to trained personnel and better equipment.

With 17 structure fires in the 10-year period of record, the probability of this hazard occurring in the future is rated as “highly likely”.

### *Future Development*

It is state law that commercial buildings be equipped with automatic fire sprinklers; however, there are no requirements for residential structures. The Cities of Forsyth and Colstrip have adopted the 2012 Fire Code which is a comprehensive code including regulations governing the safeguarding of life and property from all types of fire and explosions hazards. Topics include general precautions against fire, emergency planning and preparedness, fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, hazardous materials storage and use, and fire safety requirements for new and existing buildings and premises.

### *Climate Change*

Climate change is not anticipated to directly impact the structure fire hazard.

## 4.9 Hazardous Material Incidents and Transportation Accidents

CPRI SCORES:  
 HIGHWAY ACCIDENTS = 2.85  
 RAILROAD ACCIDENTS = 2.75  
 HAZ-MAT INCIDENTS = 2.60  
 AIRCRAFT ACCIDENTS = 2.40  
 PIPELINE SPILLS = 1.85

### Description and History

Hazardous material incidents in Rosebud County are rare but when they do happen, are often associated with the county’s highways, railroads, and/or pipelines. Hazardous material incidents also occur at fixed facilities which in Rosebud County include bulk propane and agricultural chemical distributors, gas stations, power plants, and/or mining-related facilities. Transportation accidents can occur on the highways, railroad, or in the air and often result in fatalities and injuries but rarely in property loss unless hazardous materials are involved. Because of the potential for future incidents involving hazardous materials on the transportation corridors in Rosebud County these two hazards are profiled together.

### Hazardous Material Incidents

A hazardous material release is the contamination of the environment (i.e. air, water, soil) by any material that because of its quantity, concentration, or physical or chemical characteristics threatens human health, the environment, or property. Hazardous materials, including petroleum products and chemicals, are commonly stored and used in Rosebud County and are regularly transported via the region’s roadways, railroads, and through pipelines. A release of hazardous materials from both fixed and transportation incidents pose possible threats involving emergency response. Hazards range from small spills on roadways to major releases from railways or pipeline spills that contaminate land and water.

The Cenex Pipeline LLC carries product through Rosebud County. The pipeline operators periodically conduct liaison activities with emergency response organizations to establish and maintain a mutual understanding regarding cooperation and coordination of response efforts. *Pipeline Emergency Response Guidelines* include responsibilities for 911 Centers and Pipeline Control Centers, Pipeline Operators, Emergency Responders, and Incident Commander/ Pipeline Operator’s Representative.

Hazardous material incidents in Rosebud County have mostly been minor. Records of hazardous material events from 1990 to 2020, available from the National Response Center database, are summarized in **Table 4.9-1**.

**Table 4.9-1. Rosebud County Hazardous Material Incidents; 1990 - 2020**

Incident Date	Type of Incident	Incident Cause	Location	Nearest City	Quantity Spilled/ Material Name	Responsible Party
3/29/1993	Railroad	Unknown	Not Reported	Rosebud	0.13 gal Crude Oil	Chevron USA
3/29/1993	Railroad	Unknown	Not Reported	Rosebud	2500 gal Diesel	Burlington Northern Rr
9/29/1993	Fixed	Other	Not Reported	Colstrip	1 gal PCBs	Western Energy Co.
10/10/1994	Pipeline	Equipment Failure	Not Reported	Millstone	300 barrels Salt Water	Samson Resources Co.
12/9/1994	Pipeline	Equipment Failure	Samson Resources	Milltown	60 barrels Crude Oil	Samson Resources Co.
9/21/1995	Vessel	Equipment Failure	Yellowstone River	Forsyth	10 gal Hydraulic Oil	Montana Power Co
9/25/1995	Fixed	Operator Error	Willow Ave	Colstrip	1,000 gal Fuel Oil #2	Dixon Brothers
9/27/1995	Fixed	Equipment Failure	Willow Ave	Colstrip	75 gal Transformer Oil	Montana Power Co
10/1/1996	Vessel	Equipment Failure	Yellowstone River	Forsyth	4 gal Hydraulic Oil	Montana Power Co
9/30/1996	Vessel	Equipment Failure	Yellowstone River	Forsyth	4 gal Hydraulic Oil	Montana Power Co
1/10/1997	Railroad	Unknown	Forsyth Yard	Forsyth	100 gal Diesel	Burlington Northern
3/4/1997	Pipeline	Operator Error	4th Street	Lame Deer	460 gal Gasoline	Cheyenne Depot Store

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**Table 4.9-1. Rosebud County Hazardous Material Incidents; 1990 - 2020**

Incident Date	Type of Incident	Incident Cause	Location	Nearest City	Quantity Spilled/ Material Name	Responsible Party
9/8/1997	Fixed	Unknown	Colstrip Project	Colstrip	4,800 gal Sulfuric Acid	Montana Power Co
2/24/1998	Fixed	Other	Castle Rock Lake	Colstrip	Motor Oil	Montana Power Co
8/27/1998	Fixed	Operator Error	Units 3 and 4	Colstrip	500 gal Fuel Oil #2	Unknown
4/27/1999	Fixed	Equipment Failure	W Treatment Plant	Colstrip	Chlorine	Montana Power Co
9/26/1999	Fixed	Other	Unit 1	Colstrip	Transformer Oil	Montana Power Co
1/20/2000	Continuous	Other	Big Sky Mine	Coal Strip	Unknown	Big Sky Coal Company
2/20/2001	Fixed	Other	Big Sky Mine	Colstrip	627 lbs. Nitrogen Dioxide	Peabody Group
3/18/2002	Continuous	Other	The Big Sky Mine	Colstrip	Unknown	Peabody Group
12/2/2002	Mobile	Transport Accident	Rosebud Exit, I-94		Propane	Genex Harvest States
12/8/2005	Mobile	Nat. Phenomenon	Westbound I-94	Forsyth	60 gal Fuel Oil #2	Interstate Brands Corp.
9/3/2006	Mobile	Operator Error	Westbound I-94	Forsyth	Unknown	Tri-State Motor Transit
6/18/2007	Pipeline	Equipment Failure			4 barrels Crude Oil	Whiting Petroleum Corp.
4/11/2008	Mobile	Operator Error	Grebe Road	Sumatra	10 barrels Crude Oil	CHS Transportation
7/7/2008	Railroad	Derailment	Mile Post 128.9	Forsyth	Diesel	BNSF Railroad
2/24/2012	Pipeline	Equipment Failure	10 Miles West	Forsyth	Diesel	Genex Pipeline
2/22/2012	Storage Tank	Other	Big Sky Mine	Lame Deer	75 gal Diesel	Northern Cheyenne
12/12/2013	Mobile	Operator Error	Big Sky Mine	Rosebud	100 gal Diesel	Landstar Trucking
5/31/2014	Storage Tank	Operator Error	Big Sky Mine	Colstrip	72 gal Diesel	PPL Montana LLC
5/11/2018	Fixed	Unknown	Rosebud Exit, I-94	Hathaway	100 gal Lubricating Oil	Unknown

Source: National Response Center, 2021 (<http://www.nrc.uscg.mil/FOIAfiles>)

The Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted in 1986 to inform communities and citizens of chemical hazards in their areas. Sections 311 and 312 of EPCRA require businesses to report the locations and quantities of chemicals stored on-site to state and local governments in order to help communities prepare to respond to chemical spills and similar emergencies. EPCRA Section 313 requires the U.S. Environmental Protection Agency (EPA) and the states to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities and make the data available to the public in the Toxics Release Inventory (TRI). In 1990 Congress passed the Pollution Prevention Act which required that additional data on waste management and source reduction activities be reported under TRI. The goal of TRI is to empower citizens, through information, to hold companies and local governments accountable in terms of how toxic chemicals are managed. Two active TRI facilities are located in Rosebud County (**Table 4.9-2**).

**Table 4.9-2 – Toxic Release Inventory – Total Aggregate Releases; Rosebud County**

Facility Name & Address	Total On-site Disposal (pounds)	Total Off-site Disposal (pounds)	Total On- and Offsite Disposal (pounds)
<b>Colstrip Energy LP Rosebud Power Plant, 18 Snider Subdivision, Rd., Colstrip, MT</b>			
2019	163,799	0	163,799
2018	161,203	0	161,203
Chemicals: Barium, Chromium, Copper, Dioxin, Hydrogen Fluoride, Lead, Manganese, Mercury, Vanadium, Zinc			
<b>Colstrip Steam Electric Station, Willow Ave., Colstrip, MT</b>			
2019	12,743,169	31,802	12,774,971
2018	7,116,974	40,006	7,156,980
Chemicals, Antimony Compounds, Arsenic Compounds, Barium Compounds, Benzo (G,H,I) Perylene, Beryllium Compounds, Bromine, Chromium Compounds, Cobalt Compounds, Copper Compounds, Dichloromethane, Dioxin, Ethylbenzene, Ethylene Glycol, Hexachlorobenzene, Hydrochloric Acid, Hydrogen Fluoride, Lead Compounds, Manganese Compounds, Mercury Compounds, Naphthalene, Nickel Compounds, Polycyclic Aromatic Compounds, Selenium Compounds, Sulfuric Acid, Thallium Compounds, Vanadium Compounds, Zinc Compounds			

Source: EPA, 2021; ([http://www.epa.gov/enviro/html/tris/tris\\_query.html](http://www.epa.gov/enviro/html/tris/tris_query.html))



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Submission of Tier II forms are is required under Section 312 of the EPCRA. The purpose of this form is to provide State, local officials, and the public with specific information on potential hazards. This includes the locations, as well as the amount, of hazardous chemicals present at the facility during the previous calendar year. Facilities in Rosebud County that have Tier II reporting requirements are shown in **Table 4.9-3**.

**Table 4.9-3. Rosebud County Tier II Hazardous Material Reporters**

Facility Name	Location
Colstrip Propane Bulk Tank	Colstrip
Talen MT LLC, Colstrip Steam Electric Station	Colstrip
Forsyth Propane	Forsyth
Forsyth Lubes	Forsyth
Hathaway Propane Bulk Tank	Hathaway
CM Federal 34-30 Tank	Rosebud County

Source: Rosebud County DES, 2021

The source and location of transportation accidents vary but the response is typically the same. Response is focused on determining the presence of hazardous materials and then assisting the injured. The regional hazardous-material response team closest to Rosebud County is positioned in Billings.

There have been no federal or state disaster declarations associated with hazardous material incidents in Rosebud County.

### Highway Accidents

Car crashes occur in every community across the nation and can be devastating to families, friends, and communities. It is estimated that vehicle crashes cost the State approximately \$595 million in wage loss, medical expenses, insurance administration, and property damage. This figure does not account for the indirect costs of human suffering and loss resulting from these tragedies. Vehicular accidents occur for a number of reasons including distracted drivers, driver fatigue, drunk driving, speeding, aggressive driving, and weather. In Montana vehicle collisions with wildlife are a common occurrence.

Statistics on highway accidents in Rosebud County over the most recent 10 year period are presented in **Table 4.9-4**. Information is not available on whether these incidents involved a haz-mat response.

**Table 4.9-4. Vehicular Crash Data in Rosebud County; 2009 - 2018**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	TOTAL
<b>All Crashes</b>											
Fatal Crash	12	2	6	8	5	4	4	7	3	7	<b>46</b>
Serious Injury Crash	10	11	20	18	14	10	8	10	5	7	<b>103</b>
Total # of Crashes	275	280	283	241	229	240	249	190	224	254	<b>2,190</b>
<b>Rural Roadway Crashes</b>											
Fatal Crash	12	2	6	8	5	4	4	7	3	7	<b>46</b>
Serious Injury Crash	9	10	20	18	14	9	7	10	5	7	<b>100</b>
Total # of Crashes	194	233	224	217	190	205	229	175	207	247	<b>1,927</b>
<b>Animal Involved Crashes</b>											
Fatal Crash	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Serious Injury Crash	0	0	2	0	1	1	1	0	0	0	<b>5</b>
Total # of Crashes	55	46	67	56	32	33	58	51	80	70	<b>493</b>

Source: Montana Dept. of Transportation, 2021 (<http://www.mdt.mt.gov/publications/datastats/crashdata.shtml>).



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There is no history of a mass casualty accident in Rosebud County involving a school bus or tour bus; however, school events use bus transport during winter months when severe weather can pose an extreme risk.

### Railroad Accidents

According to the National Transportation Safety Board (NTSB), 60 percent of all railroad accidents occur at unprotected or passive crossings. There has been one fatality and nine injuries at railroad crossings in Rosebud County in the past 45 years, as shown in **Table 4.9-5**.

**Table 4.9-5. Rosebud County Accidents at Railroad Crossings: 1975 – 2020**

Date	Nearest Town/ RR Station	Road	Road Type	Fatalities	Injuries	Crossing Protection
3/23/1975	Forsyth	10th Street Crossing	Public	.	1	Cross bucks
5/11/1975	Forsyth	Private Farm Crossin	Private	.	.	None
6/12/1975	Forsyth	Montana FAS 315	Public	1	2	Cross bucks
9/12/1975	Colstrip	Main Street Crossing	Public	.	1	Cross bucks
3/18/1979	Colstrip	Main St	Public	.	2	Cross bucks
7/26/1982	Not Reported	Private Crossing	Private	.	1	None
4/23/1988	Forsyth	10th St Forsyth	Public	.	1	Gates
7/29/2010	Nichols	Private	Private	.	1	Stop signs
<b>TOTAL</b>				<b>1</b>	<b>9</b>	

Source: Federal Railroad Administration, 2021;

<http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/gxrabbr.aspx>

Federal Railroad Administration data indicates that that between 1975 and 2020, forty (40) railroad accidents occurred in Rosebud County. Two incidents had derailed cars carrying hazardous materials (**Table 4.9-6**). These railcars were not damaged, and no hazardous materials were released.

**Table 4.9-6. Rosebud County Railroad Accidents; 1975 - 2020**

Date	Nearest Town	Injuries	Fatalities	Cars Carrying Haz-Mat	Haz-Mat Cars Damaged	Comments
3/29/1975	Carterville	0	0	0	0	2 railcars derailed.
6/1/1975	Forsyth	0	0	0	0	3 railcars derailed.
6/2/1975	Dowlin	0	0	0	0	10 railcars derailed.
7/5/1975	Colstrip	0	0	0	0	16 railcars derailed.
1/5/1976	Flynn	1	0	0	0	7 railcars derailed.
8/2/1976	Not Reported	0	0	0	0	12 railcars derailed.
8/12/1976	Rosebud	0	0	0	0	0 railcars derailed.
9/1/1976	Nichols	0	0	0	0	13 railcars derailed.
10/24/1976	Cow Creek	0	0	0	0	2 railcars derailed.
3/30/1977	Cow Creek	0	0	0	0	8 railcars derailed.
8/17/1977	Forsyth	0	0	0	0	6 railcars derailed.
10/16/1977	Colstrip	0	0	0	0	18 railcars derailed.
11/27/1977	Forsyth	0	0	0	0	6 railcars derailed.
2/11/1978	Rosebud	0	0	0	0	2 engines & 38 cars derailed.
3/1/1978	Cow Creek	0	0	0	0	No railcars derailed.
11/18/1978	Vananda	0	0	0	0	1 railcars derailed.
11/28/1977	Hathaway	0	0	0	0	8 railcars derailed.
2/5/1979	Forsyth	0	0	0	0	1 engine & 2 cars derailed.
3/12/1979	Joppa	0	0	0	0	2 engines & 32 cars derailed.
4/8/1979	Joppa	0	0	0	0	13 railcars derailed.
7/22/1979	Flynn	0	0	0	0	5 railcars derailed.
6/14/1980	Flynn	0	0	0	0	33 railcars derailed.



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**Table 4.9-6. Rosebud County Railroad Accidents; 1975 - 2020**

Date	Nearest Town	Injuries	Fatalities	Cars Carrying Haz-Mat	Haz-Mat Cars Damaged	Comments
10/1/1980	Forsyth	0	0	0	0	2 railcars derailed.
10/17/1980	Colstrip	0	0	0	0	3 railcars derailed.
10/22/1980	Forsyth	0	0	0	0	1 railcar derailed.
1/17/1982	Forsyth	0	0	0	0	9 railcars derailed.
7/26/1982	Nichols	1	0	0	0	1 engine & 7 cars derailed.
8/28/1984	Forsyth	0	0	0	0	4 railcars derailed.
4/8/1987	Finch	0	0	0	0	13 railcars derailed.
6/5/1988	Flynn	0	0	0	0	16 railcars derailed.
6/22/1988	Colstrip	0	0	0	0	25 railcars derailed.
5/27/1989	Forsyth	0	0	0	0	5 railcars derailed.
2/2/1991	Forsyth	0	0	0	0	4 railcars derailed.
2/3/1993	Forsyth	0	0	0	0	3 railcars derailed.
3/29/1993	Rosebud	0	0	0	0	2 engines & 4 railcars derailed
11/1/1995	Hathaway	0	0	0	0	1 railcar derailed.
2/26/1998	Hathaway	0	0	0	0	1 railcar derailed.
8/1/2006	Forsyth	0	0	2	0	3 cars derailed. No HM released
10/17/2007	Nichols	0	0	0	0	3 railcars derailed.
7/7/2008	Forsyth	0	0	0	0	1 engine & 10 railcars derailed
<b>TOTAL</b>		<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	

Source: Federal Railroad Administration, 2021;

<http://safetydata.fra.dot.gov/OfficeofSafety/publicsite/Query/incabbr.aspx>

The Burlington Northern and Santa Fe Railroad runs east-west through Rosebud County and moves large volumes of coal and freight through the area. Ninety percent of these commodities are shipped out of state. Derailment of coal cars into waterways could cause environmental damage. MHMP Planning Team members recalled that the railroad had dumped a whole load of coal in Rosebud in around 2000.

Oil trains also pass through Rosebud County, but the number is down since the Bakken Oil Field decline. Oil trains are a constant concern because of the catastrophic impacts that could result from a derailment that ruptures an oil tanker in town or into waterways.

### Aircraft Accidents

Airports serving small private and charter aircraft are located in Forsyth, Colstrip, and Ashland. Firefighting aircraft utilize these airports during suppression efforts, as needed. Aviation accidents can occur for a multitude of reasons from mechanical failure to poor weather conditions to pilot error. They usually don't involve a hazardous material release but are often fatal to the occupants. Federal Aviation Administration (FAA) database listings for aircraft accidents in Rosebud County are presented in **Table 4.9-7**. There have been seven aircraft accident fatalities since 1985 in Rosebud County.

**Table 4.9-7. Rosebud County Aircraft Accidents**

Date	Location	Aircraft Make	Fatalities	Date	Location	Aircraft Make	Fatalities
2/22/1964	Forsyth	BEECHCRAFT C35	Fatal(2)	6/9/1976	Forsyth	PIPER PA-25	Nonfatal
11/16/1964	Ashland	CESSNA 172	Nonfatal	12/18/1976	Ashland	CESSNA 170A	Nonfatal
1/26/1969	Ingomar	PIPER PA-11	Fatal(2)	1/21/1977	Ingomar	PIPER PA-18	Nonfatal
6/28/1969	Forsyth	PIPER PA-22	Nonfatal	10/2/1977	Forsyth	BELLANCA 8KCAB	Nonfatal
7/22/1969	Birney	CESSNA 180	Nonfatal	4/14/1983	Ashland	CESSNA 182P	Nonfatal
1/5/1970	Ashland	CESSNA 180E	Nonfatal	7/17/1983	Forsyth	CESSNA 182	Nonfatal
2/7/1971	Forsyth	BEECH B-95	Nonfatal	7/4/1986	Ashland	PIPER J-3	Nonfatal
3/16/1972	Ashland	CESSNA 150J	Nonfatal	7/28/1988	Forsyth	PIPER PA-18	Nonfatal
7/28/1973	Birney	PIPER PA-22	Nonfatal	4/8/1990	Forsyth	PIPER PA-28-140	Nonfatal
11/18/1973	Forsyth	CESSNA 172H	Nonfatal	2/2/1991	Colstrip	CESSNA C-172	Fatal(2)
3/9/1974	Colstrip	FLY BABY HUEY	Fatal(1)	4/22/1998	Colstrip	ERCOUPE 415-D	Nonfatal
3/10/1976	Ashland,	PIPER PA-11	Nonfatal	<b>TOTAL</b>			<b>7 Fatalities</b>

Source: FAA, 2021; [https://www.nts.gov/ layouts/nts.aviation/](https://www.nts.gov/layouts/nts.aviation/)

Rosebud County is within a military operations area called the Powder River Training Complex, located in the southern portion of the county towards the Tongue River Reservoir. The U.S. Air Force training complex occupies 35,000-square miles in the Dakotas, Montana and Wyoming. Exercises involve various detection-evading stealth aircraft flying over at low altitudes. The training missions bring increasing noise levels through the training complex. Military aircraft are only allowed to train over a 10- to 15- day period each year, during which time commercial aircraft are restricted during the training held for a couple of hours each day. (Rapid City Journal, *Air Force Plans Large Exercise July 19-23 at Powder River Training Complex*, July 6, 2021).

***Vulnerability and Area of Impact***

The potential for a hazardous material accident in Rosebud County is present, in part due to the number of semi-trucks and trailers using highways and roads in the county, the railroad transporting coal, oil and chemicals, and the petroleum pipelines.

Use of hazardous materials at fixed facilities is also present at various locations throughout the county. Industries in Rosebud County that utilize hazardous materials and petroleum products consist of several large coal mines and two active power generating plants. These facilities operate in compliance with state and federal regulations but have the potential for hazardous material spills. Although there is no history of significant hazardous material incidents in Rosebud County, the potential is present.

The volume and type of hazardous materials that flow into, are stored, and flow through communities will determine exposure to a potential release of hazardous materials. An accidental or intentional release of materials could produce a health hazard to those in the immediate area, downwind, and/or downstream.

Privately-owned vehicles provide transportation for individuals in Rosebud County using the state highway systems as well as county and private roads. Trucks and trailers carry interstate and intrastate cargo. Highway accidents caused by severe weather and high speeds occur frequently.

Railroad related hazards such as derailments, toxic spill contamination, and vehicle collisions are a threat to Rosebud County residents. According to the NTSB, more than 80 percent of public railroad

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crossings do not have lights and gates, and 60 percent of all railroad accidents occur at these unprotected crossings.

Pipeline spills can cause considerable environmental damage. Bank erosion associated with river crossings can make a pipeline more vulnerable to damage. MHMP Planning Team members recalled a pipeline spill in about 2013. Reportedly, 12,000 gallons of diesel spilled. Further details were not available.

### Probability and Magnitude

Rosebud County is vulnerable to all types of hazardous material and transportation accident emergencies. The major effects of these incidents are loss of life or injury, environmental degradation, and economic impact. It is not common for structural loss to be a consequence.

According to the U.S. Department of Transportation, Office of Hazardous Materials Safety, three hazardous material releases are reported with damages in Rosebud County: two highway and one railroad incident (**Table 4.9-8**).

**Table 4.9-8. Rosebud County Hazardous Material Incidents with Damages**

Date	Location	Carrier	Quantity Released	Commodity Released	Damages	Mode of Transport
6/25/1997	Colstrip	Montana Power Company	100 gallons	Diesel Fuel	\$843	Highway
8/21/1999	Forsyth	BNSF	4 gallons	Denatured Alcohol	\$1,005	Railroad
11/17/2010	Rosebud	Stewart	unknown	Diesel Fuel	\$160,000	Highway
TOTAL					<b>\$161,848</b>	

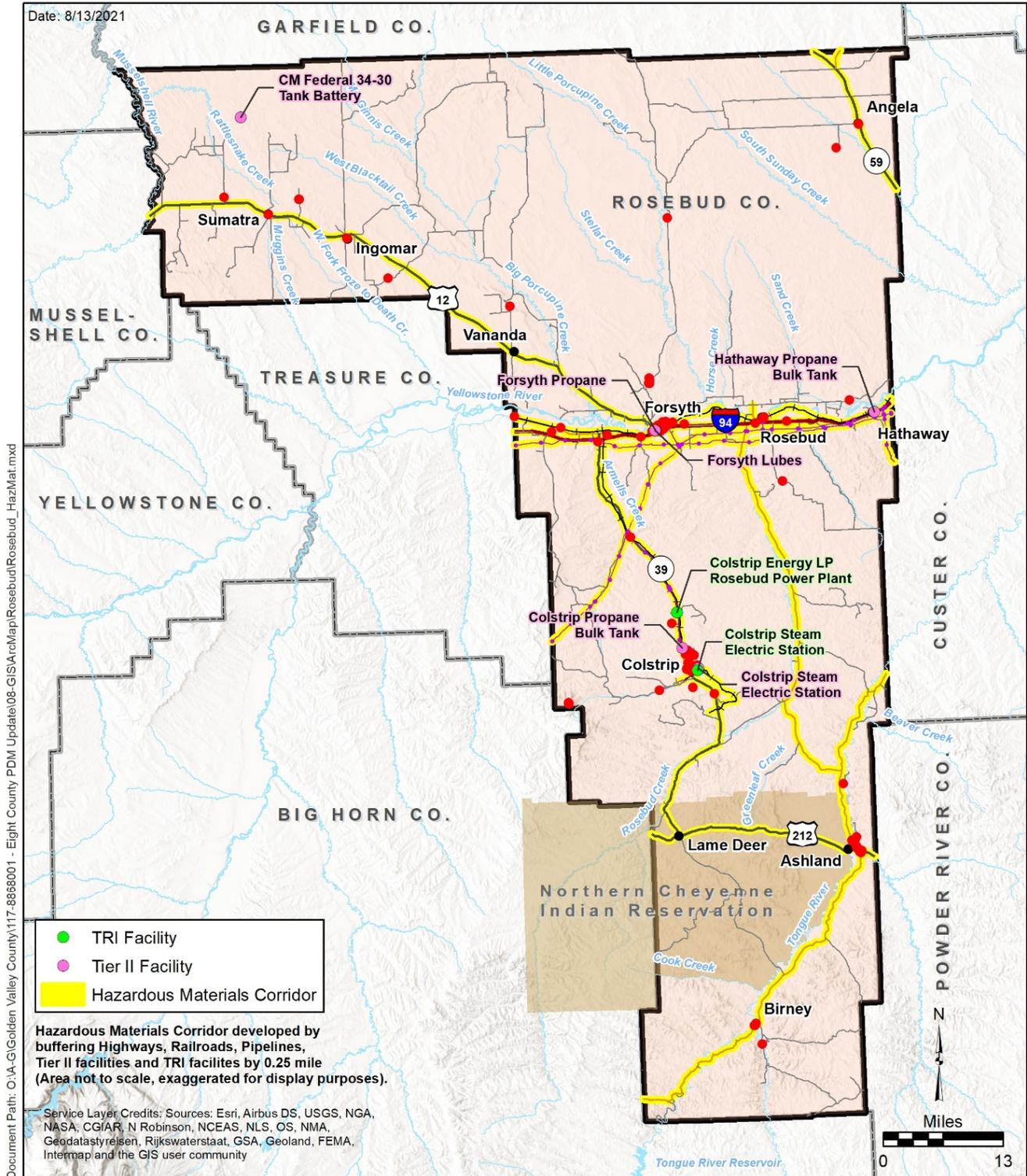
Source: U.S. Dept. Transportation, 2021; <https://portal.phmsa.dot.gov/analytics>

To model the spatial distribution of hazardous material incident risk a GIS layer of transportation arteries was used, which included highways, major roadways, railroads, and pipelines. Fixed facilities, including TRI and Tier II sites, were added to this layer and it was then buffered by 0.25 miles. **Figures 8 through 8C** present the hazardous material buffer used for the MHMP analysis in Rosebud County, Forsyth, Colstrip, and Ashland, respectively, and the vulnerability of critical facilities. **Table 4.9-9** presents the results of the vulnerability analysis.

**Table 4.9-9. Rosebud County Vulnerability Analysis – Haz-Mat Incidents**

Category	Rosebud Co. (balance)	Forsyth (city)	Colstrip (city)
Residential Property Exposure \$	\$14,718,576	\$67,067,386	\$83,833,878
# Residences at Risk	241	780	823
Commercial/Ag & Industrial Property Exposure \$	\$35,827,230	\$12,502,774	\$10,446,709
# Commercial/Ag & Industrial Properties at Risk	273	63	36
Critical Facilities Exposure Risk \$	\$24,772,382	\$33,914,788	\$56,308,882
# Critical Facilities at Risk	33	33	14
Bridge Exposure \$	\$70,013,549	\$1,172,736	\$0
# Bridges at Risk	109	1	0
Persons at Risk	911	1,794	2,295
Persons Under 18 at Risk	259	512	655
Persons Over 65 at Risk	149	295	377

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**Figure 8**  
**Hazardous Material and Transportation Buffer**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



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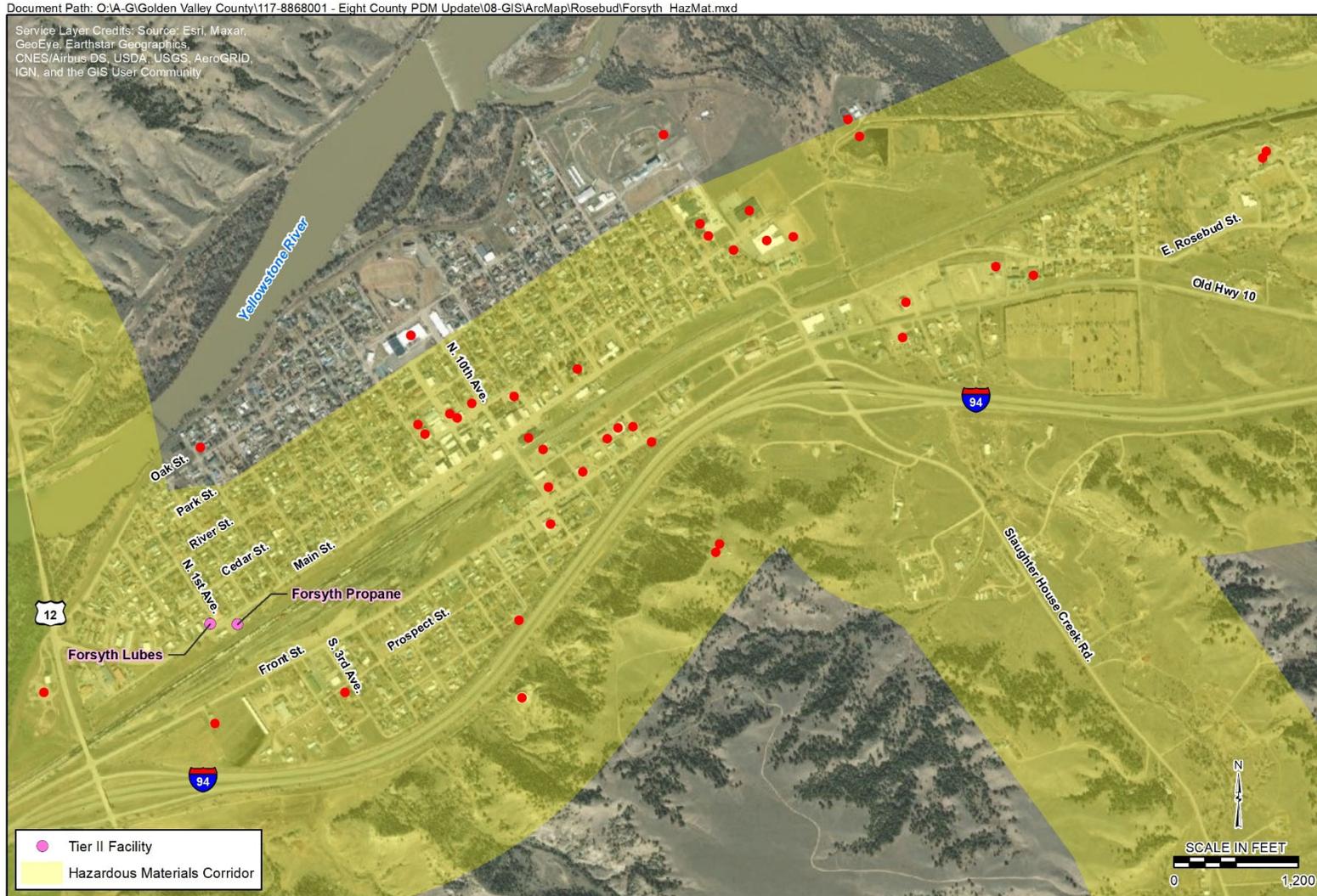
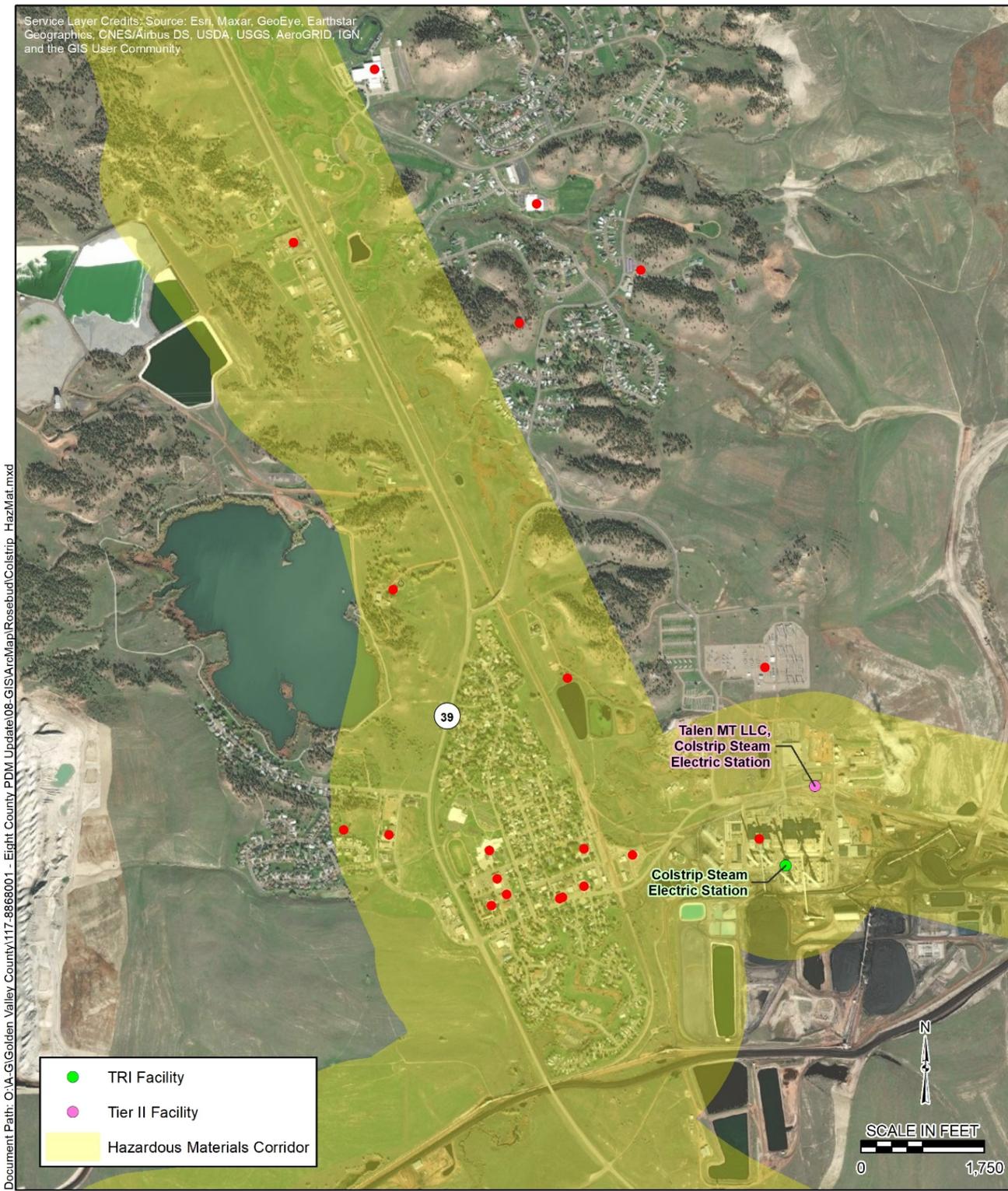


Figure 8A  
**Hazardous Material and  
 Transportation Buffer - Forsyth  
 Rosebud County, Montana  
 Multi-Hazard Mitigation Plan**

Legend  
 ● Critical Facility

**Section 4: Risk Assessment and Vulnerability Analysis**



**Figure 8B**  
**Hazardous Material and**  
**Transportation Buffer - Colstrip**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**

**Legend**  
 ● Critical Facility

**Section 4: Risk Assessment and Vulnerability Analysis**



**Figure 8C**  
**Hazardous Material and Transportation Buffer - Ashland Rosebud County, Montana Multi-Hazard Mitigation Plan**

## ***Section 4: Risk Assessment and Vulnerability Analysis***

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The GIS analysis indicates that there are over 145,709 acres in Rosebud County (4.5 percent) in the hazardous material buffer including 1,844 residences, 372 commercial/agricultural and industrial buildings, and 80 critical facilities. The *Hazardous Material Incident* section in **Appendix C-4** lists the critical facilities and bridges within the hazardous material transportation buffer.

The history of hazardous material incidents in Rosebud County indicates 31 minor events over the past 30 years. As such, the probability of future events is rated as “highly likely”; an event that happens more than once a year. The magnitude of any hazardous material event would depend on the amount and material spilled. The MHMP Planning Team rated the hazardous material incident hazard as “highly likely”, the railroad accident hazard as “possible” and the probability of a pipeline spill as “possible”.

Rosebud County is vulnerable to vehicular accidents. A mass casualty incident involving a school bus is also a possibility and a concern since remote locations have limited resources making response time slow which could delay treatment of the injured. In the past 10 years, there have been 2,190 motor vehicle accidents in Rosebud County, including 46 crashes involving fatalities and 103 crashes resulting in severe injuries. Therefore, the probability of highway accidents is rated as “highly likely”.

The MHMP Planning Team rated the probability of railroad accidents with impacts as “possible”, an event that occurs less than once each decade. In the past 45 year, forty (40) railroad derailments have occurred with only two involving railcars with hazardous materials. In addition, there were eight accidents at railroad crossings involving one fatality and 9 injuries.

Seven fatalities have occurred in Rosebud County from aircraft accidents over the past 57 years resulting in a hazard ranking of “likely”, an event that occurs more than once a decade but not every year. The MHMP Planning Team ranked the aircraft accident hazard as “possible”.

### ***Future Development***

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Rosebud County has no land use regulations that specifically restrict building around industrial facilities or along transportation routes or in the vicinity of facilities that store hazardous materials or petroleum products. However, impacts to public health and safety are considered for all new subdivisions.

### ***Climate Change***

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Hazardous material incidents and transportation accidents are not expected to increase as a result of climate change. No increase in exposure or vulnerability to the population, property, or critical facilities are expected to occur. Climate change is not anticipated to directly impact the transportation accident hazard. Secondary impacts to public health may result due to increased smoke from wildfire activity which may increase highway accidents.

## 4.10 Risk Assessment Summary

This section summarizes the results of the individual risk assessments presented under the hazard profiles. There have been no repetitive loss properties due to flooding in Rosebud County, Forsyth, or Colstrip. Neither Rosebud County nor the incorporated communities have had repetitive loss properties associated with other hazards.

### Composite Hazard Map and Future Development

Growth policies for Rosebud County (2019), the City of Forsyth (2016) and the City of Colstrip (2019) were reviewed for potential future development projects. The MHMP Planning Team also weighed in on future development projects that had the potential to be constructed in the next five years. **Figures 9, 9A, 9B, and 9C** present composite of hazard prone areas in Rosebud County, Forsyth, Colstrip, and Ashland, respectively, with the location of future development projects shown. The composite hazard map is an overlay of the impact areas for wildfire, flooding, dam failure, and hazardous material incidents/transportation accidents. **Table 4.10-1** indicates which hazards each of the future development areas are exposed to.

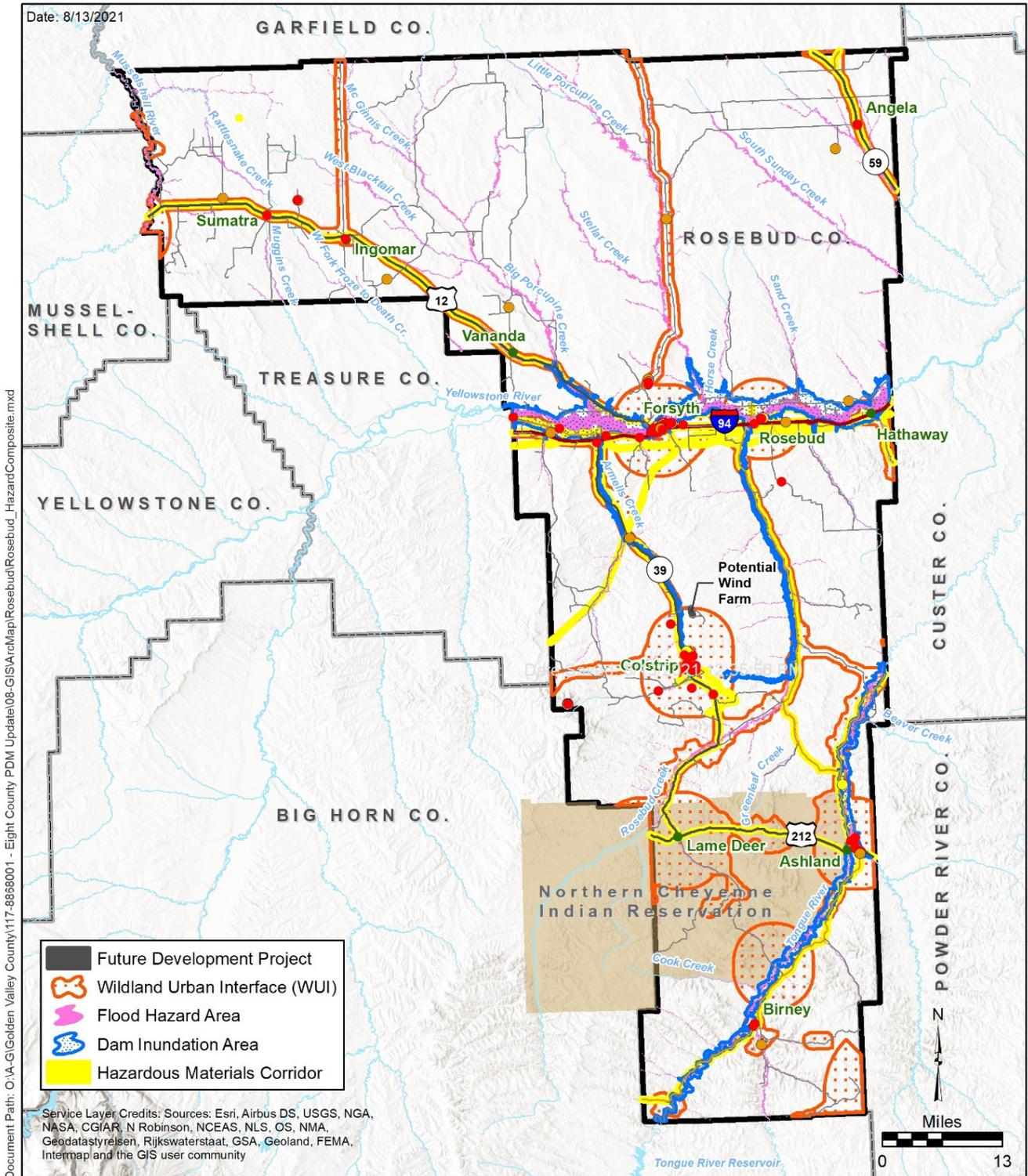
**Table 4.10-1. Future Development Summary**

Proposed Project	Hazard Areas							
	Wildfire	Drought	Severe Summer Weather	Com. Disease	Severe Winter Weather	Flooding & Dam Failure	Structure Fire	Haz-Mat & Transp. Accidents
Wind Farm north of Colstrip	Yes	Yes	Yes	Yes	Yes	No	Yes	No

### Vulnerability Analysis - Loss Estimation Summary

Estimating potential losses and calculating risk requires evaluating where hazard areas and vulnerabilities to them coincide, how frequently the hazards occur, and then estimating the magnitude of damage resulting from a hazard event. Rather than estimating loss, a vulnerability assessment was completed which estimates building stock exposure. *Section 4.1* presents the methodology for the vulnerability assessment completed for the 2021 MHMP. **Tables 4.10-2 through 4.10-4** present the results of the vulnerability assessment for each hazard for residential and commercial/industrial/agricultural structures, critical facilities, bridges, and population in Rosebud County, Forsyth, and Colstrip, respectively. **Appendix C-4** contains supporting information.

## Section 4: Risk Assessment and Vulnerability Analysis



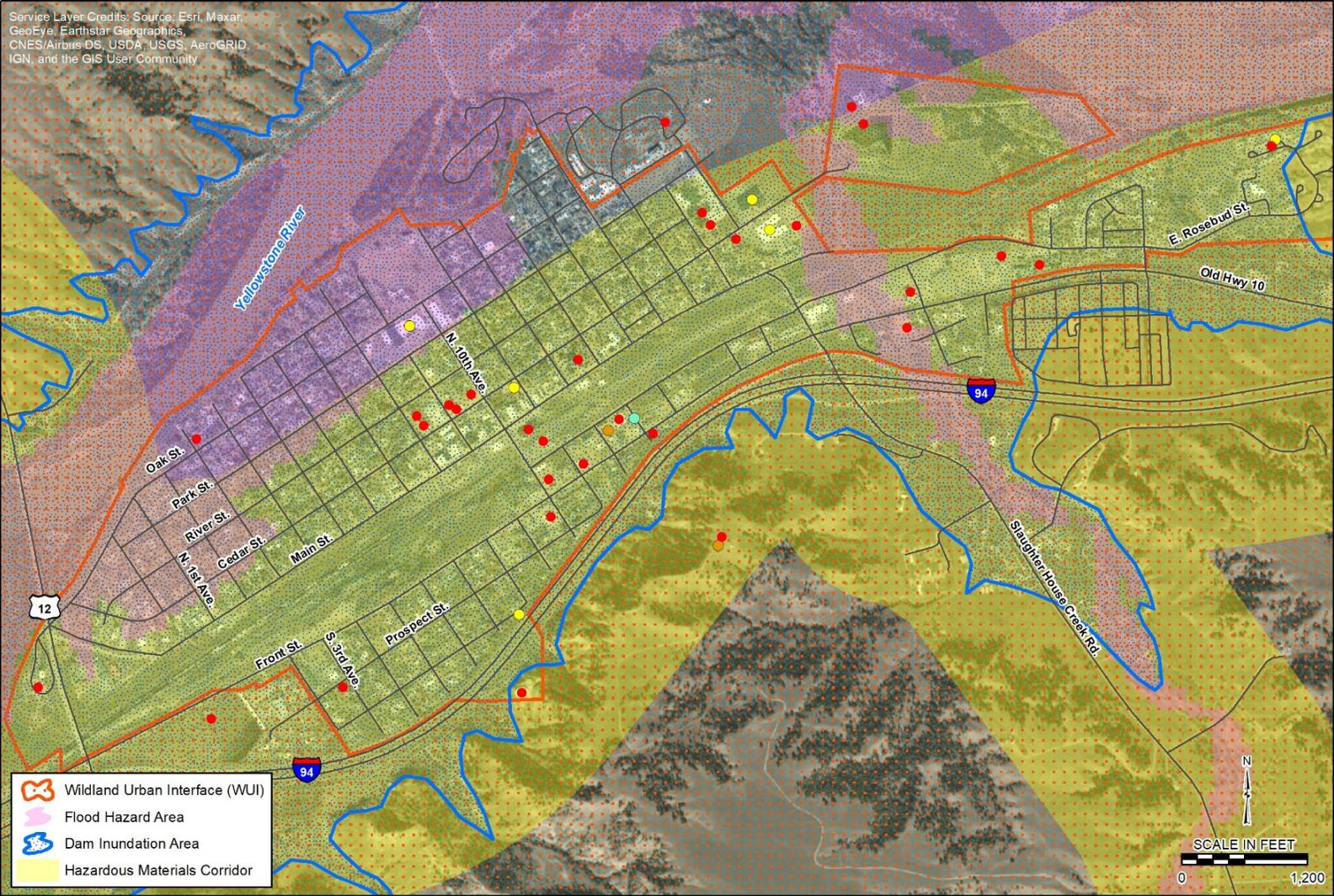
**Figure 9**  
**Hazard Composite**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



Section 4: Risk Assessment and Vulnerability Analysis

Document Path: O:\A-G\Golden Valley County\117-8868001 - Eight County PDM Update\08-GIS\ArcMap\Rosebud\Forsyth\_HazardComposite.mxd

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



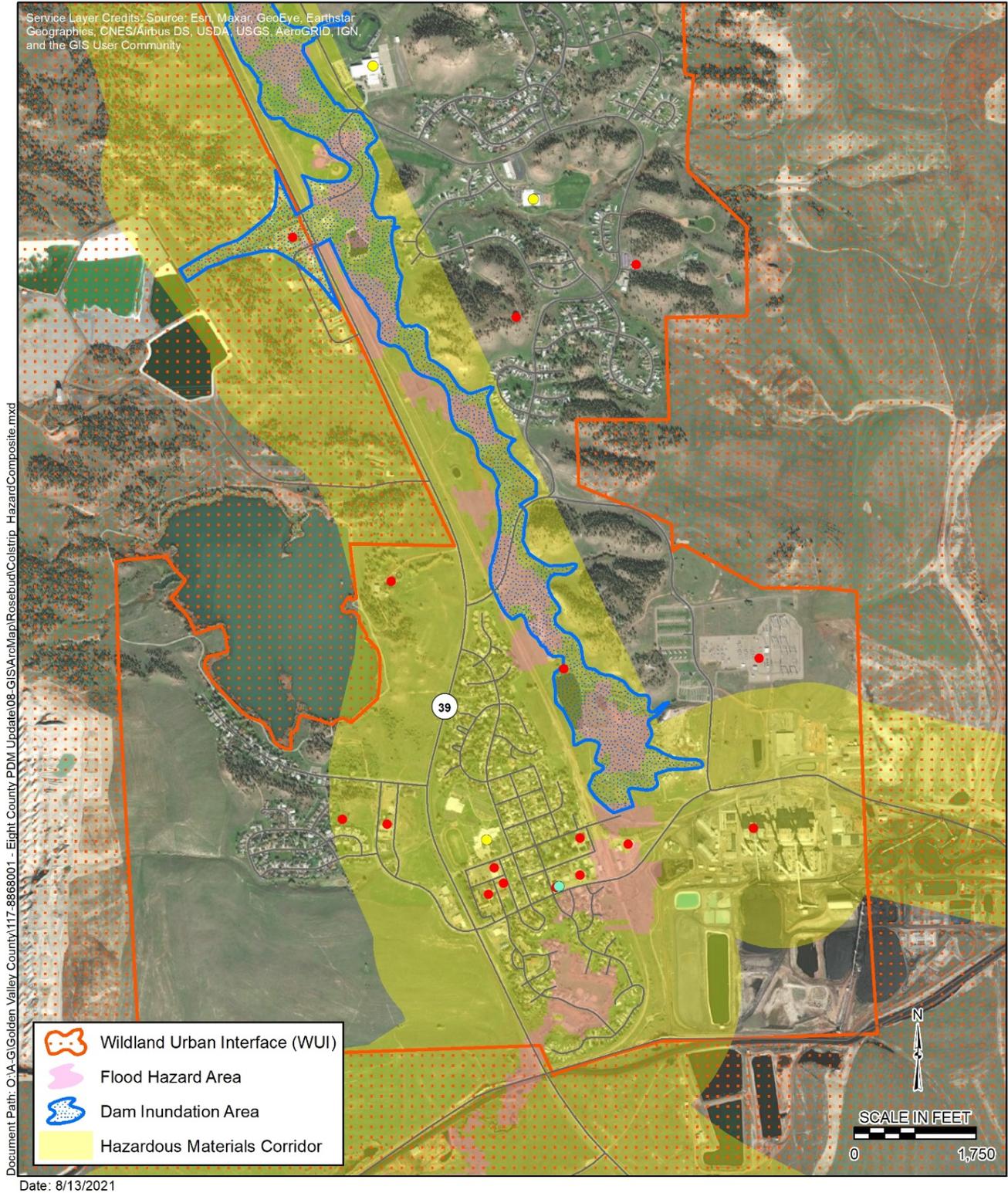
Date: 8/13/2021

- Legend**
- Critical Facility
  - Cell Tower
  - Vulnerable Population
  - Dispatch

**Figure 9A**  
**Hazard Composite - Forsyth**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**



## Section 4: Risk Assessment and Vulnerability Analysis

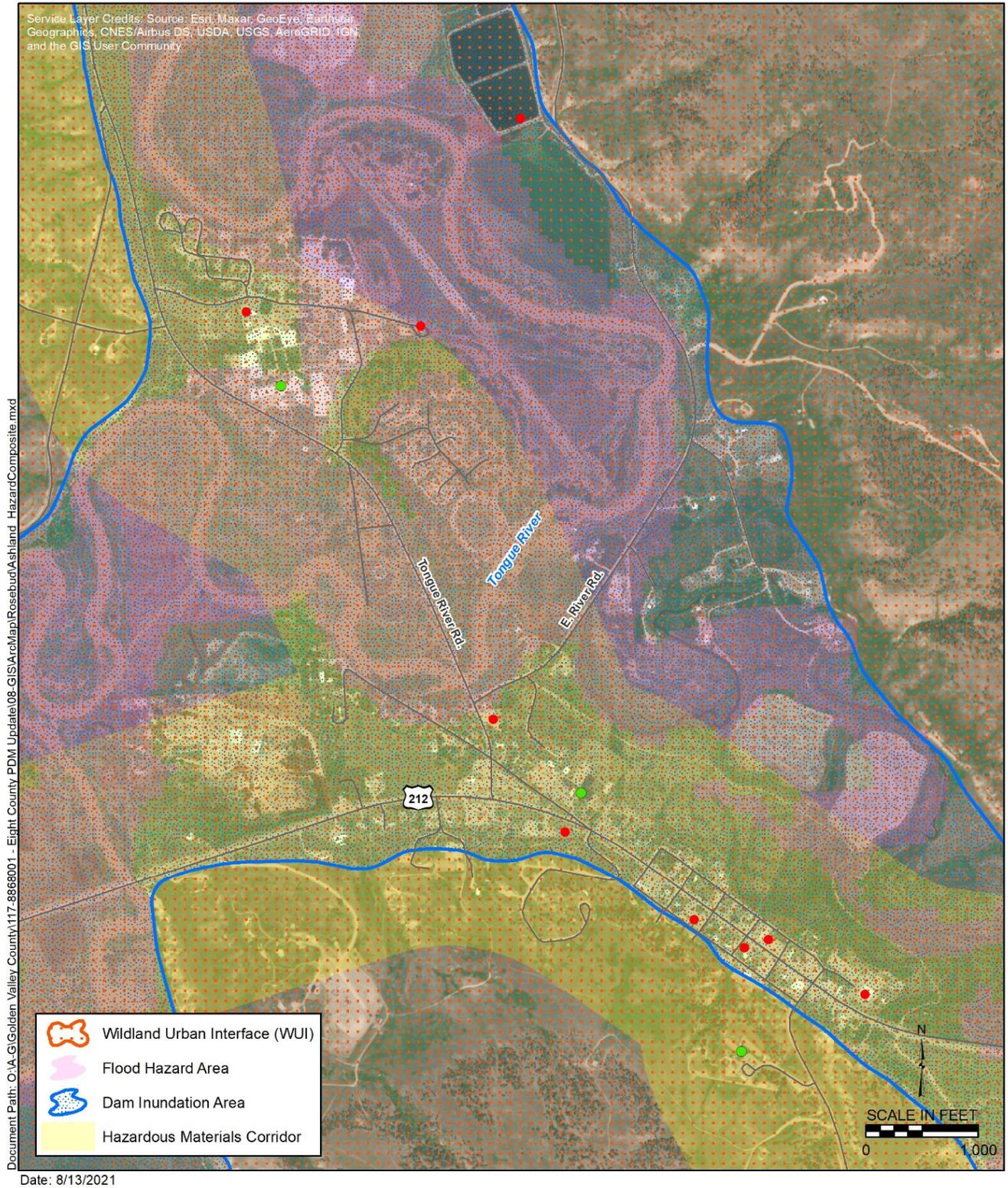


### Legend

- Critical Facility
- Cell Tower
- Vulnerable Population
- Dispatch

**Figure 9B**  
**Hazard Composite - Colstrip**  
**Rosebud County, Montana**  
**Multi-Hazard Mitigation Plan**

Section 4: Risk Assessment and Vulnerability Analysis



Legend

- Critical Facility
- Vulnerable Population

Figure 9C  
**Hazard Composite - Ashland  
 Rosebud County, Montana  
 Multi-Hazard Mitigation Plan**

Table 4.10-2. Hazard Vulnerability Summary; Rosebud County (balance)

Hazard	Residential Building Stock - \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock - \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Bridge Exposure \$	# Bridges in Hazard Area	Persons in Hazard Area	Under 18 in Hazard Area	Over 65 in Hazard Area
Wildfire	\$146,677,782	1452	\$66,651,842	513	\$41,717,433	51	\$70,360,547	114	3996	1139	656
Drought	\$152,615,476	1,518	\$100,203,956	856	\$43,441,433	65	\$75,871,071	131	4,839	1,379	795
Severe Summer Weather	\$152,615,476	1,518	\$100,203,956	856	\$43,441,433	65	\$75,871,071	131	4,839	1,379	795
Communicable Disease	\$152,615,476	1,518	\$100,203,956	856	\$43,441,433	65	\$75,871,071	131	4,839	1,379	795
Severe Winter Weather	\$152,615,476	1,518	\$100,203,956	856	\$43,441,433	65	\$75,871,071	131	4,839	1,379	795
Flooding	\$10,761,735	184	\$10,544,812	103	\$11,025,207	6	\$33,508,345	53	590	168	97
Dam Failure	\$26,843,281	369	\$29,872,021	311	\$23,087,767	22	\$41,570,735	65	1,374	392	226
Structure Fire	\$152,615,476	1,518	\$100,203,956	856	\$43,441,433	65	\$75,871,071	131	4,839	1,379	795
Hazardous Material Incidents & Transportation Accidents	\$14,718,576	241	\$35,827,230	273	\$24,772,382	33	\$70,013,549	109	911	259	149

Table 4.10-3. Hazard Vulnerability Summary; City of Forsyth

Hazard	Residential Building Stock - \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock - \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Bridge Exposure \$	# Bridges in Hazard Area	Persons in Hazard Area	Under 18 in Hazard Area	Over 65 in Hazard Area
Wildfire	\$0	0	\$0	0	\$0	0	\$0	0	0	0	0
Drought	\$67,067,386	780	\$12,502,774	63	\$50,693,243	37	\$1,172,736	1	1,794	512	295
Severe Summer Weather	\$67,067,386	780	\$12,502,774	63	\$50,693,243	37	\$1,172,736	1	1,794	512	295
Communicable Disease	\$67,067,386	780	\$12,502,774	63	\$50,693,243	37	\$1,172,736	1	1,794	512	295
Severe Winter Weather	\$67,067,386	780	\$12,502,774	63	\$50,693,243	37	\$1,172,736	1	1,794	512	295
Flooding	\$163,560	6	\$0	0	\$2,384,938	2	\$0	0	12	3	2.0
Dam Failure	\$67,067,386	780	\$12,502,774	63	\$49,796,243	36	\$1,172,736	1	1,794	512	295
Structure Fire	\$67,067,386	780	\$12,502,774	63	\$50,693,243	37	\$1,172,736	1	1,794	512	295
Hazardous Material Incidents & Transportation Accidents	\$67,067,386	780	\$12,502,774	63	\$33,914,788	33	\$1,172,736	1	1,794	512	295

Table 4.10-4. Hazard Vulnerability Summary; City of Colstrip

Hazard	Residential Building Stock - \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock - \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Bridge Exposure \$	# Bridges in Hazard Area	Persons in Hazard Area	Under 18 in Hazard Area	Over 65 in Hazard Area
Wildfire	\$0	0	\$0	0	\$0	0	\$0	0	0	0	0
Drought	\$83,833,878	823	\$10,446,709	36	\$66,637,876	19	\$0	0	2,295	655	377
Severe Summer Weather	\$83,833,878	823	\$10,446,709	36	\$66,637,876	19	\$0	0	2,295	655	377
Communicable Disease	\$83,833,878	823	\$10,446,709	36	\$66,637,876	19	\$0	0	2,295	655	377
Severe Winter Weather	\$83,833,878	823	\$10,446,709	36	\$66,637,876	19	\$0	0	2,295	655	377
Flooding	\$2,363,085	50	\$89,315	1	\$0	0	\$0	0	103	29	17
Dam Failure	\$0	0	\$0	0	\$200,000	1	\$0	0	0	0	0
Structure Fire	\$83,833,878	823	\$10,446,709	36	\$66,637,876	19	\$0	0	2,295	655	377
Hazardous Material Incidents & Transportation Accidents	\$83,833,878	823	\$10,446,709	36	\$56,308,882	14	\$0	0	2,295	6,55	377

## SECTION 5. MITIGATION STRATEGIES

This section presents mitigation actions for Rosebud County, the cities of Forsyth and Colstrip to reduce potential exposure and losses from natural, man-made, and technological hazards. The MHMP Planning Team reviewed the Risk Assessment and Vulnerability Analysis to identify and develop the mitigation actions comprising the Rosebud County mitigation strategy.

This section includes:

1. Background and Past Mitigation Accomplishments
2. General Mitigation Planning Approach
3. Mitigation Goals and Objectives
4. Capability Assessment
5. Mitigation Strategy Development

**Hazard mitigation** reduces the potential impacts of, and costs associated with, emergency and disaster-related events.

Mitigation actions address a range of impacts, including impacts on the population, property, the economy, and the environment.

**Mitigation actions** can include activities such as: revisions to land-use planning, training and education, and structural and nonstructural safety measures.

### 5.1 Background and Past Mitigation Accomplishments

In accordance with DMA 2000 requirements, a discussion regarding past mitigation activities and an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this Plan. Rosebud County, through previous and ongoing hazard mitigation activities, has demonstrated that it is pro-active in protecting its physical assets and citizens against losses from natural hazards. Completed and ongoing projects since the 2013 PDM Plan was adopted include the following:

#### Wildfire

- Fuel reduction has been completed at the East Rosebud Fishing Access site by Montana Fish, Wildlife and Parks who came in during the winter and cleared trees.
- Coordination meetings are held each spring between the county, U.S. Forest Service, and BLM to discuss the upcoming fire season.
- Rosebud County utilizes the “Fire Programs” software which allows for effective tracking, management and reporting of wildland fire incidents.
- Rosebud County subdivision regulations were updated in 2018 to include state wildfire standards.
- Wildfire mitigation information is posted on the county’s website with links provided to additional information.

#### Flooding

- The City of Forsyth has been working with the USACE on a System-wide Improvement Framework and their levee is inspected annually. The city has invested in tree and brush removal, installing culverts, working with every property owner, the levee has been surveyed, and property owners have removed items that infringe. Rosebud County did tree removal and repair of a washout at the far east end of the levee.

### **Structure Fire**

- The Forsyth, Colstrip, and Ashland Fire Depts. conduct active fire drills in the school with smoke machines and discuss prevention.

### **Severe Winter Weather**

- Reflective address signs at driveways are about 10 percent complete in the county and have been promoted through 911 and 4-H/Boy Scout fundraisers.

### **All Hazards**

- Colstrip and Forsyth have purchased generators for their lift stations.
- Forsyth has two sirens which are tested monthly. Colstrip has four sirens that are also tested monthly in conjunction with sirens at the power plant.
- Backup generators have been obtained for Rosebud County EMS/DES and Colstrip law enforcement.
- Forsyth and Colstrip update building codes each time new ones are released by the state.
- A fireproof shed was built for the backup generator and radio tower site in Ashland in 2015.
- The Little Wolf and Treasure County repeaters were upgraded in 2015.
- The radio tower at the Sheriff's office in Forsyth was replaced in 2017.
- Rosebud County implemented an enhanced 911 system in 2018.

## **5.2 General Mitigation Planning Approach**

The overall approach used to update the Rosebud County mitigation strategy was based on FEMA guidance regarding local mitigation plan development, including:

- DMA 2000 regulations, specifically 44 CFR 201.6 (local mitigation planning)
- FEMA "Local Mitigation Planning Handbook", March 2013
- FEMA "Integrating Hazard Mitigation into Local Planning", March 2013
- Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3)
- FEMA "Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards", January 2013

The mitigation strategy approach includes the following steps that are further detailed in later sections of this Plan:

- Review and update mitigation goals and objectives.
- Identify mitigation capabilities and evaluate their capacity and effectiveness to mitigate and manage hazard risk.
- Identify past and ongoing mitigation activities throughout the county.
- Identify appropriate county and local mitigation strategies to address the regions risk to natural and man-made hazards.
- Prepare an implementation strategy, including the prioritization of projects in the mitigation strategy.

### 5.3 Mitigation Goals and Objectives

This section documents the efforts to develop hazard mitigation goals and objectives established to reduce or avoid long-term vulnerabilities to the identified hazards.

According to CFR 201.6(c)(3)(i): “The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.” For the purposes of this plan, goals are defined as follows:

**Goals** are general guidelines that explain what is to be achieved. They are usually broad, long-term, policy-type statements and represent global visions. Goals help define the benefits that the plan is trying to achieve. The success of the plan, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).

The 2013 Rosebud County PDM Plan had three goals; two were specific to mitigating hazards in each city (Forsyth and Colstrip), and one was specific to mitigating hazards in the county, as follows:

- Goal 1: Mitigate natural hazards to reduce the potential for property loss or damage, injury and loss of life in the City of Colstrip.
- Goal 2: Mitigate natural hazards to reduce the potential for property loss or damage, injury, and loss of life in the City of Forsyth.
- Goal 3: Mitigate natural hazards to reduce the potential for property loss or damage, injury, and loss of life in the unincorporated areas of Rosebud County.

The methodology for the 2021 MHMP update was to establish a goal for each hazard, as prioritized by the MHMP Planning Team, followed by an All Hazard goal.

FEMA defines Objectives as strategies or implementation steps to attain mitigation goals. Unlike goals, objectives are specific and measurable, where feasible. Objectives for the 2021 Rosebud County MHMP were consistent with FEMA’s “Local Mitigation Planning Handbook, March 2013” guidelines (see Section 5.5.1) as either: Public Education and Awareness, Property Protection, Prevention, Structural, Natural Resource Protection, or Emergency Services, with an objective added for Planning/Analysis/Mapping projects. Goal and objectives for the 2021 Rosebud County MHMP are presented in **Table 5.3-1**.

**Table 5.3-1. Summary of Goals and Objectives**

Goal #	Goal Statement	Objective #	2021 Goal/Objective Statement
1	Reduce Impacts from Wildfire	1.1	Implement Property Protection Projects to Reduce Impacts from Wildfire
		1.2	Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Wildfire
		1.3	Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire
		1.4	Implement Prevent Projects to Reduce Impacts from Wildfire
		1.5	Enhance Emergency Service Capabilities to Reduce Impacts from Wildfire

**Table 5.3-1. Summary of Goals and Objectives**

Goal #	Goal Statement	Objective #	2021 Goal/Objective Statement
2	Reduce Impacts from Drought	2.1	Implement Public Education and Awareness Projects to Reduce Impacts from Drought
		2.2	Implement Structural Projects to Reduce Impacts from Drought
		2.3	Implement Prevention Projects to Reduce Impacts from Drought
		2.4	Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Drought
3	Reduce Impacts from Severe Summer Weather	3.1	Implement Prevention Projects to Reduce Impacts from Severe Summer Weather
		3.2	Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather
		3.3	Enhance Emergency Service Capabilities to Reduce Impacts from Severe Summer Weather
		3.4	Implement Property Protection Projects to Reduce Impacts from Severe Summer Weather
4	Reduce Impacts from Communicable Disease	4.1	Implement Prevention Projects to Reduce Impacts from Communicable Disease
		4.2	Implement Public Education and Awareness Projects to Reduce Impacts from Communicable Disease
		4.3	Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease
5	Reduce Impacts from Severe Winter Weather	5.1	Enhance Emergency Service Capabilities to Reduce Impacts from Severe Winter Weather
		5.2	Implement Public Education and Awareness to Reduce Impacts from Severe Winter Weather
6	Reduce Impacts from Flooding & Dam Failure	6.1	Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure
		6.2	Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure
		6.3	Implement Property Protection Projects to Reduce Impacts from Flooding and Dam Failure
		6.4	Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure
7	Reduce Impacts from Structure Fire	7.1	Implement Public Education and Awareness Projects to Reduce Impacts from Structure Fire
		7.2	Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire
8	Reduce Impacts Hazardous Material Incidents and Transportation Accidents	8.1	Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents
9	Reduce Impacts from All Hazards	9.1	Enhance Emergency Service Capabilities to Mitigate Impacts from All Hazards
		9.2	Implement Prevention Projects to Reduce Impacts from All Hazards
		9.3	Implement Public Education & Awareness Projects to Reduce Impacts from All Hazards

## 5.4 Capability Assessment

Goals and objectives used to mitigate natural and technological hazards build on the community’s existing capabilities. Rosebud County’s capabilities to support and implement mitigation projects include the programs and resources of various local, regional, state, and federal partners and the administrative and technical capabilities of county and city staff who implement the legal and

regulatory requirements used to manage growth (zoning, building codes, subdivision regulations, and floodplain ordinances).

It is recognized that there are many organizations with responsibilities and resources that will coordinate and aid Rosebud County with mitigation and emergency response. Many of those contacts and resources have provided help in the past and through this plan and its implementation will be identified for further integration. Those contacts and organizations include:

- U.S. Dept. of Homeland Security - FEMA
- U.S. Bureau of Indian Affairs
- U.S. Environmental Protection Agency, Region 8
- U.S. Forest Service
- U.S. Geological Survey
- Bureau of Land Management
- National Weather Service, Billings Station
- Montana Bureau of Mines and Geology
- Montana Disaster and Emergency Services
- Montana Dept. of Environmental Quality
- Montana Dept. of Natural Resources and Conservation
- Montana Dept. of Public Health and Human Services
- Montana Dept. of Transportation
- Montana State Historic Preservation Office
- Private Businesses

These agencies have provided key funding, emergency response, and/or technical assistance in dealing with various hazard events in order to develop further capabilities. Rosebud County will work towards establishing mitigation actions and emergency services through inter-governmental agreements, memorandums of understandings/agreements and other formal relationships to produce a higher level of cooperation and coordination between government and organizations for the benefit of the health and safety of their citizens and property protection.

Rosebud County's hazard mitigation capabilities are summarized below. These resources have the responsibility to provide overview of past, current, and ongoing pre- and post-disaster mitigation projects including capital improvement programs, wildfire mitigation programs, stormwater management programs, and NFIP compliance projects. The fiscal capabilities of the Rosebud County, Forsyth, and Colstrip to support hazard mitigation and provide the funding to implement the mitigation strategy outlined in the MHMP.

### 5.4.1 Summary of Programs and Resources Available to Support Mitigation

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Several FEMA programs support mitigation efforts in Rosebud County, as described below.

#### *National Flood Insurance Program*

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The NFIP is aimed at reducing the impact of flooding on private and public structures. This is achieved by providing affordable insurance for property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. Overall, the program reduces the socio-economic impact of

disasters by promoting the purchase and retention of Risk Insurance in general, and NFIP in particular.

**NFIP Community Rating System**

As an additional component of the NFIP, the Community Rating System is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance. Rosebud County does not currently participate in the CRS program.

**5.4.2 Administrative and Technical Capabilities**

Rosebud County’s administrative and technical capabilities to implement mitigation projects include emergency managers, contract engineers, floodplain managers, and financial, legal and regulatory requirements. Expertise from local and regional planning partners also contribute to mitigation capabilities for Rosebud County, the Cities of Forsyth and Colstrip. **Table 5.4-1** summarizes capabilities of the jurisdictions adopting this MHMP to accomplish hazard mitigation. *Section 3.7* provides additional discussion on many of these policies.

**Table 5.4-1. Capability Assessment Summary**

Capability	Rosebud County	City of Forsyth	City of Colstrip
Population (est.)	9,800	1,750	2,300
<b>Policies and Programs</b>			
Growth Policy that Supports Hazard Mitigation	Yes	Yes	Yes
Subdivision Regulations that Support Hazard Mitigation	Yes	Yes	Yes
Zoning that Recognizes Hazard Areas	No	Yes	Yes
National Flood Insurance Program Participation	Yes	Yes	No
Local Building Codes	No. Septic permits.	Yes	Yes
<b>Technical Capabilities</b>			
Emergency Manager	Yes	No	No
Public Works Engineer	No - contracted	No - contracted	No - contracted
GIS Mapping Capabilities	Limited.	No	No
Floodplain Administrator	Yes	Yes	No
Community Planners	Not currently. Planning Board meets infrequently	No. City-County Planning Board	No. City Planning Board

**Rosebud County Disaster and Emergency Services**

The mission of Rosebud County DES is to save lives, prevent injury, and protect property and the environment by taking reasonable and affordable measures to mitigate, prepare for, respond to and recover from disasters. The Rosebud County DES Coordinator is responsible for the planning, coordination, and implementation of all emergency management and Homeland Security related activities for the county. Other responsibilities include coordination of activities for the county’s

Emergency Operations Center (EOC). The EOC, when activated, is a central location where representatives of local government and private sector agencies convene during disaster situations to make decisions, set priorities and coordinate resources for response and recovery. These efforts are designed to enhance the capacity of the local government to plan for, respond to, and mitigate the consequences of threats and disasters using an all-hazard framework.

The Rosebud County DES office includes one full time staff position; the DES Coordinator who also has responsibilities as the Ambulance Director. This position is funded 100 percent through the county general fund. In addition, two volunteers serve as deputy DES Coordinators and are available on-call as needed.

### *Local Emergency Planning Committee*

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The mission of the Rosebud County LEPC is to provide resources and guidance to the community through education, coordination and assistance in hazmat planning; and to assure public health and safety. They do not function in actual emergency situations, but attempt to identify and catalogue potential hazards, identify available resources, and mitigate hazards when feasible. The LEPC consists of representatives from businesses, local government, emergency responders and citizen groups located in Rosebud County. Monthly meetings are year round except for August.

### *City-County Planning Board*

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The role of the Rosebud County City-County Planning Board is to serve in an advisory capacity to the local governing bodies. The Planning Board may propose policies for subdivision plats; the development of public ways, public places, public structures, and public and private utilities; the issuance of improvement location permits on platted and unplatted lands; or the laying out and development of public ways and services to platted and unplatted lands. The Planning Board is involved in all matters pertaining to the approval or disapproval of plats or subdivisions. It is also the Planning Board's responsibility to prepare a growth policy for the county.

### *Rosebud County Fire Protection Services*

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There are three rural fire departments in Rosebud County: County Rural Fire Department, the Ashland Fire District, the West Rosebud Fire District. These departments are manned by volunteers. The cities of Forsyth and Colstrip also have volunteer fire departments. The West Rosebud Fire District encompasses the area around Sumatra and Ingomar. The district contracts with the town of Melstone Fire Department for fire protection. The County Rural Fire Department has nine firefighting vehicles stationed north of I-94, 10 located south of the interstate, and 19 in Forsyth. The vehicles located outside of Forsyth are strategically placed with farmers and ranchers to expedite quick response to wildland and structure fires. The county has mutual aid agreements with the U.S. Forest Service and BLM to provide fire protection to the county fire departments for naturally caused fires threatening federal lands that start on private land within the county.

The City of Colstrip maintains an active fire department with the latest equipment and training, as well as an adequate water infrastructure and supply to service the community of Colstrip.

### ***Southeast Montana Economic Development Corporation***

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Southeast Montana Economic Development Corporation (SEMDC) has been providing services since 1997 to Rosebud, Treasure, Custer, and Powder River Counties. The goal at SEMDC is to diversify SE Montana's economy, support entrepreneurship, enhance community development and capacity building, plan for future developments and infrastructure, and help to network and build relationships among SE Montana's stakeholders and leaders. SEMDC works to achieve those goals by providing numerous services which include small business assistance, grant writing and administration, planning and loan programs for small businesses.

### ***Montana DES Eastern District Field Officer***

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Montana DES District Field Officer acts on behalf of Montana DES and is primarily responsible for assisting local and tribal governments with the development of their emergency management programs and mitigation planning. District field officers are the main conduit for implementation of various emergency management initiatives affecting local and tribal government and coordinating with other cooperators.

### ***Lower Musselshell Conservation District***

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The Lower Musselshell Conservation District provides private landowners in Golden Valley, Musselshell, and parts of Rosebud county with the tools, education, and resources to implement conservation practices which protect and promote the wise use of our natural resources. The district's fuel mitigation program is overseen by a part-time forester.

### ***Montana DNRC – Floodplain Management, Dam Safety, Wildfire Preparedness***

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The Forestry Division, of the Montana DNRC is responsible for planning and implementing forestry and fire management programs through an extensive network of staff located in field offices across the State. The Fire and Aviation Management Bureau provides resources, leadership and coordination to Montana's wildland fire services to protect lives, property, and natural resources; working with local, tribal, state, and federal partners to ensure wildfire protection on all state and private land in Montana. There are numerous programs aimed at effective fire preparedness and capacity building. The Fire Preparedness effort is focused in four areas:

- Fire Prevention Program seeks to educate Montanans about fire risk, the wildland urban interface and reducing human-caused fires;
- Fire Training Program provides statewide training opportunities for DNRC and local government personnel;
- Equipment Development Center builds and maintains wildland fire equipment and radio communications;
- Fire Support Programs provide financial and technical expertise to assist all fire programs in meeting their respective goals and mandates. These include, but are not limited to: Fire Assessment fees, GIS, repair and maintenance of radio systems and rolling stock equipment.

### ***U.S. Forest Service, and BLM***

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The BLM Montana/Dakota District Office and U.S. Forest Service Custer-Gallatin National Forest are involved in planning activities for public land within Rosebud County. The BLM and Rosebud County

have an initial attack Memorandum of Understanding (MOU) that states the BLM will respond to BLM or County fires for the first 24 hours. The U.S. Forest Service Ashland Ranger District manages fuels on public land in southeast Rosebud County.

### ***Rosebud County Public Health and Montana DPHHS***

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Rosebud County Public Health is an essential provider of personal and public health services. Services include immunizations, family planning, and communicable disease prevention, investigation and follow up, and public health emergency preparedness. The county's public and environmental health programs are supported by the Montana Dept. of Public Health and Human Services whose mission is to improve and protect the health of Montanans to the highest possible level with objectives to prevent and control communicable disease, and to prepare the public health system to respond to public health events and emergencies. The Public Health and Safety Division continuously monitors the proportion of children fully immunized and the number of local jurisdictions that participate in a public health emergency exercise every other year as measurement in achieving this goal.

### ***Montana Governor's Drought and Water Supply Advisory Committee***

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The Montana Drought and Water Supply Advisory Committee serves as a clearinghouse for the sharing of water supply and moisture conditions on a monthly basis among state and local agency officials with responsibility to manage natural resources and support constituents most likely affected by drought. In its monthly assessment of conditions, the committee considers various scientific indicators that quantify and forecast precipitation, mountain snowpack, streamflow, soil moisture, reservoir contents, and agricultural and livestock production. The committee also provides planning support and information sharing with watershed groups and county drought committees through this website and staff contact.

Member agencies include the Governor's Office, DNRC, DEQ, Fish Wildlife and Parks, Agriculture, Livestock, Commerce, and DES. Federal reporting partners include the Bureau of Reclamation, U.S. Geological Survey, Natural Resource Conservation Service, Agricultural Statistics Service, and the National Weather Service. Other reporters include the multi-agency Northern Rockies Coordination Center for fire conditions, Montana Tech's Groundwater Information Center, Montana Climate Office, USDA Farm Service Agency, U.S. Congressional delegation representatives, U.S. Small Business Administration, Rural Development, and Montana State University Extension Service.

### ***Homeland Security***

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The U.S. Department of Homeland Security (DHS) can also provide expertise and/or funding to assist Rosebud County with aspects of their mitigation strategy. DHS leverages resources within federal, state, and local governments, coordinating the transition of multiple agencies and programs into a single, integrated agency focused on protecting the American people and their homeland. More than 87,000 different governmental jurisdictions at the federal, tribal, state, and local level have homeland security responsibilities. FEMA is an agency within the DHS. Rosebud County may solicit grant funding from DHS to strengthen their emergency services and hazard mitigation program.

### **NOAA Weather-Ready Nation Program**

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The Weather-Ready Nation (WRN) Ambassador initiative is NOAA's effort to formally recognize NOAA partners who are improving the nation's readiness, responsiveness, and overall resilience against extreme weather, water, and climate events. As a WRN Ambassador, partners commit to working with NOAA and other Ambassadors to strengthen national resilience against extreme weather. In effect, the WRN Ambassador initiative helps unify the efforts across government, non-profits, academia, and private industry toward making the nation more ready, responsive, and resilient against extreme environmental hazards. WRN is a strategic outcome where society's response should be equal to the risk from all extreme weather, water, and climate hazards.

### **5.4.3 Fiscal Capabilities**

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Mitigation projects and initiatives are largely or entirely dependent on available funding. Rosebud County is able to fund mitigation projects through existing local budgets, local appropriations (including referendums and bonding), and through a myriad of Federal and State loan and grant programs. A number of these funding opportunities are described below.

### **FEMA Hazard Mitigation Funding Opportunities**

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Federal mitigation grant funding is available to all communities with a current hazard mitigation plan (this plan); however, most of these grants require a "local share" in the range of 10-25 percent of the total grant amount. The FEMA mitigation grant programs are described below.

**Hazard Mitigation Grant Program (HMGP).** The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each Federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing or elevation to reduce future damage, minor structural improvements and development of state or local standards. Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations.

Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to your state and placed in rank order for available funding and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and may be considered as additional HMGP funding becomes available. More information: <https://www.fema.gov/hazard-mitigation-grant-program>

**FEMA, Public Assistance (PA) with 406 Mitigation.** Public Assistance is a post-disaster reimbursement program that provides federal funding to help communities respond to and recover from disasters. FEMA reimburses state and local governments and certain types of private nonprofit organizations for the cost of disaster-related debris removal, emergency protective measures to protect life and property, and permanent repair work to damaged or destroyed infrastructure. Section 406 mitigation measures are funded under the PA, or Infrastructure, program. The 406

funding provides discretionary authority to fund mitigation measures in conjunction with the repair of the disaster-damaged facilities, so is limited to declared jurisdictions and eligible damaged facilities. The PA Program is a 75% federal/25% non-federal reimbursement program – the non-federal share cannot be matched with other federal funding.

**Building Resilient Infrastructure and Communities (BRIC) Grant Program.** The BRIC program supports states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC is a new FEMA pre-disaster hazard mitigation program that replaces the former PDM program. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. More information:

<https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities>

**Rehabilitation of High Hazard Potential Dams Grant Program.** This program provides technical, planning, design, and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. More information:

<https://www.fema.gov/emergency-managers/risk-management/dam-safety/grants#hhpd>

**Flood Mitigation Assistance (FMA) Grant Program.** FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is 75 percent. At least 25 percent of the total eligible costs must be provided by a non-federal source. Of this 25 percent, no more than half can be provided as in-kind contributions from third parties. FMA funds are distributed from FEMA to the state. More information: <https://www.fema.gov/flood-mitigation-assistance-grant-program>

**Fire Management Assistance Grant (FMAG) Program.** The FMAG program provides grants to states, tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (non-federal) or privately owned forest or grassland that threatens such destruction as would constitute a major disaster. The grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request. More information: <http://www.fema.gov/fire-management-assistance-grant-program>

**Fire Prevention and Safety (FP&S) Grants.** FP&S Grants support projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to target high-risk populations and reduce injury and prevent death. Eligibility includes fire departments, national, regional, state, and local organizations, Native American tribal organizations, and/or community organizations recognized for their experience and expertise in fire prevention and safety programs and activities. Private non-profit and public organizations are also eligible. Interested applicants are advised to check the website periodically for announcements of grant availability. More information: <https://www.fema.gov/welcome-assistance-firefighters-grant-program>

### ***Other Mitigation Funding Opportunities***

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Grant funding is available from a variety of federal and state agencies for training, equipment, and hazard mitigation activities. Several of these programs are described below.

**U.S. Army Corps of Engineers (USACE) Section 205 Program.** Section 205 of the Flood Control Act of 1948, as amended, provides authority for the USACE to construct projects (either structural or nonstructural) to reduce damages caused by flooding. This authority focuses on solving local flood problems in urban areas, towns and communities. Under the Section 205 Program, the USACE can provide for local protection from flooding by the construction or improvement of flood control works. The types of studies and/or projects, which are tailored to be site specific, are either structural or nonstructural. Structural projects include levees, channel improvements, small dams and floodwalls. Nonstructural measures reduce flood damages by changing the use of floodplains or by accommodating existing uses to the flood hazard. Examples include flood proofing, relocation of structures, and flood warning and preparedness systems. The USACE oversees planning, design, and construction of flood risk management projects in close coordination with the project sponsor. Before the federal government can participate in implementing a Section 205 project, a planning study must be conducted to determine if the project is economically justified (benefits exceed the costs), technically feasible, and environmentally acceptable.

The feasibility study is initially 100 percent federally-funded up to \$100,000. Any study costs over \$100,000 are cost shared 50-50 between the USACE and the local sponsor. The sponsor's 50 percent can consist of any combination of cash and in-kind services. Once the feasibility study is complete, the remaining project cost is shared 65 percent federal and 35 percent non-federal. The sponsor's 35 percent share (minimum 5 percent cash) of the total project implementation cost consists of cash and Lands, Easements, Rights-of-way, Relocations, and Disposal areas (LERRDs) necessary for project construction. If the value of the LERRDs plus the minimum 5 percent cash contribution does not equal or exceed 35 percent of the project cost, the sponsor must pay the additional amount necessary so that the sponsor's total contribution equals 35 percent of the project cost. The federal investment in the solution is limited to a maximum of \$10 million per project.

**USACE Section 22 Program.** Section 22 of the Water Resources Development Act of 1974, as amended, provides authority for the USACE to assist states, local governments, federally-recognized Indian Tribes and other non-federal entities in the preparation of comprehensive plans for the development, utilization and conservation of water and related land resources. Under the Section 22 Program, the USACE can provide technical planning assistance in all areas related to water resources development. Typical studies are only planning level of detail; they do not include detailed design for project construction. The studies generally involve the analysis of existing data for planning purposes using standard engineering techniques, although some data collection is often necessary. Most studies become the basis for state, tribal, or local planning decisions. The program can encompass many types of studies dealing with water resource issues including: flood damage reduction studies, bank stabilization studies, water quality studies, and sedimentation studies.

Section 22 is funded annually by Congress. Assistance is limited to \$500,000 in federal funds per state or Tribe per year. Individual studies, of which there may be more than one per state or Tribe per year, generally range in cost from \$25,000 to over \$100,000. These studies are cost-shared on a

50/50 basis (50 percent federal/50 percent non-federal sponsor). The study sponsor has the option of providing in-kind services for up to 100 percent of its share of the study cost.

### **National Fire Plan Program 15.228: Wildland Urban Interface Community and Rural Fire Assistance.**

This program is designed to implement the National Fire Plan and assist communities at risk from catastrophic wildland fires. The program provides grants, technical assistance, and training for community programs that develop local capability, including: Assessment and planning, mitigation activities, and community and homeowner education and action; hazardous fuels reduction activities, including the training, monitoring or maintenance associated with such hazardous fuels reduction activities, on federal land, or on adjacent nonfederal land for activities that mitigate the threat of catastrophic fire to communities and natural resources in high risk areas; and, enhancement of knowledge and fire protection capability of rural fire districts through assistance in education and training, protective clothing and equipment purchase, and mitigation methods on a cost share basis. More information: <http://www.federalgrantswire.com/wildland-urban-interface-community-and-rural-fire-assistance.html#.WCx8ekYzWUk>

**U.S. Fish & Wildlife Service, Rural Fire Assistance Grants.** Each year, the U.S. Fish & Wildlife Service provides Rural Fire Assistance (RFA) grants to neighboring community fire departments to enhance local wildfire protection, purchase equipment, and train volunteer firefighters. Service fire staff also assist directly with community projects. These efforts reduce the risk to human life and better permit FWS firefighters to interact and work with community fire organizations when fighting wildfires. The Department of the Interior (DOI) receives an appropriated budget each year for an RFA grant program. The maximum award per grant is \$20,000. The DOI assistance program targets rural and volunteer fire departments that routinely help fight fire on or near DOI lands. More information: [http://www.fws.gov/fire/living\\_with\\_fire/rural\\_fire\\_assistance.shtml](http://www.fws.gov/fire/living_with_fire/rural_fire_assistance.shtml)

**U.S. Department of Agriculture, Community Facilities Loans and Grants.** Provides grants (and loans) to state, local and Indian tribal governments, as well as private and nonprofit organizations and user-owned cooperatives to improve community facilities for essential services to rural residents. Projects can include fire and rescue services including purchase of fire-fighting equipment for rural areas. No match is required. More information:

[http://www.usda.gov/wps/portal/usda/usdahome?navid=GRANTS\\_LOANS](http://www.usda.gov/wps/portal/usda/usdahome?navid=GRANTS_LOANS)

**Hazardous Materials Emergency Preparedness Grants.** The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration awards over \$97 million in grants through its pipeline and hazardous materials safety programs. The awards are distributed to states, local communities, tribal entities, universities, and non-profit organizations to support pipeline and hazardous materials safety programs. Award recipients can use the funds for training first responders, educating the public on local safety initiatives, and encouraging the development of new pipeline technologies. More information: <http://www.phmsa.dot.gov/hazmat/grants>

**U.S. Department of Homeland Security.** Enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs. These grants include, but are not limited to areas of Critical Infrastructure Protection Equipment and Training for First Responders, and Homeland Security Grants. More information: <http://www.dhs.gov/>

**Rural Fire Capacity Program Grants.** The purpose of these grants is to organize, train and equip local firefighters to prevent and suppress wildfires. Communities under 10,000 in population are eligible for the funding. Smaller communities may join together in a group effort to submit an application, even if their combined population is over 10,000. There is no pre-set award amount. Financial assistance on any project, during any fiscal year, requires a non-federal match for project expenditures. More information: <http://dnrc.mt.gov/grants-and-loans>

**Western States Wildland Urban Interface.** National Fire Plan funds are available to mitigate risk from wildland fire within the WUI. Funds are awarded through a competitive process to 22 western states and territories through the Western WUI Grant Program. Each year, the Montana DNRC accepts proposals from partners around the state for submission to the National Fire Plan competitive process. DNRC scores and prioritizes these proposals before sending them on to the national competitive process. Non-profit organizations, conservation districts, county and municipal governments, and fire departments. Individual landowners may not apply but may be eligible for cost-share opportunities through this program. Each grant request is limited to a maximum of \$300,000. More information: <http://dnrc.mt.gov/grants-and-loans>

**Hazardous Fuel Reduction Grants.** These grants are for hazardous fuel reduction on private lands to protect communities adjacent to National Forest System Lands where prescribed fire activities are planned. Prescribed fire activities must be imminent (to take place within 3 years of the award). Non-profit organizations, conservation districts, tribal, county and municipal governments, fire departments are eligible for this funding. Award amounts typically range from \$50,000 to \$100,000 depending upon availability of funding. More information: <http://dnrc.mt.gov/grants-and-loans>

**Renewable Resource Grant Program.** Administered by the Montana DNRC, this program provides both grant and loan funding for public facility and other renewable resource projects. Projects that conserve, manage, develop or protect Montana's renewable resources are eligible for funding. Numerous public facility projects including drinking water, wastewater and solid waste development and improvement projects have received funding through this program. Other projects that have been funded include irrigation rehabilitation, dam repair, soil and water conservation and forest enhancement. More information: <http://dnrc.mt.gov/grants-and-loans>

**Community Development Block Grants (CDBG).** The U.S. Department of Commerce administers the CDBG program which are intended to provide low and moderate-income households with viable communities, including decent housing, a suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration. Public improvements may include flood and drainage improvements. In limited instances, and during the times of "urgent need" (e.g. post disaster) as defined by the CDBG National Objectives, CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event. CDBG funds can be used to match FEMA grants. More Information: <http://www.hud.gov/offices/cpd/communitydevelopment/programs/>

**2021 American Rescue Plan Act.** U.S. Dept. of Commerce, Economic Development Administration (EDA) was allocated \$3 billion in supplemental funding to assist communities nationwide in their

efforts to build back better by accelerating the economic recovery from the coronavirus pandemic and building local economies that will be resilient to future economic shocks. EDA is making a Coal Communities Commitment, allocating \$300 million of its \$3 billion American Rescue Plan appropriation to ensure support for these communities as they recover from the pandemic and create new jobs and opportunities, including through the creation or expansion of a new industry sector. This commitment will be fulfilled through \$100 million in Build Back Better Regional Challenge grants and \$200 million in Economic Adjustment Assistance grants. More Information: <https://eda.gov/funding-opportunities/>

**Treasure State Endowment Program (TSEP).** The Treasure State Endowment Program was established to help solve serious health and safety problems and assist communities with the financing of public facilities projects. The program helps local governments with infrastructure planning as well as constructing or upgrading drinking water systems, wastewater treatment facilities, sanitary or storm sewer systems, solid waste disposal and separation systems, and bridges. Funding is available in the following program categories: Planning grants may be used for preliminary engineering reports for the following projects: drinking water systems, wastewater treatment facilities, sanitary or storm sewer systems, solid waste disposal and separation systems, bridges, and Comprehensive Capital Improvements Plan. Project grants assist drinking water, wastewater, storm sewer or storm drain, solid waste, and bridge projects. Eligible costs include, but are not limited to: engineering designs and inspection, grant administration, surveying or geotechnical, and construction. Emergency grants are awarded to address imminent threats or actual occurrences of an event causing immediate peril to life, property, or the environment that can be averted or minimized with timely action.

**General Services Administration, Sale of Federal Surplus Personal Property.** This program sells property no longer needed by the federal government. The program provides individuals, businesses and organizations the opportunity to enter competitive bids for purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on the property purchased. More information: <http://www.gsa.gov/portal/category/21045>

**Crop Insurance.** Crop insurance is available to agricultural producers, including farmers, ranchers, and others to protect themselves against either the loss of their crops due to natural disasters, such as hail, drought, and floods, or the loss of revenue due to declines in the prices of agricultural commodities. In the United States, a subsidized multi-peril federal insurance program, administered by the Risk Management Agency, is available to most farmers. The program is authorized by the Federal Crop Insurance Act, as amended. Federal crop insurance is sold and serviced through private insurance companies. A portion of the premium, as well as the administrative and operating expenses of the private companies, is subsidized by the federal government. The Federal Crop Insurance Corporation reinsures the companies by absorbing some of the losses of the program when indemnities exceed total premiums. Several revenue insurance products are available on major crops as a form of additional coverage. <https://cropinsuranceinamerica.org/crop-insurance-101/>

### **Other Resources**

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**FEMA: Grant Application Training.** Each year, FEMA partners with the State on training courses designed to help communities be more successful in their applications for grants. Contact your State

Hazard Mitigation Officer for course offering schedules. Example Courses: Unified Hazard Mitigation Grant Assistance Application Development Course; and Benefit Cost Analysis (BCA) Course.

**FEMA: Community Assistance Visit.** It may be appropriate to set up a Community Assistance Visit with FEMA to provide technical assistance to communities in the review and/or updating of their floodplain ordinances to meet the new model ordinance. Consider contacting your State NFIP Coordinator for more information.

**FEMA: Building Science.** The Building Science branch develops and produces multi-hazard mitigation publications, guidance materials, tools, technical bulletins, and recovery advisories that incorporate the most up-to-date building codes, floodproofing requirements, seismic design standards, and wind design requirements for new construction and the repair of existing buildings. More information: <https://www.fema.gov/building-science>

**EPA: Smart Growth in Small Towns and Rural Communities.** EPA has consolidated resources just for small towns and rural communities to help them achieve their goals for growth and development while maintaining their distinctive rural character. More information: <https://www.epa.gov/smartgrowth/smart-growth-small-towns-and-rural-communities>

**EPA: Hazard Mitigation for Natural Disasters: A Starter Guide for Water and Wastewater Utilities.** The EPA released guidance on how to mitigate natural disasters specifically for water and wastewater utilities. More information: <https://www.epa.gov/waterutilityresponse/hazard-mitigation-natural-disasters>

**National Integrated Drought Information System.** The National Drought Resilience Partnership may provide some additional resources and ideas to mitigate drought hazards and increase awareness of droughts. More information: <https://www.drought.gov/drought/what-nidis/national-drought-resilience-partnership>.

**Beyond the Basics: Best Practices in Local Mitigation Planning.** The product of a 5-year research study where the Coastal Hazards Center and the Center for Sustainable Community Design analyzed local mitigation plans to assess their content and quality. The website features numerous examples and best practices that were drawn from the analyzed plans. Visit: <http://mitigationguide.org/>

**STAR Community Rating System.** Consider measuring your mitigation success by participating in the STAR Community Rating System. Local leaders can use the STAR Community Rating System to assess how sustainable they are, set goals for moving ahead and measure progress along the way. To get started, go to <https://www.usgbc.org/resources/star-community-rating-system-technical-guide-v2>

**Flood Economics.** The Economist Intelligence Unit analyzed case studies and state-level mitigation data in order to gain a better understanding of the economic imperatives for investment in flood mitigation. To learn more, visit: <http://floodeconomics.com/>

**Headwaters Economics.** Headwaters Economics is an independent, nonprofit research group that works to improve community development and land management decisions in the West. To learn more, visit: <https://headwaterseconomics.org/>

## 5.5 Mitigation Strategy Development

A comprehensive range of specific mitigation actions and projects were identified and analyzed for each jurisdiction to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure. This occurred during Planning Team meetings when the hazard-specific example mitigation projects were reviewed, as presented in **Appendix D-1**.

This subsection discusses the identification, prioritization, analysis and implementation plan of mitigation actions for Rosebud County, the cities of Forsyth and Colstrip. A problem statement associated with each mitigation strategy is included in **Table 5.5-3**.

### 5.5.1 Mitigation Strategy Update and Reconciliation

The Planning Team reviewed the list of mitigation actions (projects) from the 2013 PDM Plan and determined which were complete, should be deleted, or reworded for the 2021 mitigation strategy during monthly Planning Team conference calls held during February through June 2021 including changes in priority. **Appendix D-2** presents a reconciliation of mitigation projects and their status.

Concerted efforts were made to assure that the county develop mitigation strategies that included activities and initiatives covering the range of mitigation action types described in FEMA planning guidance (FEMA “Local Mitigation Planning Handbook” March 2013), specifically:

- Prevention Projects – These actions include governmental regulatory authorities, including policies or codes that influence the way land and buildings are being developed and built.
- Property Protection Projects – Actions that involve the modification of existing buildings or structures to protect them from a hazard, or removal from the hazard area. Examples include acquisition, elevation, relocations, structural retrofits, storm shutters, and shatter-resistant glass. Wildland fuel reduction projects are also included in this category.
- Structural Projects - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Resource Protection Projects – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as the National Flood Insurance Program and Community Rating System, StormReady (NOAA) and FireWise (NFPA) Communities.
- Emergency Service Projects – These are actions to enhance community preparedness through training and acquisition of equipment.
- Mapping/Analysis/Planning Projects – These actions include development of mapping and planning documents to assist with implementation of mitigation strategies.

In consideration of federal and state mitigation guidance, the MHMP Planning Team recognized that all communities would benefit from the inclusion of certain mitigation actions. These include initiatives to address vulnerable public and private properties, including repetitive loss properties; initiatives to support continued and enhanced participation in the NFIP; improved public education and awareness programs; and initiatives to support county-wide and regional efforts to build greater local mitigation capabilities.

Mitigation actions included in the 2021 Rosebud County mitigation strategy are presented in **Table 5.5-2** at the end of this section. **Appendix D-3** contains a mitigation action plan with individual project worksheets.

### 5.5.2 Mitigation Strategy Benefit/Cost Review and Prioritization

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Each of the proposed mitigation actions has value; however, time and financial constraints do not permit all projects to be implemented immediately. By prioritizing the actions, the most critical, cost effective projects can be achieved in the short term. Mitigation actions retained and developed for this updated MHMP were re-prioritized to reflect current conditions and anticipated needs over the next five years.

Section 201.6.c.3iii of 44CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a cost/benefit review of the proposed projects and their associated costs. Stated otherwise, cost-effectiveness is one of the criteria that must be applied during the evaluation and prioritization of all actions comprising the overall mitigation strategy.

The benefit/cost review used for the evaluation and prioritization of projects in this plan was qualitative; i.e. it does not include the level of detail required by FEMA for project grant eligibility under the HMGP and PDMC grant program.

- **Costs** are the total cost for the action or project, and may include administrative costs, construction costs (including engineering, design and permitting), and maintenance costs.
- **Benefits** are the savings from losses avoided attributed to the implementation of the project, and may include life-safety, structure and infrastructure damages, loss of service or function, and economic and environmental damage and losses.

When available, jurisdictions were asked to identify the actual or estimated dollar value for project costs and associated benefits. Having defined costs and benefits allows a direct comparison of benefits versus costs, and a quantitative evaluation of project cost-effectiveness. Often, however, numerical costs and/or benefits have not been identified, or may be impossible to quantitatively assess.

For the purposes of this planning process, a cost-benefit matrix was developed to rank the mitigation projects using the following criteria. Each project was assigned a “high”, “medium”, or “low” rank for *Population Impacted*, *Property Impacted*, *Project Feasibility* and *Cost*, as described below:

- For the *Population Protected* category, a “high” rank represents greater than 50 percent of County residents would be protected by implementation of the mitigation strategy; a “medium” rank represents 20 to 50 percent of County residents would be protected; and, a “low” rank represents less than 20 percent of County residents would be protected.

- For the *Property Protected* category, a “high” represents that greater than \$500,000 worth of property would be protected through implementation of the mitigation strategy; “medium” represents that \$100,000 to \$500,000 worth of property would be protected; and, “low” would be less than \$100,000 would be protected.
- For the *Project Feasibility* category a “high” rank represents that technology is available and implementation is likely; a “medium” rank indicates technology may be available but implementation could be difficult; and, a “low” rank represents that no technology is available or implementation would be unlikely.
- For the *Project Cost* category, a “high” represents that the mitigation project would cost more than \$500,000; a “medium” rank represents the project cost would be between \$100,000 and \$500,000; and, “low” represents the project would cost less than \$100,000.

The overall cost-benefit was then calculated by summing the total score for each project. **Table 5.5-1** presents the cost-benefit scoring matrix. The mitigation action plans in **Appendix D-3** present the scoring of each project.

**Table 5.5-1. Cost-Benefit Scoring Matrix**

Score	Population Protected	Property Protected	Project Feasibility	Cost
High	3	3	3	1
Medium	2	2	2	2
Low	1	1	1	3

After considering all mitigation projects, the MHMP Planning Team prioritized the projects as high, medium, or low based on which projects were most needed to protect life and property. Prioritization of the projects serves as a guide for choosing and funding projects. **Table 5.5-2** presents the county priority for each project.

### 5.5.3 Project Implementation

The MHMP Planning Team reviewed the projects and assigned a corresponding county, city department responsible for its implementation. Cooperating organizations for implementation may also include local, federal or regional agencies that are capable of implementing activities and programs. The Planning Team identified a schedule for implementation and potential funding sources. The schedule for implementation included several categories including: “ongoing” for projects that are part of the County’s emergency management program; “short-term” for projects to be completed within 1-2 years; “mid-term” for projects to be completed within 3-4 years; and, “long-term” for projects to be completed in 5 or more years.

Implementation details are shown in **Table 5.5-3** and in the mitigation action plans in **Appendix D-3**. Rosebud County DES will be responsible for mitigation project administration.

Table 5.5-2. Rosebud County 2021 Mitigation Strategy

Goal	Objective	Project	Hazard	Jurisdiction	Benefit-Cost Ranking/Score	County Priority
Goal 1 - Reduce Impacts from Wildfire	Objective 1.1: Implement Property Protection Projects to Reduce Impacts from Wildfire	1.1.1 - Work with Montana DNRC to create and maintain fuel breaks around the City of Colstrip.	Wildfire	Colstrip	High / 10	Medium
		1.1.2 - Work with Montana FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the east side of Forsyth.	Wildfire	County	Medium / 9	Medium
	Objective 1.2: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Wildfire	1.2.1 - Support coordination between private landowners and the U.S. Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.	Wildfire	County	High / 10	Medium
	Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire	1.3.1 - Continue to make fuel mitigation information available on the county website with links to additional resources.	Wildfire	County	High / 12	High
		1.3.2 - Provide recommendations for types of building materials to use in the WUI to reduce fire danger in new construction.	Wildfire	County	Medium / 9	High
		1.3.3 - Continue to support the Public Health Department's smoke advisories and alerts.	Wildfire	County	High / 10	High
	Objective 1.4: Implement Prevent Projects to Reduce Impacts from Wildfire	1.4.1 - Extend building regulations adjacent to city limits to require compliance with wildfire standards in future annexation areas.	Wildfire	Forsyth	Medium / 9	Medium
	Objective 1.5: Enhance Emergency Service Capabilities to Reduce Impacts from Wildfire	1.5.1 - Continue to update equipment to enhance firefighting capabilities.	Wildfire	County	High / 11	High
Goal 2 - Reduce Impacts from Drought	Objective 2.1: Implement Public Education and Awareness Projects to Reduce Impacts from Drought	2.1.1 Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.	Drought	County	Medium / 9	High
	Objective 2.2: Implement Structural Projects to Reduce Impacts from Drought	2.2.1 Improve the water intake system for the City of Forsyth.	Drought	County, Forsyth, Colstrip	Medium / 8	High
	Objective 2.3: Implement Prevention Projects to Reduce Impacts from Drought	2.3.1 Improve water conveyance efficiencies in agricultural, municipal, and industrial users.	Drought	County, Forsyth, Colstrip	Medium / 6	Medium
		2.3.2 Encourage voluntary water conservation by domestic, municipal, and industrial users.	Drought	County, Forsyth, Colstrip	High / 10	High
	Objective 2.4: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Drought	2.4.1 Support completion of the Colstrip Water Supply Feasibility Study.	Drought	Colstrip	High / 11	High
Goal 3 - Reduce Impacts from Severe Summer Weather	Objective 3.1: Implement Prevention Projects to Reduce Impacts from Severe Summer Weather	3.1.1 Implement the tree maintenance ordinance and address problem trees.	Severe Summer Weather	Forsyth, Colstrip	Medium / 9	High

Table 5.5-2. Rosebud County 2021 Mitigation Strategy

Goal	Objective	Project	Hazard	Jurisdiction	Benefit-Cost Ranking/Score	County Priority
Goal 3 - Reduce Impacts from Severe Summer Weather	Objective 3.2: Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather	3.2.1 Promote preparedness for severe summer weather through outreach to the communities and schools.	Severe Summer Weather	County, Forsyth, Colstrip	High / 10	High
		3.2.2 Partner with the National Weather Service on the Weather Ready Nation Ambassador Program.	Severe Summer Weather	County, Forsyth, Colstrip	High / 10	High
	Objective 3.3: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Summer Weather	3.3.1 Support efforts by the NWS to provide preparedness training to community members and homeowners.	Severe Summer Weather	County, Forsyth, Colstrip	High / 10	High
	Objective 3.4: Implement Property Protection Projects to Reduce Impacts from Severe Summer Weather	3.4.1 Encourage utility companies to bury electric and communication lines in hazard areas.	Severe Summer Weather	County	Medium / 8	Medium
Goal 4 - Reduce Impacts from Communicable Disease	Objective 4.1: Implement Prevention Projects to Reduce Impacts from Communicable Disease	4.1.1 Control mosquito populations in cities and towns.	Communicable Disease	County, Forsyth, Colstrip, Ashland	Medium / 8	High
		4.1.2 Prevent and control communicable disease through surveillance, testing and immunization.	Communicable Disease	County, Forsyth, Colstrip	High / 10	High
	Objective 4.2: Implement Public Education and Awareness Projects to Reduce Impacts from Communicable Disease	4.2.1 Promote public education on preventing communicable disease.	Communicable Disease	County, Forsyth, Colstrip	High / 10	High
	Objective 4.3: Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease	4.3.1 Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.	Communicable Disease	County, Forsyth, Colstrip	High / 10	High
		4.3.2 Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.	Communicable Disease	County, Forsyth, Colstrip	High / 10	High
Goal 5 - Reduce Impacts from Severe Winter Weather	Objective 5.1: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Winter Weather	5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.	Severe Winter Weather	County	Medium / 8	Medium
	Objective 5.2: Implement Public Education and Awareness to Reduce Impacts from Severe Winter Weather	5.2.1 Promote preparedness for severe winter weather through outreach to the communities and schools.	Severe Winter Weather	County, Forsyth, Colstrip	High / 10	Medium
Goal 6 - Reduce Impacts from Flooding & Dam Failure	Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure	6.1.1 Address any issues related to the Forsyth levee that arise during the current re-certification process.	Flooding	Forsyth	High / 10	High
		6.1.2 Develop a stormwater management plan for Forsyth.	Flooding	Forsyth	High / 10	Medium
		6.1.3 Support completion of floodplain mapping and update of the county floodplain ordinance.	Flooding	County, Forsyth	High / 11	High

Table 5.5-2. Rosebud County 2021 Mitigation Strategy

Goal	Objective	Project	Hazard	Jurisdiction	Benefit-Cost Ranking/Score	County Priority
Goal 6 - Reduce Impacts from Flooding & Dam Failure	Objective 6.2: Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure	6.2.1 Stabilize bank erosion at the intersection of River and Old Mission Roads in Ashland.	Flooding	County (Ashland)	Medium / 6	Low
		6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.	Flooding	County, Forsyth	High / 10	High
	Objective 6.3: Implement Property Protection Projects to Reduce Impacts from Flooding and Dam Failure	6.3.1 Continue to promote the National Flood Insurance Program and compliance with the county floodplain ordinance.	Flooding	County, Forsyth	High / 10	Medium
	Objective 6.4: Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure	6.4.1 Encourage emergency response partners to participate in dam exercises.	Dam Failure	County, Forsyth	High / 10	High
		6.4.2 Engage the City of Colstrip in dam failure awareness and preparedness.	Dam Failure	Colstrip	Medium / 9	High
Goal 7 - Reduce Impacts from Structure Fire	Objective 7.1: Implement Public Education and Awareness Projects to Reduce Impacts from Structure Fire	7.1.1 - Support structure fire educational programs in school on topics supplied by International Fire Council.	Structure Fire	Forsyth, Colstrip, Ashland	High / 11	High
	Objective 7.2: Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire	7.2.1 - Recruit and train volunteers for city fire departments.	Structure Fire	Forsyth, Colstrip, Ashland	High / 11	High
		7.2.2 - Update equipment needed for suppressing structure fires.	Structure Fire	Forsyth, Colstrip, Ashland	High / 10	High
Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents	Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents	8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.	Haz-Mat & Transportation Accidents	County, Forsyth, Colstrip	High / 12	High
		8.1.2 Encourage the railroad, pipeline companies, mining company, and power plant to more consistently attend LEPC meetings to plan for haz-mat response.	Haz-Mat & Transportation Accidents	County	High / 10	High
		8.1.3 Encourage power plant, mining company, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.	Haz-Mat & Transportation Accidents	County, Colstrip	High / 11	High
Goal 9 - Reduce Impacts from All Hazards	Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards	9.1.1 Obtain back-up power for water and wastewater treatment plants.	All Hazards	Forsyth, Ashland	Medium / 9	High
		9.1.2 Educate dispatch and first responders about siren systems and procure additional equipment, as needed.	All Hazards	Forsyth, Colstrip, Ashland	Medium / 9	Medium
		9.1.3 Obtain back-up power for county and city critical facilities.	All Hazards	County, Forsyth	Medium / 9	High
		9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.	All Hazards	County, Forsyth, Colstrip,	High / 12	High
		9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.	All Hazards	County	High / 10	High

**Table 5.5-2. Rosebud County 2021 Mitigation Strategy**

Goal	Objective	Project	Hazard	Jurisdiction	Benefit-Cost Ranking/Score	County Priority
Goal 9 - Reduce Impacts from All Hazards	Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards	9.2.1 Adopt updated building codes.	All Hazards	Forsyth, Colstrip	High / 10	High
		9.2.2 Update Growth Policies to encourage growth in low hazard areas.	All Hazards	County, Forsyth, Colstrip	High / 10	Medium
		9.2.3 Update subdivision regulations to adopt higher minimum standards that improve disaster resistance.	All Hazards	County, Forsyth, Colstrip	High / 10	Medium
	Objective 9.3: Implement Public Education & Awareness Projects to Reduce Impacts from All Hazards	9.3.1 Promote registration of cell phones for the "Regroup" emergency notification system.	All Hazards	County, Forsyth, Colstrip	High / 10	High
Notes: BLM = U.S. Bureau of Land Management; DNRC = Montana Department of Natural Resources and Conservation; EMS = Emergency Medical Service; FSA = Farm Service Agency; FWP = Montana Fish, Wildlife & Parks; LEPC = Local Emergency Planning Committee; MSU = Montana State University; NRCS = Natural Resources Conservation Service; WUI = Wildland Urban Interface.						

Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
<b>WILDFIRE MITIGATION PROJECTS</b>						
Embers from timber on state land have potential to threaten city of Colstrip.	1.1.1 - Work with Montana DNRC to create and maintain fuel breaks around the City of Colstrip.	No progress to report.	High school area in hills northeast of Colstrip (state trust land) is where problem is. Fire history shows embers a concern. Coordinate with DNRC on thinning/mitigation to open up timber and get spacing in order to keep ash rain down.	County Fire, DNRC	Ongoing	DNRC, County Resources
Hazardous fuels on public land could threaten public safety.	1.1.2 - Work with Montana FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the east side of Forsyth.	FWP comes in for 2 weeks during winter and drops trees. Have opened area quite a bit with many hazardous trees removed.	Continue same.	County Fire	Ongoing	MFWP, County Resources
Greater attention to landscape-wide fuel reduction would offer better protection against wildfire.	1.2.1 - Support coordination between private landowners, and the U.S. Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.	Coordination group meeting is held each spring to discuss upcoming fire season. Co-op agreement provides engines and air support during fires. County responsible for suppression on state land.	Continue same.	County Fire	Ongoing	County Resources
Landowners are often unaware of resources available to mitigate wildfire.	1.3.1 - Continue to make fuel mitigation information available on the county website with links to additional resources.	Information is posted on the County website (under Fire) where there are links to state fire website.	Continue same. County has Facebook page and PIO officer will post information on wildfire mitigation opportunities.	County PIO	Ongoing	County Resources
Home builders are often unaware of material types that protect against fire damage.	1.3.2 - Provide recommendations for types of building materials to use in the WUI to reduce fire danger in new construction.	No progress to report.	Utilize MT WUI model Building Code recommendations. Consult FireSafe Montana.	County PIO	Ongoing	County Resources
Vulnerable populations need to be protected when wildfire smoke is at dangerous levels.	1.3.3 - Continue to support the Public Health Department's smoke advisories and alerts.	New project for 2021 MHMP.	Continue messaging through Facebook, newspaper, smart boxes in post office, radio, flyers, etc. to reach community members.	County Public Health	Ongoing	County Resources
Growth outside city limits allows homes to be built without code compliance.	1.4.1 - Extend building regulations adjacent to city limits to require compliance with wildfire standards in future annexation areas.	New project for 2021 MHMP.	Educate city council on benefit of implementing project.	City Councils	Mid-term	County Resources
County does not have updated firefighting equipment.	1.5.1 - Continue to update equipment to enhance firefighting capabilities.	New project for 2021 Plan.	Add fire station near Ingomar to house equipment year round. Continue to obtain surplus equipment from DNRC/MDT to build engines.	County Fire	Ongoing	County Resources, Grants

Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
<b>DROUGHT MITIGATION PROJECTS</b>						
Producers are often not aware of the many resources available to mitigate drought.	2.1.1 Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.	New Project for 2021 Plan	Utilize social, broadcast, and print media to reach agricultural producers regarding resources available.	County Extension	Ongoing	County Resources
Low water levels have compromised Forsyth's water intake system.	2.2.1 Improve the water intake system for the City of Forsyth.	New Project for 2021 Plan	City is completing Preliminary Engineering Report on how to make improvements to water intake system. Will implement action items in future.	Forsyth Water Dept.	Mid-term	City Resources, Grants
Water systems are old and inefficient. Improvements could reduce water usage.	2.3.1 Improve water conveyance efficiencies in agricultural, municipal, and industrial users.	New Project for 2021 Plan	Municipalities to study and implement appropriate upgrades to their systems. Extension to work with agricultural users on conveyance improvements. Outreach to industrial users.	County Extension	Ongoing	County Resources
When drought conditions persist, all users must conserve water.	2.3.2 Encourage voluntary water conservation by domestic, municipal, and industrial users.	New Project for 2021 Plan	Utilize social, broadcast, and print media to promote conservation. Municipalities to consider watering restrictions during periods of severe drought.	County DES, Forsyth & Colstrip Water Depts.	Ongoing	County & City Resources
When Colstrip Power Plant closes, city water supply will be threatened.	2.4.1 Support completion of the Colstrip Water Supply Feasibility Study.	New Project for 2021 Plan	Study mandated by 2021 state legislature. MDEQ to be administrator. Colstrip water supply comes via pipeline (owned by power plant) from Yellowstone River. With closing of power plant, study will ensure water for City of Colstrip.	MDEQ, Colstrip Mayor	Short-term	Power Plant owners. City Resources
<b>SEVERE SUMMER WEATHER MITIGATION PROJECTS</b>						
Tree limbs broken from extreme wind events have damaged property.	3.1.1 Implement the tree maintenance ordinance and address problem trees.	New Project for 2021 Plan	City working with consultant to identify and assess problems trees. Tree ordinance will be updated upon completion of report. Tree maintenance ongoing.	Forsyth Public Works	Ongoing	City Resources
Outreach on severe weather preparedness could save lives and protect property.	3.2.1 Promote preparedness for severe summer weather through outreach to the communities and schools.	New Project for 2021 Plan	Utilize social media and share NWS "Weather Ready Wednesdays" posts. Go into schools and provide outreach on preparedness to students.	County DES	Ongoing	County Resources, NWS
Employers don't provide severe weather awareness as part of their safety programs.	3.2.2 Partner with the National Weather Service on the Weather Ready Nation Ambassador Program.	New Project for 2021 Plan	Encourage organizations and business in communities to sign up and promote WRN program to their staff and post on websites.	County DES	Ongoing	County Resources, NWS

Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
Tools offered by the NWS are not being utilized to the fullest extent.	3.3.1 Support efforts by the NWS to provide preparedness training to community members and homeowners.	New Project for 2021 Plan	NWS will continue to provide spotter training every other year. Promote Storm Ready communications links as this program is modernized.	NWS	Ongoing	County Resources, NWS
Upgrading electrical infrastructure to underground lines is expensive and often not an option for Rural Electric Co-ops.	3.4.1 Encourage utility companies to bury electric and communication lines in hazard areas.	New Project for 2021 Plan	MDU and Range Telephone have buried utilities in some areas. Have brought secondary feed into Forsyth from different set of lines. Mid-Yellowstone Rural Electric Co-op and Tongue River Electric in Ashland also provide utilities in county.	County Commissioners	Ongoing	County Resources, Utilities
<b>COMMUNICABLE DISEASE MITIGATION PROJECTS</b>						
Vector-borne diseases could be problem in the county.	4.1.1 Control mosquito populations in cities and towns.	New project for 2021 Plan.	Spray on a weekly basis during summer as problem becomes apparent.	City Public Works	Ongoing	City & Town Resources
New diseases could be brought into the county impacting public health.	4.1.2 Prevent and control communicable disease through surveillance, testing and immunization.	New project for 2021 Plan.	Monitor Health Alert Network. Conduct annual flu clinics at Public Health Dept. and fairgrounds. Hold drive thru clinics during pandemic. Public Health to go to other places in communities, as needed, to reach vulnerable populations.	County Public Health	Ongoing	County Resources
Community members don't necessarily receive enough public health education.	4.2.1 Promote public education on preventing communicable disease.	New project for 2021 Plan.	Utilize broadcast, print, and social media to provide education. Medical director to give weekly updates, as needed, on the radio. PIO to post on EMS/DES and Public Health Facebook pages. Utilize smart box at post office for elderly who don't do Facebook. Hang posters in public places. Use electronic billboards of PSAs.	County Public Health	Ongoing	County Resources
Training and exercising for public health emergencies could be improved.	4.3.1 Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.	New project for 2021 Plan.	Open pod for mass immunization once a year. Collaborate with Sheriff's Dept., EMS, Commissioners, and Hospital.	County Public Health	Ongoing	County Resources
New diseases could be brought into the county impacting public health.	4.3.2 Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.	New project for 2021 Plan.	Receive HANs from state. Make decision who to distribute HAN to. Broad lists go to schools, veterinarians, every entity in county. Small list goes to medical providers.	County Public Health	Ongoing	County Resources

Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
<b>SEVERE WINTER WEATHER MITIGATION PROJECTS</b>						
Many rural residences do not post addresses which delays emergency response.	5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.	Reflective address signs at driveways are about 10% complete in county. Have been promoted through 911 and 4-H/Boy Scout fundraisers.	Continue promoting through community service and fundraising projects.	Rural addressing, 911	Ongoing	County Resources, Landowners
Outreach on severe weather preparedness could save lives and protect property.	5.2.1 Promote preparedness for severe winter weather through outreach to the communities and schools.	New Project for 2021 Plan	Obtain MDT Winter Weather Survival guides and make available at courthouse and community events. Bring materials to schools for distribution.	County DES, City Chamber of Commerce	Ongoing	County & City Resources
<b>FLOODING AND DAM FAILURE MITIGATION PROJECTS</b>						
Requirements of USACE levee certification process is expensive and often difficult to comply with.	6.1.1 Address any issues related to the Forsyth levee that arise during the current re-certification process.	City working with USACE on System-wide Improvement Framework (SWIF). Levee inspected annually. City has invested in tree & brush removal, installing culverts, working with every property owner, levee has been surveyed, owners have removed anything that infringes. County did tree removal and repair of washout at far east end.	Continue same. Major rip-rap project in future.	City, County DES	Ongoing	City & County Resources, Grants
Heavy rains produce flooded intersections and basements in Forsyth.	6.1.2 Develop a stormwater management plan for Forsyth.	New Project for 2021 Plan.	Hire consultant to complete stormwater management plan. Implement project as funding allows.	Forsyth Public Works	Mid-term	City Resources, Grants
Incomplete floodplain mapping leaves flood prone areas unregulated. Residents not aware when floodplain permits are needed.	6.1.3 Support completion of floodplain mapping and update of the county floodplain ordinance.	New Project for 2021 Plan.	High accuracy LiDAR available for Yellowstone River in county. DNRC in process of applying for a grant to update the studies. Inquiry by wind farm north of Forsyth would be in floodplain.	County & Forsyth Floodplain Administrators	Mid-term	FEMA, DNRC, County, Resources
Electric poles have become compromised due to river hydraulics and erosion.	6.2.1 Stabilize bank erosion at the intersection of River and Old Mission Roads in Ashland.	No progress to report.	Tongue River makes 90 degree turn here. Tongue River Electric had to move a couple of poles due to erosion. Used to be bridge pilings there that slowed river from pounding into bank. Future project to put in some riprap.	County Road Dept.	Long-term	County Resources, Grants

Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
Inadequate infrastructure precludes drainage of flood water.	6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.	New Project for 2021 Plan.	Upgrade culverts when washouts occur. Encourage MDT to upgrade bridges that need work.	County Road Dept., Forsyth Public Works	Ongoing	County & City Resources
County residents may not be aware of availability and benefits of flood insurance.	6.3.1 Continue to promote the National Flood Insurance Program and compliance with the county floodplain ordinance.	New Project for 2021 Plan.	Flood insurance not required inside levee in Forsyth. Most properties outside levee are higher than riverbank. Continue NFIP compliance.	County & Forsyth Floodplain Administrators	Ongoing	County & City Resources
First responders do not participate in tabletop exercises held by dam owners.	6.4.1 Encourage emergency response partners to participate in dam exercises.	New Project for 2021 Plan.	Encourage dam owners to conduct annual tabletop exercises. Ensure county and city response agencies participate.	County DES	Ongoing	County & City Resources, Dam Owners
Colstrip has not participated in exercises for Castlerock Lake Dam. Dam failure could wipe out water system. Threat to community.	6.4.2 Engage the City of Colstrip in dam failure awareness and preparedness.	New Project for 2021 Plan.	Ensure City is invited to annual tabletop exercises. Obtain copy of Castlerock Lake Dam EAP. Provide info to public on exercises and dam failure risk via social media.	County Commissioners, City of Colstrip	Ongoing	County & City Resources
<b>STRUCTURE FIRE MITIGATION PROJECTS</b>						
Number of structure fires could be reduced with more prevention education.	7.1.1 - Support structure fire educational programs in school on topics supplied by International Fire Council.	New Project for 2021 Plan	Continue going to schools once a year and conduct active fire drills with smoke machines. Show students fire trucks. Colstrip will continue to fall fire prevention program in schools and include articles in quarterly city newsletter.	Forsyth, Colstrip, Ashland VFDs	Ongoing	County & City Resources
Cities do not have enough volunteers to fight structure fires. New recruits must be trained.	7.2.1 - Recruit and train volunteers for city fire departments.	New Project for 2021 Plan	Continue to recruit firefighters through word of mouth. Continue bi-monthly training on basics and send new recruits annually to Cody for fire school	Forsyth, Colstrip, Ashland VFDs	Ongoing	County & City Resources
City infrastructure is undersized for structure fire response.	7.2.2 - Update equipment needed for suppressing structure fires.	New Project for 2021 Plan	Buy new equipment. as needed. Look at grants for funding opportunities.	County Fire, Forsyth, Colstrip, Ashland VFDs	Ongoing	County & City Resources, Grants
<b>HAZARDOUS MATERIALS &amp; TRANSPORTATION ACCIDENTS MITIGATION PROJECTS</b>						
Haz-Mat response team is several hours away, so local first responders need basic haz-mat awareness training.	8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.	New project for 2021 Plan	Provide haz-mat awareness training to first responders every two years (ambulance, EMS, Fire Dept., Sheriff's Dept.). Colstrip to continue to train with power plant and mine haz-mat teams. Joint training with Police Dept., clinic, EMS.	County & City Fire Depts.	Ongoing	County & City Resources

Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
All emergency response planning partners do not participate in LEPC.	8.1.2 Encourage the railroad, pipeline companies, mining company, and power plant to more consistently attend LEPC meetings to plan for haz-mat response.	New project for 2021 Plan	Request entities to provide more than sporadic attendance to ensure a more cohesive planning effort takes place.	County DES	Ongoing	County Resources
County first responders need to train together with industry in the communities.	8.1.3 Encourage the power plant, mining company, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.	New project for 2021 Plan	Ensure County and Colstrip Fire Depts. participate in training offered at Power Plant and annual safety meetings. Train with Safety & Rescue Teams at both Power Plant and mine. Coordinate training with railroad and pipeline companies.	County DES	Ongoing	County & City Resources
<b>ALL HAZARD MITIGATION PROJECTS</b>						
Continuity of operations would be impacted by lack of backup power.	9.1.1 Obtain back-up power for water and wastewater treatment plants.	Colstrip and Forsyth have generators for lift stations. No other progress to report.	Be aware of grants to provide funding for Forsyth water system generator. Determine generator needs Ashland water and wastewater systems.	City Public Works, Water Users	Mid-term	County & City Resources, Grants
Dispatch uncertain when to activate sirens. Additional equipment needed to cover all of Forsyth.	9.1.2 Educate dispatch and first responders about siren systems and procure additional equipment, as needed.	Forsyth has two sirens which are tested every month. Colstrip has four sirens that are tested monthly in conjunction with sirens at the power plant.	Continue same. Be aware of funding opportunities for third siren in Forsyth.	Sheriff's Office	Ongoing	County & City Resources, Grants
Continuity of operations would be impacted by lack of backup power.	9.1.3 Obtain back-up power for county and city critical facilities.	Sheriff's office & hospital have automated systems. EMS/DES has a manual generator. Colstrip law enforcement has generator.	Be aware of grants to provide funding. Generator still needed for Forsyth City Hall and County Courthouse.	City Public Works, County DES	Mid-term	County & City Resources, Grants
There are not enough trained first responders or EMS personnel.	9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.	New project for 2021 Plan	Ongoing effort to recruit first responders. Training to be held in next year for new recruits.	County DES	Ongoing	County Resources
First responder communication is impacted by poor cell service.	9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.	New project for 2021 Plan	Continue to be aware of First Net project and implement when available.	County DES	Mid-term	County Resources
Enforcement of building codes only occurs within city limits.	9.2.1 Adopt updated building codes.	Forsyth and Colstrip update building codes each time new ones released by state.	Continue same.	City Planning	Ongoing	City Resources
Next update of Growth Policies should incorporate the MHMP.	9.2.2 Update Growth Policies to encourage growth in low hazard areas.	New project for 2021 Plan	City of Forsyth to update Growth Policy in 2021. County to update every 5 years. Colstrip updated in 2019.	County & City Planning	Ongoing	County & City Resources



**Table 5.5-3. Rosebud County 2021 Mitigation Strategy – Implementation Details**

Problem Statement	Mitigation Project	Progress Made	Planned Activities	Responsible Agency / Department	Schedule	Potential Funding Source
Disaster resistant construction should be required in future development.	9.2.3 Update subdivision regulations to adopt higher minimum standards that improve disaster resistance.	New project for 2021 Plan	Consult with MT Dept. of Commerce on model subdivision regulations and incorporate development standards into future revision.	County & City Planning	Ongoing	County & City Resources
Emergency Notification System doesn't alert cell phones unless they're registered with system.	9.3.1 Promote registration of cell phones for the "Regroup" emergency notification system.	New project for 2021 Plan	County added "Regroup" for mass notification in 2016. Utilize print, broadcast and social media to inform citizens that they need to register their cell phones to receive notifications.	County DES	Ongoing	County Resources
Notes: BLM = U.S. Bureau of Land Management; DES = Disaster and Emergency Services; DNRC = Montana Department of Natural Resources and Conservation; EMS = Emergency Medical Service; FSA = Farm Service Agency; FWP = Montana Fish, Wildlife & Parks; HAN = Health Alert Network; LEPC = Local Emergency Planning Committee; LiDAR = Light Detection and Ranging; MDT = Montana Department of Transportation; MDU = Montana Dakota Utilities; MHMP = Multi-Hazard Mitigation Plan; MSU = Montana State University; NFIP = National Flood Insurance Program; NRCS = Natural Resources Conservation Service; NWS = National Weather Service; PIO = Public Information Officer; PSA = Public Service Announcement; SWIF = System-wide Improvement Framework; USACE = U.S. Army Corps of Engineers; VFD = Volunteer Fire Department; WRN = Weather Ready Nation; WUI = Wildland Urban Interface.						



## SECTION 6. PLAN MAINTENANCE PROCEDURES

The Plan maintenance section details the formal process that will ensure that the Rosebud County MHMP remains an active and relevant document. The maintenance process includes a schedule for monitoring and evaluating the Plan and producing a Plan revision every five years. The Plan can be revised more frequently than five years if the conditions under which it was developed change significantly (e.g. a major disaster occurs, and projects are accomplished, and/or new projects need to be identified, or funding availability changes). This section also describes how Rosebud County will monitor the progress of mitigation activities and how the Plan will be incorporated into existing planning mechanisms. The final section describes how Rosebud County will integrate public participation throughout the Plan maintenance process.

### 6.1 Monitoring, Evaluating and Updating the Plan

Evaluation of the mitigation plan consists of an assessment of whether the planning process and actions have been effective and whether changes are needed. The review should determine whether the hazards profiled remain relevant and what new hazards may affect the area, whether new vulnerabilities have emerged, whether capabilities have changed to support mitigation, and whether the plan goals are being reached. Plan updates typically occur every five years but can take place more frequently, if needed.

#### 6.1.1 2013 PDM Plan

The 2013 PDM Plan indicated that each summer the LEPC would meet to ask and answer the questions listed below. The discussion was to have been documented so that when the Plan was updated, the finding of the monitoring could be incorporated into the revision.

- Have any potential hazards developed that were not addressed in the Plan?
- Have any natural disasters occurred that were not addressed in the Plan?
- Has any unanticipated development occurred that is vulnerable to hazards?
- Are there any additional mitigation ideas that need to be incorporated?
- Have projects been initiated and/or completed?
- What are the barriers to completing the projects identified in the Plan?

According to the MHMP Planning Team, sections of the 2013 Rosebud County PDM Plan were reviewed seasonally, as deemed appropriate, over the past eight years; i.e. the wildfire section was reviewed ahead of the fire season, flood section was reviewed ahead of the flood season. The LEPC talked about the Plan on various occasions; however, meeting notes did not document these discussions. Consequently, no information exists about monitoring or evaluation of the 2013 Plan.

In 2018, Rosebud County was one of eight counties who went together on a FEMA planning grant application to complete their hazard mitigation plan update. This project was funded and subsequently Tetra Tech was hired to complete the PDM Plan updates.

#### 6.1.2 2021 MHMP

The 2021 MHMP will be reviewed at meetings of the LEPC once each fiscal year. The LEPC membership includes many of the MHMP Planning Team members who will bring insight to the group on plan development. The Plan will be reviewed once a year by the LEPC who will consider

any new hazards and/or vulnerabilities in the county, as well as identify any new mitigation projects which should be added to the Plan. The review should determine whether a Plan update is needed prior to the required five-year update.

The Rosebud County DES Coordinator will be responsible for ensuring the annual MHMP review is on the agenda at the LEPC meetings. The DES Coordinator will document the meeting by preparing a status report summarizing the outcome of the plan review. Meeting notes will be posted on the county website and/or otherwise made available to interested stakeholders. Notes from the annual plan review meetings will be kept in a permanent file designated for the next (2026) MHMP update. If new projects are to be added to the Plan, a memorandum will be drafted to amend the Plan and submitted to the County Commissioners, Forsyth City Council, and Colstrip City Council for adoption, as appropriate.

The MHMP will also be evaluated and revised following any major disasters, to determine if the recommended actions remain relevant and appropriate. The risk assessment will also be revisited to see if any changes are necessary based on the pattern of disaster damages. This is an opportunity to increase the community's disaster resistance and build a better and stronger community. The meeting will be documented with notes posted on the county website and placed in a permanent file designated for the next (2026) MHMP update.

Three years after adoption of the MHMP, Rosebud County may decide to apply for a planning grant through FEMA to start the 2026 MHMP update. Upon receipt of funding, the county will solicit bids in accordance with applicable contracting procedures and hire a contractor to assist with the project. The proposed schedule for completion of the Plan update is one year from award of a contract, to coincide with the five-year adoption date of the 2021 MHMP update.

The Rosebud County DES Coordinator will be responsible for the Plan update. Before the end of the five-year period, the updated Plan will be submitted to FEMA for approval. When concurrence is received that the updated Plan complies with FEMA requirements, it will be submitted to the Rosebud County Commissioners, the Forsyth City Council, and the Colstrip City Council for adoption. The DES Coordinator will send an e-mail to individuals and organizations on the stakeholder list to inform them that the updated Plan is available on the county website.

## 6.2 Monitoring Progress of Mitigation Activities

The process for monitoring and evaluating mitigation projects will be the responsibility of the LEPC, an organization comprised of local officials from Rosebud County, Forsyth, and Colstrip, emergency response entities, local businesses, and non-profit organizations who meet on a regular basis. The following sections describe monitoring actions over the past five years and an updated strategy going forward.

### 6.2.1 2013 PDM Plan

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Since development of the 2013 PDM Plan, several mitigation projects were completed in Rosebud County (see *Section 5.1*) while a number of other projects are on-going and will continue through the next planning period. Rosebud County DES has monitored completion of most mitigation projects; however, the 2013 PDM Plan did not outline a specific process to track the initiation, status, and completion of mitigation activities.

### **6.2.2 2021 MHMP**

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Going forward, the LEPC will review the mitigation goals, objectives, and actions once per fiscal year, to ensure progress is being made. They will evaluate the feasibility of the mitigation projects, monitor resources, budgets, and schedules, and document project completion, at a minimum, once a year. This group will provide a venue for reporting and accountability. Most MHMP Planning Team members are part of the LEPC. The Rosebud County DES Coordinator will coordinate these meetings and be responsible for taking notes, posting them on the county website, and maintaining a permanent file for the next (2026) MHMP update.

At the annual meetings to monitor and evaluate mitigation projects, the LEPC will review:

- Any grant applications filed on behalf of any of the participating jurisdictions.
- Hazard events and losses occurring in the various jurisdictions.
- Progress on implementing mitigation actions, including efforts to obtain outside funding.
- Obstacles or impediments to project implementation.
- Additional mitigation actions believed to be appropriate and feasible.
- Public and stakeholder input.

A mitigation action plan has been developed for each project in this Plan (**Appendix D-3**). Each agency or department listed as a “responsible entity” should receive a copy of the mitigation strategy assigned to them and record progress and developments towards implementation. During the LEPC meetings where project status is reviewed, each agency/dept. will provide an update of projects under their purview and can coordinate with the LEPC on challenges, successes, and opportunities. Mitigation project evaluations will assess whether:

- Goals and objectives address current and expected conditions.
- The nature or magnitude of the risks has changed.
- Current resources are appropriate for implementing the MHMP and if different or additional resources are now available.
- Actions were cost effective.
- Schedules and budgets are feasible.
- Implementation problems, such as technical, political, legal or coordination issues with other agencies are presents.
- Outcomes have occurred as expected
- New agencies/departments/staff should be included.

The DES Coordinator position in Rosebud County is not federally funded and is held by the Ambulance Director (who has other responsibilities besides DES). As such, the coordinator will require the assistance of the LEPC to administer the county’s mitigation program. Responsibility for securing mitigation grants will be shared with various county departments and the cities, as follows:

- Flood projects will be managed by the Rosebud County Road Department.
- Wildfire projects will be managed by the Rosebud County Fire Department.
- Drought projects will be managed by the Rosebud County Extension/Conservation District.
- Communicable Disease projects will be managed by Rosebud County Public Health.
- Severe Weather and All Hazard projects will be managed by the Rosebud County DES and Public Information Officer.
- Forsyth and Colstrip will manage grants and mitigation projects through the mayor’s office with assistance from the Clerk-Treasurer and various departments, as needed.

All departments will report to the DES Coordinator, who will track mitigation grants through a central database and will assist the departments in issuing quarterly reports and with financial reporting.

Rosebud County may want to consider measuring their mitigation success by participating in the STAR Community Rating System. Local leaders can use the STAR Community System to assess how sustainable they are, set goals for moving ahead and measure progress along the way. More information: <http://starcommunities.org/get-started>.

FEMA’s Grants Management Technical Assistance program launched the *Grants Management Digital Resource Center* to provide information and resources to support the grant management lifecycle. Tools have been created to highlight documentation management and retention practices for non-federal entities who receive federal financial assistance from FEMA. Rosebud County may want to consider utilizing these tools to assist with grant management.

FEMA has a project *Closeout Toolkit* for HMGP sub-award closeouts. Subaward closeout is the process by which the recipient and FEMA verify that a subaward scope of work has been completed as approved and that all reimbursed costs were eligible. The recipient has primary responsibility for the closeout tasks associated with both the program and subrecipient requirements. The recipient must conduct final inspections for projects, reconcile subrecipient expenditures, resolve negative audit findings, obtain final reports from subrecipients, and reconcile the closeout activities of subrecipients with HMGP grant award requirements. These activities must all be done within the grant’s period of performance.

### 6.3 Implementation through Existing Programs

Rosebud County will have the opportunity to implement the mitigation strategy through existing programs and procedures. The mitigation strategy, including goals and actions, will be incorporated into the plans, regulations and ordinances as they are updated in the future or when new plans are developed. **Table 6.3-1** presents a summary of existing plans and ordinances and how integration of mitigation projects will occur.

**Table 6.3-1. Implementation of Mitigation into Existing Plans and Codes**

Type	Name	Integration Technique
<b>Plans</b>		
Emergency Operations	Rosebud County Emergency Operations Plan	Integrated by reference in MHMP.
Growth Policies	Rosebud County Growth Policy	Integration of mitigation strategies will occur when growth policies are revised.
	City of Forsyth Growth Policy	
	City of Colstrip Growth Policy	
Wildfire Mitigation	Rosebud County Community Wildfire Protection Plan	Wildfire mitigation projects will be incorporated when plan is revised.
Flooding	Rosebud County Flood Insurance Study	Integration of mitigation plan will occur, as appropriate, when study is revised.
Capital Improvement Plan	Rosebud County Capital Improvement Plan	Integration of mitigation plan will occur when CIP is revised.
<b>Codes, Regulations &amp; Ordinances</b>		
Zoning	City of Forsyth Zoning Regulations	Mitigation plan will be incorporated into revisions of zoning ordinances.
	City of Colstrip Zoning Regulations	
Subdivisions	Rosebud County Subdivision Regulations	Mitigation plan will be incorporated into revisions of subdivision regulations.
	City of Forsyth Subdivision Regulations	
	City of Colstrip Subdivision Regulations	
Floodplain	Rosebud County Floodplain Regulations	Mitigation plan will be incorporated into revisions of floodplain regulations.
	City of Forsyth Floodplain Regulations	

A summary of how the MHMP can be integrated into the legal framework is presented below:

- Partner with other organizations and agencies with similar goals to promote building codes that are more disaster resistant on the State level.
- Develop incentives for local governments, citizens, and businesses to pursue hazard mitigation projects.
- Allocate County resources and assistance for mitigation projects.
- Partner with other organizations and agencies in eastern Montana to support hazard mitigation activities.

Rosebud County and the Cities of Forsyth and Colstrip use a growth policy to guide development. Typically, a growth policy will address hazards; specifically, that life and property be protected from natural disasters and man-caused hazards. Mitigation goals in the MHMP will be recommended for incorporation into future revisions of these growth policies to ensure that high-hazard areas are being considered for low risk uses.

To ensure that the requirements of the MHMP are incorporated into other planning mechanisms and remain an on-going concern in Rosebud County, job descriptions of various staff will be enhanced to include a mitigation component. Job descriptions for the County Planner, Floodplain Administrator, and Road Dept. supervisor will be updated to include involvement in the LEPC. Participation in this group will provide an awareness of new and on-going mitigation initiatives for the purpose that they be integrated into plans, codes and regulations during revision. The job description of the DES Coordinator will include responsibilities for implementing outreach activities for risk reduction in the county, coordinating with the Board of County Commissioners to secure funding for mitigation projects, mitigation project implementation, scheduling the annual LEPC meetings to review the MHMP, and updating the MHMP. The DES Coordinator will also be responsible for maintaining a permanent file for the MHMP planning process, which will include damage figures from hazard events, records of mitigation projects, and notes/minutes from relevant meetings.

Meetings of the Board of County Commissioners and City Councils will provide an opportunity for Rosebud County DES to report back on the progress made on the integration of mitigation planning elements into planning documents and procedures for Rosebud County, Forsyth and Colstrip.

### 6.4 Continued Public Involvement

Rosebud County is dedicated to involving the public directly in review and updates of the MHMP. The public will have many opportunities to provide feedback about the Plan. Hard copies of the Plan will be kept at appropriate county and city offices. An electronic copy of the Plan will be available on the Rosebud County website. The existence and location of Plan hard copies will be publicized on the county website. *Section 2.0* includes the address and the phone number of Rosebud County DES who will be responsible for keeping track of public comments on the Plan.

The public will be invited to meetings of the LEPC when the MHMP is discussed. The meetings will provide the public a forum for which they can express concerns, opinions, or ideas about the Plan. The DES Coordinator will be responsible for using county resources to publicize the public meetings and maintain public involvement through print, broadcast and/or social media.

The MHMP Planning Team will continually observe the processes for public outreach. By monitoring these activities, the Planning Team will then be able to evaluate them at the time of the Plan update and determine if any changes are needed.

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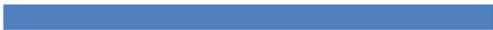
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Rosebud County  
Multi-Hazard  
Mitigation Plan  
2021 Update

**APPENDIX A**  
Resolutions



**RESOLUTION NO. 2022-R03**

**A RESOLUTION OF THE CITY OF FORSYTH, MONTANA ADOPTING  
ROSEBUD COUNTY MULTI-HAZARD MITIGATION PLAN.**

WHEREAS, in October of 2000 the President of the United States signed into law the "Disaster Mitigation Act of 2000" (PL 106-390) to amend the "Robert T. Stafford Disaster Relief and Emergency Act of 1988" which among other provisions requires local governments to adopt a Multi-Hazard Mitigation Plan in order to be eligible for hazard mitigation funding;

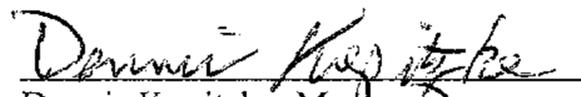
WHEREAS, the City of Forsyth, Montana has worked closely with Rosebud County Disaster and Emergency Services to update a county-wide Multi-Hazard Mitigation Plan that will serve the needs of Rosebud County;

WHEREAS, the City of Forsyth, Montana supports the 2021 Update to the Rosebud County Multi-Hazard Mitigation Plan as a logical means toward protecting people and property from the potential devastating effects of natural and man-made hazards;

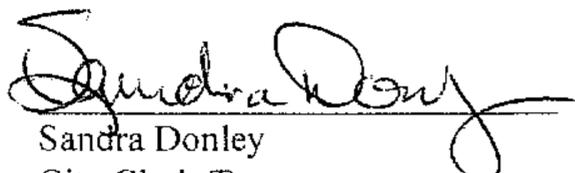
NOW THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF FORSYTH THAT:

**THE CITY COUNCIL OF THE CITY OF FORSYTH ADOPTS BY WAY OF RESOLUTION, THE "ROSEBUD COUNTY, MONTANA MULTI-HAZARD MITIGATION PLAN- 2021 UPDATE" AS APPROVED BY THE MONTANA DISASTER AND EMERGENCY SERVICES AND THE FEDERAL EMERGENCY MANAGEMENT AGENCY.**

PASSED by the City Council and APPROVED this 14<sup>th</sup> day of February 2022.

  
Dennis Kopitzke, Mayor

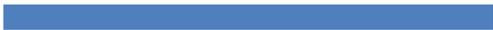
ATTEST:

  
Sandra Donley  
City Clerk-Treasurer



Rosebud County  
Multi-Hazard  
Mitigation Plan  
2021 Update

**APPENDIX B**  
Planning Process  
Documentation



APPENDIX B-1

PLANNING TEAM &  
PROJECT  
STAKEHOLDERS

**APPENDIX B-1. MHMP PLANNING TEAM****ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>TYPE</b>	<b>FIRST NAME</b>	<b>LAST NAME</b>	<b>AFFILIATION</b>
Business	Tina	Beach	CHS Pipeline
Colstrip	Jaylene	Allison	Colstrip Fire Dept.
Colstrip	Cory	Hert	Colstrip Police Dept.
Colstrip	Bryan	Swan	Colstrip Public Works
Colstrip	John	Williams	Colstrip Mayor
County	Jennifer	Anderson	Rosebud County Extension Office
County	Rodney	Dresbach	Rosebud County Rural Fire Chief
County	Courtney	Haus	Rosebud County Public Information Officer
County	Ed	Joiner	Rosebud County Commissioner, District 3
County	Keith	Raymond	Rosebud County DES & Emergency Medical Services
County	Shelly	Schnitzmeier	Rosebud County Public Health
Federal	Tom	Frieders	National Weather Service Warning Meteorologist
Forsyth	Dennis	Kopitzke	Forsyth Mayor
Forsyth	Doris	Pinkerton	Forsyth Clerk/Treasurer
Forsyth	Pat	Zent	Forsyth Water/Wastewater
State	Charlie	Hanson	Montana DES District Field Representative

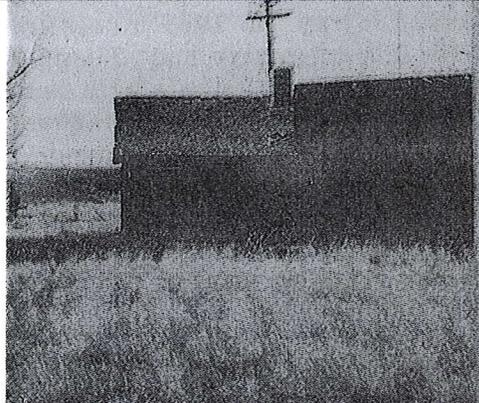
**APPENDIX B-1. PROJECT STAKEHOLDERS  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>TYPE</b>	<b>FIRST NAME</b>	<b>LAST NAME</b>	<b>AFFILIATION</b>
Adjoining County	Andrew	Harper	Musselshell County DES Coordinator
Adjoining County	Rebecca	McEuen	Powder River County DES Coordinator
Adjoining County	Ann	Miller	Garfield County DES Coordinator
Adjoining County	Brian	Mischel	Big Horn County DES Coordinator
Adjoining County	Bud	Peterson	Custer County DES Coordinator
Adjoining County	Nicole	Stephenson	Treasure County DES Coordinator
Business	Tina	Beach	CHS Pipeline
Colstrip	Pat	Campbell	Colstrip Council Member
Colstrip	Wayne	Dudley	Colstrip Council Member
Colstrip	Kami	Egan	Colstrip Planning/Zoning/Code Official
Colstrip	Cory	Hert	Colstrip Police Dept.
Colstrip	Greg	Koczur	Colstrip Council Member
Colstrip	Rob	Pontius	Colstrip Fire Dept.
Colstrip	Michelle	Richards	Colstrip City Clerk/Treasurer
Colstrip	Bryan	Swan	Colstrip Public Works
Colstrip	John	Williams	Colstrip Mayor
County	Amy	Adler	Rosebud County Rural Addressing
County	Jennifer	Anderson	Rosebud County Extension Office
County	Melissa	Ashley	Rosebud County Extension Office
County	Lisa	Blevins	Rosebud County Superintendent of Schools
County	Wayne	Buck	Rosebud County Road Dept.
County	Rodney	Dresbach	Rosebud County Rural Fire Chief
County	Allen	Fulton	Rosebud County Sheriff
County	Courtney	Haus	Rosebud County Public Information Officer
County	Ed	Joiner	Rosebud County Commissioner, District 3
County	Sarah	Kisman	Rosebud County Commissioner, Admin.
County	Robert E.	Lee	Rosebud County Commissioner-District 1, County Planner, Floodplain Admin.
County	Douglas D.	Martens	Rosebud County Commissioner, District 2
County	Chris	Purkett	Rosebud County IT Director, Forsyth Council Member
County	Keith	Raymond	Rosebud County DES & Emergency Medical Services
County	Michael	Rinaldi	Rosebud County Environmental Health
County	Shelly	Schnitzmeier	Rosebud County Public Health
County	Joan	Stahl	Rosebud County Clerk & Recorder, City-County Planning Board
Federal	Tom	Frieders	National Weather Service Warning Meteorologist
Fire	B.J.	Anderson	Rural Fire Dept.
Forsyth	Ethan	Bell	Forsyth Council Member
Forsyth	John	Hill	Forsyth Council Member
Forsyth	Dennis	Kopitzke	Forsyth Mayor
Forsyth	Cal	MacConnel	Forsyth Volunteer Fire Dept. Chief
Forsyth	Doris	Pinkerton	Forsyth Clerk/Treasurer
Forsyth	Carole	Raymond	Forsyth Council Member
Forsyth	Richard	Thompson	Forsyth Public Works, Floodplain Admin
Forsyth	Pat	Zent	Forsyth Water/Wastewater
Local Org.			Southeastern Montana Development Corp.
Media			Forsyth Independent Press
Non-Profit	Sherilynn	Hamilton	American Red Cross
State	Jeff	Brown	Montana DNRC - Fire Management Officer
State	Jeff	Gates	Montana DES District Field Representative
State	Charlie	Hanson	Montana DES District Field Representative
Tribal	Theresa	Small	Northern Cheyenne Reservation DES Coordinator
Utility	Daren	Reeder	Mid-Yellowstone Electric Co-op

APPENDIX B-2

MEETING

ANNOUNCEMENTS



at she lived in the house on the right  
others family lived in the other.

at the top was referred to as the bath house. Jim Patrick's son Gary lived for a time in the "bath house" with his first wife. Across the tracks was Soren Nielson's house. The two story green house, though in a sad state, is still there.

The post office closed on July 29, 1995, and though still has a zip code, it officially became a ghost town. Located midway between Miles City and Forsyth, the old buildings can be seen from the interstate and are a testament to Rosebud County's colorful past.

"Thanks to the hard work of our local health jurisdictions and health care workers, Montana's most vulnerable now have access to safe and effective COVID-19 vaccines." National data from the

off the hook." Rosebud County (including the Northern Cheyenne Reservation) has had 1,080 total cases of COVID-19 since the start of the pandemic with 30 deaths.

## County to develop updated disaster plan

### Staff Report

A virtual public meeting is scheduled to take place on Tuesday, Jan. 26 to kick-off the 2021 update of the Rosebud County Pre-Disaster Mitigation Plan.

According to Rosebud County Disaster and Emergency Services Director Keith Raymond, the PDM Plan update will re-examine the wide range of hazards that affect Rosebud County, recent hazard events, the

probability of future occurrences, and the vulnerabilities of our structures and population. From that assessment, a plan of action to mitigate these hazards can be developed.

The Federal Emergency Management Agency (FEMA) requires that a PDM Plan be in place for the county to receive disaster mitigation funds and apply for mitigation grants.

Continued on Page 7

## ts of power source, company says

rbines' h-speed technology of them generation 15 min- at 280 ess than 30 n the wind he state. ways the 450 mega- 50 mega- en it comes customers' e wind ur Montana thWestern resident a Govern- s John e result is ower reli- d instability ers."

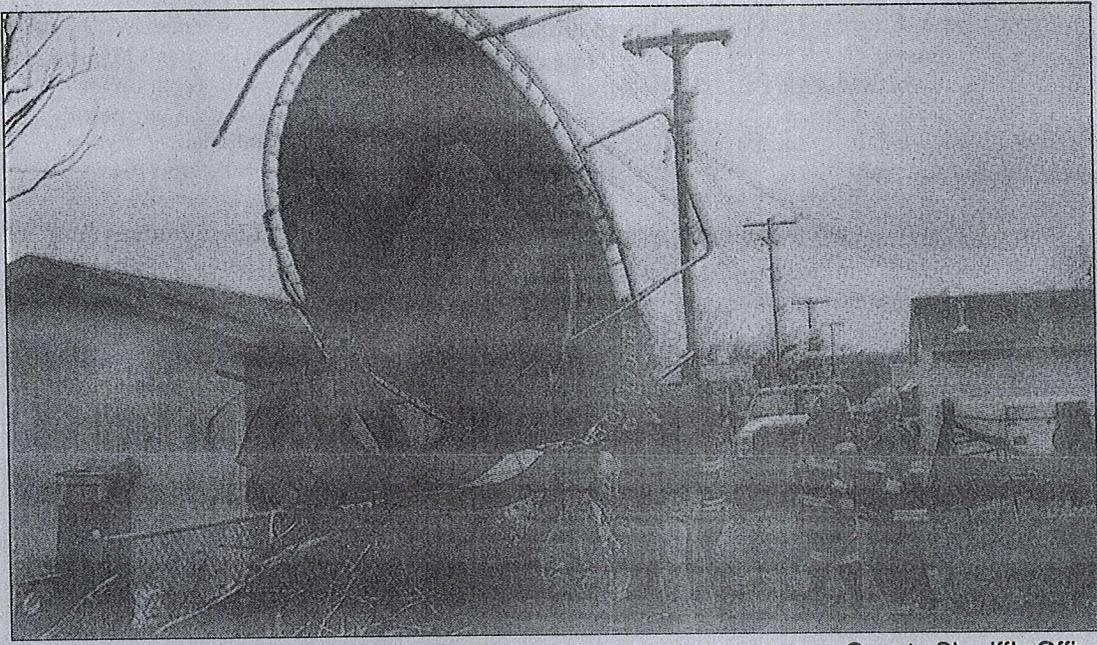


Photo courtesy of Rosebud County Sheriff's Office

Extreme wind on Jan. 13 caused several accidents on Montana highways along with other damage. This trampoline in Forsyth blew into a garage and power lines and was safely retrieved by the Forsyth Fire Department. The Rosebud County Sheriff's Office recommends trampolines be staked down.

# MSU Extension to hold Winter Series Jan. 28 at Eastern Mt. Fairgrounds

## Staff Report

The MSU Extension Winter Series will be held on Jan. 28 at the 4-H Building at the Eastern MT Fairgrounds.

Megan Van Emon, MSU Extension Beef Specialist, will be discussing cattle pests and parasites.

Her talk will also include the proper use of pour-on, fly tags, and other pest control methods and how to maximize effectiveness of control methods while preventing resistance to

those methods.

McCone County Extension Agent, Ken Nelson, will be discussing grasshopper predictions for 2021.

He will give a brief overview of the APHIS Rangeland Control Program, private rangeland and pasture control options, and cropland grasshopper issues and the control options available.

Eric Miller, Garfield County Extension Agent, will be discussing Cheat Grass Management.

This will include management options for the control of cheat grass. Miller will also discuss the growth cycle, spread, grazing, and herbicides.

Mike Schuldt, Custer County Extension Agent, will be discussing Forage Production Challenges such as alfalfa weevil control, which will address chemical control options, chemical resistance, and IPM management strategies, and risk management of annual cereal forage

crops such as barley, triticale, and oats.

Schuldt will also present information about Nitrate risk and reduction of this risk when feeding annual cereal crops to livestock.

The Winter Series will start at 1 p.m. and go until 5 p.m. Each talk will last for an hour.

To attend, the public needs to register with the Custer County Extension office by Jan. 25. Direct any questions to the Custer County Extension office at 406-874-3370.

## County to develop updated disaster plan

Continued from Page 1

There is a 10-month time frame for completing the draft plan. A virtual project kick-off meeting will be held at 9 a.m. on Tuesday, Jan. 26. Anyone may call into the meeting conference line at 406-247-0698, meeting ID: 626271158#.

Planning team meetings will be held from February through May.

The county will be

working with Tetra Tech, Inc. to develop the plan.

"By mid-October we will have a draft Plan for you to review and another public meeting will be held," Daphne Digrindakis, Tetra Tech Project Manager said. "Once the preliminary review is complete, the plan will be submitted to Montana DES and FEMA for approval."

After Plan approval,

the County and incorporated communities of Forsyth and Colstrip will be asked to adopt it. Once the plan is adopted, Rosebud County will remain eligible to receive FEMA mitigation grants and disaster mitigation funds.

Details on the project will be regularly updated on the following website: [www.MTmitigation.com/](http://www.MTmitigation.com/) select: Rosebud County,

password: Forsyth.

"We look forward to the public's involvement in this very important project," said Raymond. "Update of the Rosebud County PDM Plan will go a long way to save lives and protect property in our County. If you have any questions or need more information, please contact me at 406-346-7968 or Daphne Digrindakis with Tetra Tech at 406-475-2648."



# Business & Professional Directory

# Poetry, country-style cooking, great fellowship mark annual wagon train

By PAMELA ASH  
Staff Writer

Morris Ware started his annual wagon train in 2013 and has held it every year since in Ingomar. He said he did have to miss 2014 because he fell off his wagon and the wagon broke his back when it ran over him. The three-day event in Ingomar is held in August or September each year and people attend from all over the state. This year the wagon train event was held on Sept. 15-17.

Owen Badgett, local Ingomar author and poet, recited some of his poetry during the evening gatherings, and everyone enjoyed country style meals home cooked by

Emily Olson. Invited to join the festivities, this writer got her first experience of being part of such a fun and unusual activity. Daily rides follow different trails and visited different sites in the Ingomar area.

Visiting from Huntley with their wagons and horses were Dick and Dawn Grosskopf. From Wolf Point were Ray Reede, Gary Holman, and Loren and Vicki Bisbee. Roger Sprague from the Colstrip area and Loretta Haynes from Billings joined the group with Sprague's wagon and horses. Debb Brewer and eight-year-old daughter Malania were guests of LaDawna Erickson, co-owner with Emily Olson of Diamonds in

the Gumbo. The ladies treated Malania to horseback riding, riding in the wagon, and feeding Olson's award-winning longhorns.

"It was a little hard to get Malania off the horse so Debb could have a turn," Erickson said.

The festivities ended with a birthday party for Debb Brewer, and the preliminary start of plans for next year's wagon train.

With the ongoing drought and COVID-19 concerns, this year was a bit smaller, but a perfect opportunity to get to know the other folks attending. Morris said the biggest one he's hosted was for 30 people.



Sitting around the cook shed having morning breakfast and coffee: Owen Badgett, Morris Ware, and Gary Holman.



The 20-21 Wagon Train took place Sept. 15-17.



Malania Brewer and Emily Olson feeding the longhorns.

## In Celebration Of Columbus Day

Christopher Columbus made his first voyage to America in 1492. He sailed west from Palos, Spain with three ships and a crew of 87 men.

To honor Christopher Columbus for his discovery of America, we celebrate Columbus Day the 2nd Monday in October.

**BANKING**  
On a First Name Basis

**FIRST STATE BANK OF FORSYTH**



© Vic Jacquot



## JV defeats Roundup



Forsyth junior varsity volleyball took a match Saturday against Roundup, three games to one, by scores of 25-21, 25-23, 8-15 and 15-10.

Rosebud County Disaster and Emergency Services (DES) and Treasure County DES would like to announce the release of the DRAFT 2021 Update to their Multi-Hazard Mitigation Plans. These Plans are available for public review and comment through November 1, 2021.

Hazard Mitigation Plan updates are required by the Federal Emergency Management Agency (FEMA) in order for the county to receive disaster mitigation funds and apply for mitigation grants. The planning process for this Plan involved examining a wide range of hazards that affect the counties, recent hazard events, the probability of future occurrences, and the vulnerabilities of structures and population. From that assessment, a plan of action to mitigate these hazards was developed.

The Plans outline a mitigation strategy for reducing losses from wildfire, flooding, severe weather, drought, communicable disease, dam failure, hazardous material incidents, and transportation accidents in each county in the Rosebud and Treasure Counties.

The draft Plan for each county can be viewed online at:

[www.MTmitigation.com](http://www.MTmitigation.com) / select: Rosebud County / password: Forsyth / select: Draft Plan

[www.MTmitigation.com](http://www.MTmitigation.com) / select: Treasure County / password: Hysham/ select: Draft Plan

Virtual plan review meetings will be held as listed below. Anyone may call into the meeting conference line at 1-406-247-0698 to join the meeting.

**ROSEBUD COUNTY - Tuesday, October 5th at 9 am**  
Phone Conference ID: # 812 581 191#

**TREASURE COUNTY - Wednesday, October 6th at 12 noon**  
Phone Conference ID: 208 589 725#

If you are interested in joining the meeting in person, or seeing a hard copy of the draft Plan, please contact the following DES Coordinators:

**Rosebud County DES: Keith Raymond, at 406-346-7968 or [kraymond@rosebudcountymt.com](mailto:kraymond@rosebudcountymt.com)**

**Treasure County DES: Nicole Stephenson, at 406-342-5546 or [treasurecountylegalsecretary@gmail.com](mailto:treasurecountylegalsecretary@gmail.com)**

The public will have a second opportunity to review the Plan concurrent with review by Montana DES and FEMA, from December 1, 2021 to February 1, 2022.

## Migratory bird hunters reminded of change to wanton waste of game

The 2021 Migratory Bird Regulation booklets contain language on wanton waste of game that is no longer accurate. Because the regulations were printed before the Montana Legislature changed the statute, the information is outdated.

The regulation reflecting the new statute reads:

"Waste of Game (MCA 87-6-205) Wanton Waste - No person shall kill or cripple any

migratory game bird pursuant to this part without making a reasonable effort to retrieve the bird and retain it in his/her actual custody. Under Montana law, it is unlawful to waste any part of a game bird suitable for food. For migratory birds, suitable for food means the breast meat."

The regulations posted on the FWP website are current with the new language.

APPENDIX B-3

MEETING

SUMMARIES &

PRESENTATIONS

ROSEBUD COUNTY MHMP 2021 UPDATE  
PUBLIC MEETING NOTES  
TUESDAY, JANUARY 26, 2021  
9am – 10:30am

**ATTENDANCE:**

Keith Raymond	Rosebud Co. DES
Cory Hert	Colstrip Police Dept.
Charlie Hanson	MT DES Field Representative
Dennis Kopitzke	Forsyth Mayor
Miles Dennis	Ashland Fire Dept.
Pat Zent	Forsyth Water/Wastewater
Lisa Blevins	Rosebud Co. Superintendent of Schools
Rod Dresbach	Rosebud Co. Rural Fire Chief
Shelly Schnitzmeier	Rosebud Co. Public Health
Richard Thompson	Forsyth Public Works
Ed Joiner	Rosebud Co. Commissioner
Daphne Digrindakis	Tetra Tech

**PRESENTATION**

2013 Rosebud County PDM Plan & Mitigation Strategy Review

**NOTES:**

**Plans and Studies, Regulations**

- County and Town of Colstrip finished Growth Policies last year.
- Forsyth has a growth plan, subdivision regs, zoning, floodplain, building codes

**Future Development**

- A windfarm will begin construction in the spring in Rosebud County and will require additional roads. Currently, the county has over 1,200 miles of roads.
- There is the possibility that oil drilling in the Sumatra/Ingomar area will resume. 100 test wells were being talked about prior to the pandemic.

**Drought**

- Ranchers in the southern part of the county have had problems with grasshoppers. Many had to sell cattle because there is no grass. This year could be worse. Lack of snowfall make drought a concern in 2021.
- Rosebud County has hired an extension agent.
- 2020/2021 Forsyth area is 2.5 inches behind in moisture. Birney area south of the Northern Cheyenne Reservation is 3.5 inches behind. So far this winter, moisture deficits haven't been made up.

**Severe Winter Weather**

- Significant winds a couple of weeks ago (Jan. 2021) with 72 mph in Forsyth, 82 in Ingomar. Power line fires occurred in central Montana and many power poles were knocked down. No damage in Rosebud County.

ROSEBUD COUNTY MHMP 2021 UPDATE  
PUBLIC MEETING NOTES  
TUESDAY, JANUARY 26, 2021  
9am – 10:30am

**Wildfire**

- Fuel reduction has been completed at the following fishing access sites and represent completed mitigation projects from the 2013 PDM Plan: West Rosebud/Hwy 12 in Forsyth, East Rosebud/15<sup>th</sup> Street in Forsyth, and Far West/Fishing Access Rd. in Rosebud.

**Flooding**

- Forsyth has an uncertified levee; however, 95% of the certification issues have been taken care of.
- There may be some other private levees in the county but not sure.
- Behind the Rosebud Co. Fairgrounds in Forsyth, high water ate the riverbank away in 2011. FEMA came in and moved the levee. The project cost roughly \$400-500K.
- The mitigation project to stabilize bank erosion at River/Old Mission Roads in in Ashland. The project still needs work.

**Hazardous Materials**

- No significant haz-mat issues in Rosebud County since 2013.
- Home Oil had significant leak that forced them to move. B-1 Propane moved transfer tanks out of town. Amerigas is propane dealer in Ashland.
- BNSF runs more than 4 trains a day through the county. Oil trains from Bakken Oil field are comprise a significant number of the trains.
- There are a couple of different pipelines through Rosebud County. Keith has maps. Cenex runs along highway. Williston Basin pipeline runs along Armels Creek.

**All Hazard**

- Schools in Rosebud County are prepared for multiple hazards.

**Planning Team Meetings**

Six Planning Team Meeting will be held approximately every three weeks, on a Wednesday, at 9am. Participants can either join meeting online or by phone via MS Teams platform.

Planning Team Meeting #1

**Wednesday, Feb. 17th at 9am**

Score hazards using CPRI

Planning Team Meeting #2

**Wednesday, March 10th at 9am**

Review critical facilities and hazard impact maps

Topics below will vary depending on the outcome of Meeting #1.

Planning Team Meeting #3

**Wednesday, March 31st at 9am**

Mitigation Strategy – Flooding & Dam Failure

Planning Team Meeting #4

**Wednesday, April 21st at 9am**

Mitigation Strategy – Wildfire & Landslide

ROSEBUD COUNTY MHMP 2021 UPDATE  
PUBLIC MEETING NOTES  
TUESDAY, JANUARY 26, 2021  
9am - 10:30am

Planning Team Meeting #5

**Wednesday, May 12th at 9am**

Mitigation Strategy - Severe Weather & Drought & Haz-Mat

Planning Team Meeting #6

**Wednesday, June 2nd at 9am**

Mitigation Strategy - All Hazards.

Capability Assessment & Plan Maintenance

**ROSEBUD COUNTY  
PRE-DISASTER  
MITIGATION PLAN  
2021 UPDATE**

Contractor: Tetra Tech, Inc.  
Daphne Digrindakis  
406-475-2648

1

**WHAT IS MITIGATION?**

Mitigation is a sustainable action that will reduce or eliminate injury to citizens, damages to structures and allow continuity of critical society function.

Types of mitigation projects include:

- Property Protection
- Structural
- Prevention
- Emergency Services
- Natural Resource Protection
- Public Education and Awareness
- Planning/Mapping/Analysis

2

**WHY HAVE A HAZARD MITIGATION PLAN?**

- Required by FEMA in order to receive mitigation funds after a declared disaster (HMGP), Public Assistance (PA) C-G.
- \$100 million available annually through competitive grants for hazard mitigation projects through:
  - Hazard Mitigation Assistance grant program (HMGP)
  - Building Resilient Infrastructure and Communities (BRIC) grants program
  - Flood Mitigation Assistance (FMA) grants program
  - Fire Management Assistance grants (FMAG) program
- FEMA funds project 75/25. County has cost-share obligation.

3

**APPROACH FOR  
2021 MITIGATION PLAN UPDATE**

- Review each section of the old PDM Plan
- Implement planning process for public involvement
- Review recent plans and studies
- Update hazard profiles and identify any new hazards
- Update critical facilities
- Update risk assessment
- Update mitigation goals, objectives & projects
- Update capability assessment
- Update plan maintenance procedures
- Formally adopt plan

4

### 2013 PLAN REVIEW INTRODUCTION

- Rosebud County first completed a Pre-Disaster Mitigation (PDM) Plan in 2007.
- This PDM Plan was updated and approved by FEMA in 2013.
- Hazard Mitigation Plans must be updated every 5 years to remain eligible for disaster funding.
- Must be adopted by resolution by County and communities of Forsyth and Colstrip.
- Multi-Hazard Mitigation Plan instead of PDM.

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### 2013/2021 PLANNING PROCESS

- Project Stakeholders
  - Personnel from County, Forsyth and Colstrip, emergency responders, preparedness coordinators, school districts, medical, local organizations, state, federal, non-profits, businesses
- PDM Planning Team
  - Jurisdictions wishing to adopt plan must participate
  - Conference calls/planning meetings
- Review of Plans and Studies
- Public Meetings
- Project Website – [www.MTmitigation.com](http://www.MTmitigation.com) / password: Forsyth
- Plan Review Process
- 2021 Planning Process impacted by Covid-19 with regard to in-person meetings

6

### REVIEW OF PLANS & STUDIES

- Plans with Mitigation Considerations
  - County and City/Town Growth Policies
  - Subdivision Regulations
  - Zoning Ordinances
  - Floodplain Ordinances
  - Building Codes
  - High Hazard Dam Emergency Action Plans
  - Community Wildfire Protection Plan
- Analyze Development Trends
  - Determine what hazards future development projects are exposed to.

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### 2013 PLAN REVIEW - RISK ASSESSMENT

- Natural, Man-Made, and Technological Hazards most likely to cause a disaster in the County.
- Hazards that have the potential to cause fatalities/injuries or property damage.
- New for 2021 Plan Update - Use Calculated Priority Risk Index (CPRI) to Re-Prioritize Hazards.
  - Probability - Highly likely to unlikely
  - Severity/Magnitude - catastrophic to negligible
  - Economic Impact - catastrophic to negligible
  - Warning Time - < 6 hours to > 24 hours
  - Duration - < 6 hours to > one week

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**2013 PLAN REVIEW  
HAZARD IDENTIFICATION & RANKING**

1. Drought
2. Severe Summer Weather
3. Wildfire
4. Severe Winter Weather
5. Flooding
6. Hazardous Material Release
7. Earthquake

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**2021 PLAN UPDATE - HAZARD PROFILES**

- Identify Additional Hazards to Include in Plan
  - Cyber Security
- Profile up to 8 Hazards in Plan
  - Organized in Plan by priority
  - Some hazards can be combined into one profile
  - Lower priority hazards included in Plan appendix
- Each Hazard Profile to Include
  - Description and History
  - Vulnerability and Area of Impact
  - Probability and Magnitude
  - Future Development
  - Implications of Climate Change

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**2021 PLAN UPDATE - RISK ASSESSMENT  
METHODOLOGY**

- GIS layers of hazard areas
  - Some hazards have uniform exposure across county
- Analyze buildings at risk from various hazards
  - Critical facility locations and insured values.
  - Dept. Revenue parcel data of locations and values of commercial & residential properties. Linked to NRIS Structures database with locations of building stock.
- Using GIS – intersect building stock/critical facilities with hazard areas
  - Determine number and value of buildings at risk
- Population exposure – total in hazard area, over 65, under 18

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**2021 PLAN UPDATE  
HAZARD-BY-HAZARD REVIEW**

For Each Hazard:

- What significant hazard events have occurred since last PDM Plan update?
- Where are the problem areas in the County?
- Has County received any FEMA grants to complete mitigation projects?
- What mitigation projects has County completed since last PDM Plan was completed?
- Capability limitations for completing mitigation projects?

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**2013 PLAN REVIEW –  
DROUGHT**

- Rosebud County experiences drought severe years each decade.
- Economic impacts - lower crop yields, lower livestock inventory, reduced rangeland productivity, cost of supplemental feed, reduced water levels, damage to wildlife and fish habitat
- Indirect impacts to Main Street businesses, increased credit risk for banks, capital shortfalls, loss of tax revenues, reduction in government services, unemployment, out-migration.
- Increase in other related hazards: risk of wildfire, grasshoppers, plant disease, wind erosion

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**2013 PLAN REVIEW –  
DROUGHT**

- 2012 Insurance Claim Payout - \$700K
- One Year Drought Loss Estimate for Key Crops
  - Wheat - \$592K
  - Forage Production - \$33.7K
  - Barley - \$8K
  - Sugar Beets - \$3.5K
  - Oats - \$105K
  - TOTAL for crops above - \$742.7K
  - Does not consider other crops, livestock, direct costs
- High potential for drought in Rosebud County

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**2013 PLAN REVIEW –  
SEVERE SUMMER WEATHER**

- Summer – hailstorms, thunderstorm winds, lightning, tornadoes, extended heat, microbursts
  - 1991 to 2012 – 7 tornadoes
    - Highest magnitude F1, no damages reported
  - 1962 to 2012 – 25 incidents of hail over 1.5 inches diameter
    - One report of 6-inch hail, 3 reports of 4-inch hail
    - 11 damaging events since 1993
  - 1993-2012 – 62 incidents of thunderstorm winds over 60 knots (69 mph)
    - 17 incidents over 80 knots (92 mph)
    - 12 damaging events since 1993 with property & crop damage

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**2013 PLAN REVIEW –  
SEVERE SUMMER WEATHER**

- Vulnerabilities
  - Extended heat and lightning increase wildfire risk, slow moving thunderstorm can produce flash floods, high winds can down trees and could disrupt electrical services
- Uniform exposure across county
- Future Development
  - State Building Codes require construction standards
    - Wind load - 75 mph constant velocity wind load/90 mph gusts.
- No mitigation strategy for severe summer weather in 2013 PDM Plan

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**2013 PLAN REVIEW – WILDFIRE**

- Typically occur in summer due to drought conditions (low rainfall, high temperatures, low humidity), high winds and thunderstorms.
- Fuels in Rosebud County include timber, shrubs, grasses, and rangeland.
- Most fires started by lightning.
- Firefighting challenges due to large area of government-owned lands: Custer National Forest, BLM, Northern Cheyenne Reservation
- CRP lands increase fuels available and wildfire risk. In 2012, county had 31,000 acres in CRP.
- 1980 to 2012 – 62 wildfires required federal firefighting resources.
- Most historical events have occurred in the southern part of the county that is more forested.

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**2013 PLAN REVIEW – WILDFIRE**

- CWPP – County has 60-70 fires a year that burn 2,000 to 7,500 acres. Majority of fires < 250 acres.
- 10 largest wildfires 1980 to 2012
  - July 2012 – Ash Creek Fire – 249,562 acres
  - August 2012 – Rosebud Complex Fire – 152,261 acres
  - July 1999 – Fishel Creek Fire – 33,000 acres
  - August 1996 – Rosebud Creek Fire – 30,700 acres
  - September 2006 – Horton Hay Complex Fire – 25,239 acres
  - June 1988 – Earlybird Fire - 22,947 acres
  - September 1983 – Rye Fire – 17,500 acres
  - August 2003 – Eastern MT Complex Fire – 13,533 acres
  - August 2003 – Craig Fire – 9,180 acres
  - August 2012 – Sweeney Fire – 9,016 acres

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**2013 PLAN REVIEW – WILDFIRE**

- Wildfire Vulnerability
  - Loss of residences and other structures
  - Impacts to agricultural producers – fences, grazing
  - Impacts to natural and cultural resources
  - Impacts to assets such as timber and range
  - Reduced recreational opportunities
  - Economic losses
  - Health risk from smoke
- Wildland Urban Interface Areas
  - Wildhorse Subdivision, Hidden Meadow Subdivision, Bascom Subdivision, Ashland, Birney, Lane Deer, Colstrip, Forsyth and Rosebud.
- Subdivision regulations require vegetation management plan, on-site water supply, ingress/egress requirements.
- Rosebud Co. 18<sup>th</sup> of Montana counties with wildfire losses.

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Figure 4.6.5 Wildland Urban Interface Parcels for Rosebud County

**WILDFIRE HAZARD AREA**



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**2013 MITIGATION STRATEGY – WILDFIRE**

- Work with Montana DNRC to create and maintain fuel breaks around City of Colstrip.
- Work with Montana FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the Yellowstone River on the east side of Forsyth.
- Support coordination between private landowners, Forest Service, BLM, and Northern Cheyenne Tribe to treat hazardous fuels on private lands adjacent to these public and tribal lands.
- Implement “Fire Programs” software program.
- When subdivision regulations are updated, review requirements for access (slope, egress, turnarounds, bridge standards, etc.). Consider adopting either a requirement or recommendations for types of building materials in the wildland urban interface to reduce fire danger in new construction.

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**2013 PLAN REVIEW - SEVERE WINTER WEATHER**

- Winter – extended cold, blizzards, heavy snow, strong winds, wind chill
  - Statistics 2000 to 2012
    - 6 blizzards, 25 heavy snow events (> 8 inches), 1 ice storm
  - Occur every year. Uniform exposure across county.
  - Vulnerability
    - Poor road conditions, transportation accidents, road closures, utility interruption, isolation, tree damage
- 2013 Mitigation Strategy for Severe Winter Weather
  - Purchase and replace county road signs with non-combustible, break-away signs.

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**2013 PLAN REVIEW – FLOODING**

- Most severe flooding occurs mid-winter or spring from snowmelt combined with runoff from heavy rains and ice jams. Can also occur from dam or levee failure.
  - June 2007 Flood - Runoff from upstream of county and Tongue River Reservoir. Lane Deer under 3 feet of water with homes flooded, people stranded.
  - May 2011 Flood - FEMA disaster declaration. \$225K in county damage.
- Forsyth protected by levee on Yellowstone River.
- East Fork Armells Creek runs through Colstrip.
- No digital floodplain maps as of 2013.
- Significant floods occur once every 10 years. Ice jams occur every 5 to 6 years, primarily on Yellowstone, Tongue rivers, and Rosebud Creek

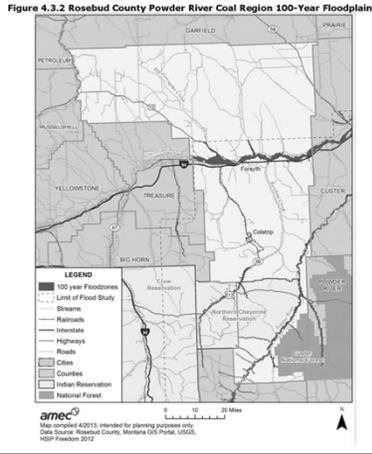
23

**2013 PLAN REVIEW – FLOODING**

- NFIP – 17 policies in county, 7 in Forsyth, 0 in Colstrip.
- Estimated losses from 500-year flood event
  - HAZUS model of simulated flood hazard in Rosebud County showed no losses to critical of special needs facilities during floods up to the 500-year event.
  - Many critical facilities in Forsyth and Colstrip within estimated 500-year flood hazard area.
  - Ashland and Birney critical facilities at risk from Tongue River Dam break.
- Estimated losses from 100-year flood event
  - \$26M in direct economic building loss
  - 1,461 people displaced

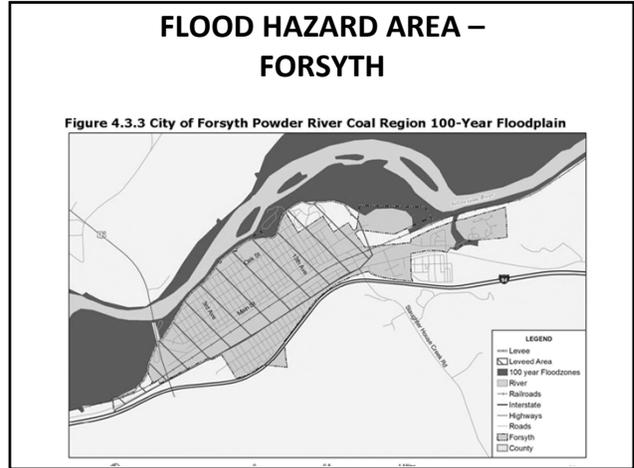
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# FLOOD HAZARD AREA



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# FLOOD HAZARD AREA – FORSYTH



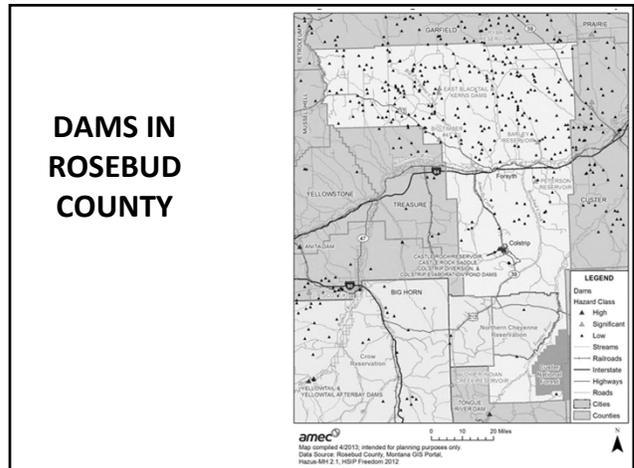
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## 2013 PLAN REVIEW – FLOODING & DAM FAILURE

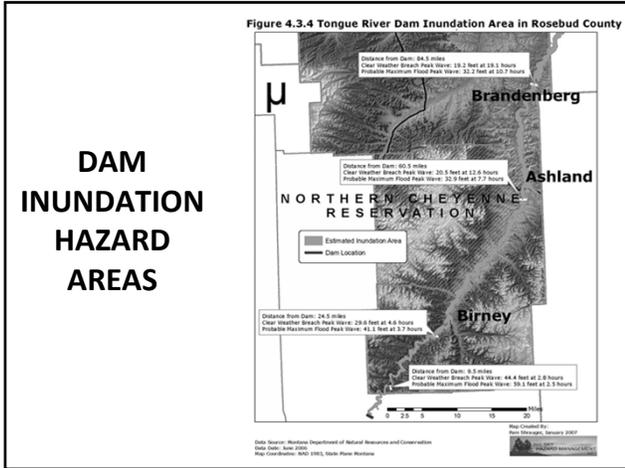
- No history of dam failure in Rosebud County
  - 4 high-hazard dams in county
    - Castle Rock Reservoir Dam & Saddle Dams
    - Colstrip Diversion & Evaporation Pond Dams
  - Two dams in other counties have potential to reach Rosebud Co. if breached.
    - 2 most hazardous: Yellowtail Dam & Tongue River Dam.
    - 11 other high hazard dams could potentially impact Rosebud County.

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## DAMS IN ROSEBUD COUNTY



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- 2013 MITIGATION STRATEGY – FLOODING**
- Address any issues related to the Forsyth levee on the Yellowstone River that arise during the current re-certification process. These could include encroachment and vegetation.
  - Stabilize bank erosion at intersection of River and Old Mission Roads.

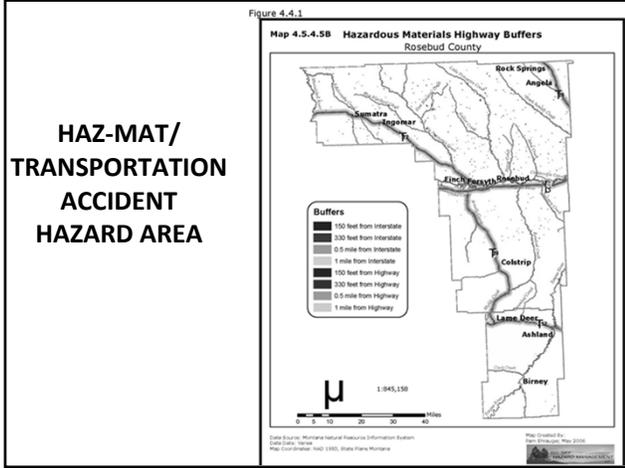
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- 2013 PLAN REVIEW - HAZARDOUS MATERIAL RELEASE**
- Chemicals and petroleum both at fixed facilities and transported through county via highways, railroads, and pipelines.
  - Fixed facilities include water treatment plants, gas stations, and stores containing fuels, farm chemicals, propane, paint.
    - Mining Services International Colstrip Plant, V-1 Propane, Home Oil, PPL Montana Colstrip, Cenex/Nickels Pipeline Pump Station
  - Transportation-related facilities
    - Interstate-94, MT Hwy 39, US Hwy 12, US Hwy 212, MT Hwy 59
    - BNSF railroad – 4 trains a day w/ haz-mat through county.
    - Continental crude oil pipeline

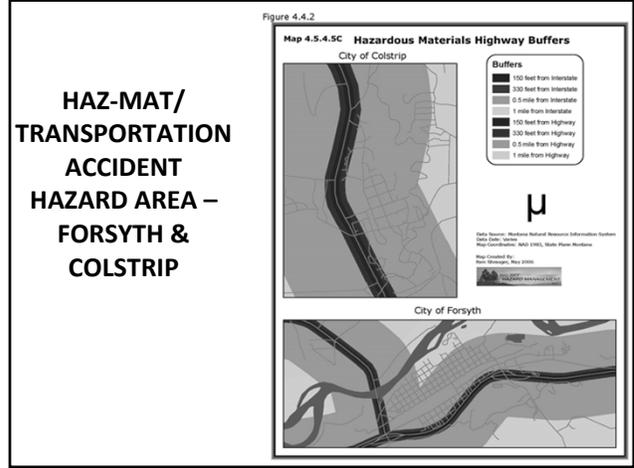
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- 2013 PLAN REVIEW - HAZARDOUS MATERIAL RELEASE**
- 25 haz-mat incidents in Rosebud County 1993-2012.
    - 1993 train crash spilled 2,500 gal. fuel near Rosebud.
    - 1997 – 460 gal. gasoline released when truck backed into fuel pump in Lame Deer.
    - 1998 – 500 gal. fuel spilled at Colstrip when tank overfilled.
    - 2008 derailment due to Yellowstone River bank erosion near Forsyth. Diesel fuel released.
  - Haz-Mat release can be expected once a year somewhere in Rosebud County, one every 3 years in Colstrip, and once every 3 years in Forsyth.
  - Numerous vulnerable critical facilities located within buffer zone of highway, railroad, and pipelines.

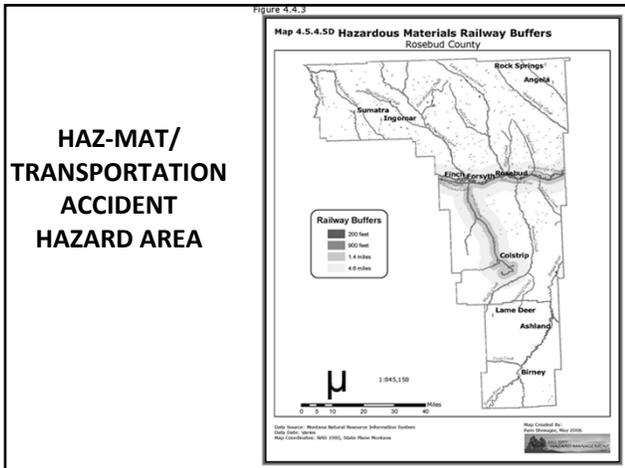
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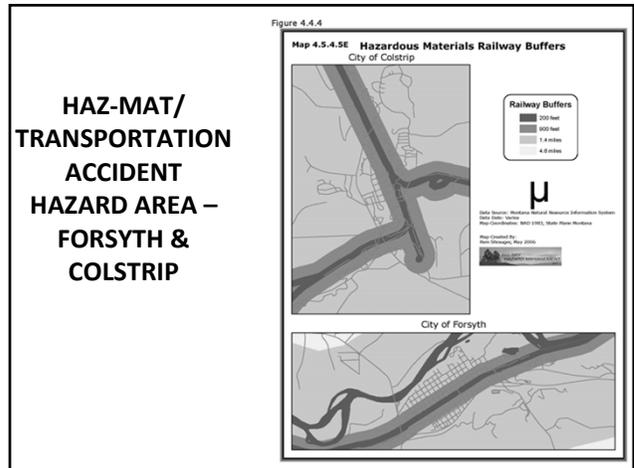
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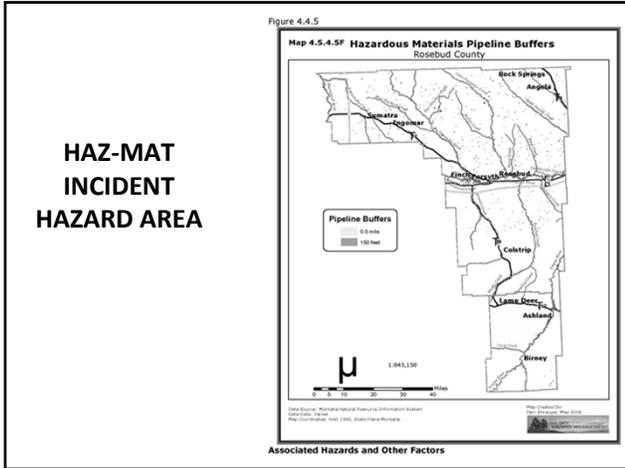
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**2013 MITIGATION STRATEGY - HAZ-MAT/TRANSPORTATION ACCIDENTS**

- Educate Rosebud area residents on what to do during a hazardous material spill by the railroad.
- Assist Rosebud school in preparation for railroad hazmat incident.

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**2013 PLAN REVIEW - EARTHQUAKE**

- Montana very seismic state.
- Most of activity along Intermountain Seismic Belt in western Montana.
- Eastern Montana much lower frequency with no recognized surface faults.
- No significant earthquakes have occurred in the County.
- Most shaking felt in Rosebud County has been from earthquakes in more seismically active regions.
- Infrequent/unlikely occurrence.
- No mitigation strategy for earthquakes in 2013 PDM Plan

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**2013 MITIGATION STRATEGY – ALL HAZARDS**

- Obtain back-up power for city water treatment plant.
- Educate dispatch and responders about new siren system. Coordinate with PPL.
- Obtain back-up power source for water treatment plant.
- Obtain back-up power for city hall/fire department.
- Enhance communications infrastructure in Ashland area by constructing radio tower site and fireproof shed, coordinate with BIA to reduce duplication.
- Obtain back-up power for county courthouse.
- Enhance communications infrastructure, Treasure County repeater. Coordinate with Richland County on best location and if needed relocate. Obtain back-up power for site.

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**2013 MITIGATION STRATEGY – ALL HAZARDS**

- Obtain back-up power for Ashland water and wastewater treatment plants.
- Enhance communications infrastructure, Little Wolf radio repeater. Convert commercial license to county lease, add back-up power, place equipment into externally fireproof shed.
- Replace the radio tower at the Sheriff's office in Forsyth.
- Install/activate base unit in Sheriff's office for Sarpy Creek.
- Complete implementation of enhanced 911 system.
- Adopt updated building codes once available from the state.
- Continue to make information available online through the county with links to additional information and resources.

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**2021 MITIGATION PLAN UPDATE MITIGATION STRATEGY**

- Determine Status of Projects from 2013 Plan
  - Complete, Retain/Reword, Delete, Ongoing
- Identify New Projects
  - Focus on mitigation – not response or preparedness
  - Consider Development Trends
- Project Implementation Details
  - Responsible Agencies and Partners
  - Potential Funding Sources
  - Timeframe
  - Progress Made
  - Planned Activities
- Project Prioritization Factors
  - Cost, Feasibility, Population Benefit, Property Benefit

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**2021 MITIGATION PLAN UPDATE SCHEDULE**

- Planning Team Conference Calls/Meetings – February – May 2021
- Public Meeting to review draft risk assessment and mitigation strategy – October 2021
- Stakeholder review of Draft Plan (30 days) – October/November 2021
- Revision to address stakeholder comments – November 2021
- Review by MT DES (45 days) – December 2021 / January 2022
- Review by FEMA (45 days) – January / February 2022
- Second public review (3 months) – December 2021 / February 2022
- Submit to County & incorporated communities for adoption – March/April 2022

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**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLAN REVIEW MEETING  
OCTOBER 5, 2021  
9 am - 10 am**

**Attendance:**

Keith Raymond	Rosebud County DES
Courtney Haus	Rosebud County Public Information Officer
Shelly Schnitzmeier	Rosebud County Public Health
Dennis Kopitzke	Forsyth Mayor
Tina Beach	CHS Pipelines
Rodney Dresbach	Rosebud County Rural Fire Chief
Jake Hoover	CHS Pipelines
Ed Joiner	Rosebud Co. Commissioner
Andy Sullivan	City of Forsyth
Cory Hert	City of Colstrip Police Dept.
John Williams	City of Colstrip Mayor
Daphne Digrindakis	Tetra Tech

**Presentation:** See Appendix B-3 for PowerPoint Presentation.

**Notes:**

Mitigation Project 9.1.5 – First Net is low priority in Rosebud County. AT&T doesn't have infrastructure in county. Group decided to keep this project in plan since planned activities were to monitor and implement when available.

City of Colstrip will provide additional data on fire department.

**ROSEBUD COUNTY  
MULTI-HAZARD  
MITIGATION PLAN  
2021 UPDATE**

**PLAN REVIEW PUBLIC MEETING  
October 2021**

Contractor: Tetra Tech, Inc.  
Daphne Digrindakis  
406-475-2648

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**APPROACH FOR  
2021 MHMP UPDATE**

- Review each section of the old Pre-Disaster Mitigation Plan
- Implement planning process for public involvement
- Review plans and studies
- Update hazard profiles and identify any new hazards to include in updated Plan
- Complete new risk assessment
- Update mitigation goals, objectives & projects
- Complete capability assessment
- Review plan maintenance procedures
- Formally adopt plan

2

**2021 MHMP REVIEW**

- Section 1 – Introduction
- Section 2 – Planning Process
- Section 3 – Community Profile
  - Physical Setting, Climate, Critical Infrastructure, Population, Housing, Economy, Land Use, and Growth Management Tools
  - Info from Growth Policies - May need to be updated
- Section 4 – Risk Assessment & Vulnerability Analysis
  - Risk Assessment Methods
  - 8 Hazards Profiled
    - Description & History
    - Vulnerability & Area of Impact
    - Probability & Magnitude
    - Future Development
    - Climate Change
  - Risk Assessment Summary

3

**2021 MHMP REVIEW**

- Section 5 – Mitigation Strategy
  - Mitigation Accomplishments
  - Capability Assessment
  - Mitigation Resources
  - 2021 Mitigation Strategy
- Section 6 – Plan Maintenance
  - Monitoring & Evaluating Plan and Mitigation Projects
  - How County Mitigation Program will be run

4

**2021 MHMP UPDATE  
PLANNING PROCESS**

- Stakeholders List
- Planning Team
  - Meeting #1 – Rank Hazards
  - Meeting #2 – Review Critical Facilities & Hazard Impact Maps
  - Meetings #3 - #6 – Mitigation Workshops
  - Meeting #6 – Discuss Capability Assessment & Plan Maintenance.
- Project Website – [www.MTmitigation.com](http://www.MTmitigation.com)
  - Password: Forsyth
- Public Meetings
  - Meeting #1 – Project Kick-off
  - Meeting #2 – Plan Review (this meeting)

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**2021 MHMP UPDATE  
IDENTIFY & RANK HAZARDS**

- Hazards most likely to cause a disaster in the County.
- Hazards that have the potential to cause fatalities/injuries or property damage.
- Focus on hazards that can be mitigated.
- Use Calculated Priority Risk Index (CPRI) to Prioritize Hazards.
  - Probability
  - Severity/Magnitude
  - Economic Impact
  - Warning Time
  - Duration

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**2021 MHMP UPDATE  
HAZARD RANKING**

1. Wildfire
2. Drought
3. Severe Summer Weather
4. Communicable Disease
5. Severe Winter Weather
6. Flooding & Dam Failure
7. Structure Fire
8. Haz-Mat Incidents/Transportation Accidents

7

**2021 MHMP UPDATE  
RISK ASSESSMENT METHODOLOGY**

- GIS layers of hazard areas
  - Some hazards have uniform exposure across county
- Analyze buildings at risk from various hazards
  - Critical facility locations and insured values.
  - NRIS Structures Framework for building locations
  - Dept. Revenue parcel data of building values
- Using GIS – intersect building stock with hazard areas to determine number and value of buildings at risk.
- Population exposure used U.S. Census county estimates.

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### HAZARD SUMMARY - WILDFIRE

- Fire season result of low rainfall, high temperatures, low humidity, thunderstorms, high winds and lightning.
- Fire ignitions include lightning, burning coal seams, and human caused i.e., arson, fire works, debris burning, downed powerlines, heated farm equipment.
- Between 1994 and 2021, over 85 fires greater than 200 acres burned more than 500,000 acres in the county.
  - 2021 Richard Spring and Lame Deer Fires – Coal seam ignited. >150,000 acres burned.
  - 2020 Snider/Rice Fire Complex – 69 square miles burned, 4 structures destroyed.
  - 2012 Ash Creek Fire – Burned 250,000 acres. Hundreds of miles of fencing destroyed. Thousands of head of displaced livestock had to be shipped to temporary pastures because of lost grazing resource.

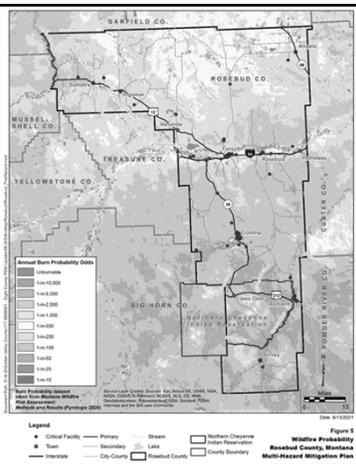
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### HAZARD SUMMARY - WILDFIRE

- Agricultural economy most threatened.
- Wildland Urban Interface
  - Wildhorse, Hidden Meadow , Bascom Subdivisions
  - Ashland, Birney, Lame Deer, Colstrip, Forsyth, and Rosebud.
- Steady warming trend will increase wildfires.
- Smoke from wildfires cause health concerns.

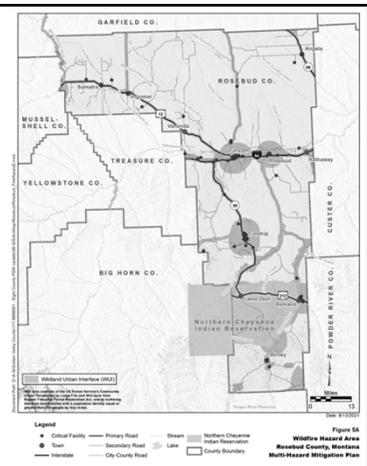
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### WILDFIRE PROBABILITY ROSEBUD COUNTY



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### WILDFIRE IMPACT AREA ROSEBUD COUNTY



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## RISK ASSESSMENT SUMMARY WILDFIRE

- **Rosebud County (balance)**
  - Residences at Risk – 1,452 worth \$146.7M
  - Commercial/Ag/Industrial Properties at Risk – 513 worth \$66.6M
  - Critical Facilities at Risk – 51 worth \$41.7M
  - Bridges at Risk – 114 bridges
  - Population at Risk – 3,996 persons
- **City of Forsyth** – city limits omitted from wildfire hazard area because of municipal fire protection.
- **City of Colstrip**– city limits omitted from wildfire hazard area because of municipal fire protection.

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## WILDFIRE MITIGATION STRATEGY

- 1.1.1 - Work with Montana DNRC to create and maintain fuel breaks around City of Colstrip.
- 1.1.2 - Work with MT FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the Yellowstone River on the east side of Forsyth.
- 1.2.1 - Support coordination between private landowners, Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.
- 1.3.1 - Continue to make fuel mitigation information available online through the county with links to additional resources.
- 1.3.2 - Provide recommendations for types of building materials in the WUI to reduce fire danger in new construction.
- 1.3.3 - Continue to support Public Health Department's smoke advisories and alerts.
- 1.4.1 - Extend building regulations adjacent to city limits, as potential future annexation areas, to require compliance with wildfire standards.
- 1.5.1 - Continue to update equipment to enhance firefighting capabilities.

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## HAZARD SUMMARY - DROUGHT

- Drought affects food production, public water supplies, and the agricultural economy.
  - Lower crop yields.
  - Reduced irrigation results in loss of pasture and food supply for livestock.
  - Decisions to decrease livestock inventory when forced to purchase expensive feed.
  - Agriculture supports Main Street businesses which experience indirect economic effects from drought.
  - Increases chances wildland fire.
- USDA Drought Disaster Declarations in 2012, 2013, 2015, 2016, 2017, 2019, 2020, and 2021.

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## DROUGHT RISK ASSESSMENT RESULTS

Table 4.3-5. Estimate of Economic Loss from Drought, Rosebud County

Year	Winter Wheat					Drought Loss in Adjusted 2020 \$
	Winter Wheat Yield (bu/acre)	Winter Wheat (acres harvested)	Price Per Bushel (2020\$)	Economic Value in 2020\$	Drought Yield Reduction	
2010 ND	46.7	25,500	\$5.10	\$6,073,335.00		
2017	27.6				40.90%	\$2,483,955
2004	27				42.18%	\$2,561,985
2002	22				52.89%	\$3,212,235
2000	23				50.75%	\$3,082,185
					TOTAL	\$11,340,360

Source: USDA National Agricultural Statistics Service, 2021; Notes: ND = No Drought

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## DROUGHT MITIGATION STRATEGY

- 2.1.1 Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.
- 2.2.1 Improve water intake system for City of Forsyth.
- 2.3.1 Improve water conveyance efficiencies in agricultural, municipal, and industrial users.
- 2.3.2 Encourage voluntary water conservation by domestic, municipal, and industrial users.
- 2.4.1 Support completion of Colstrip Water Supply Feasibility Study.

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## HAZARD SUMMARY SEVERE SUMMER WEATHER

- Summer Weather Events - May through October each year.
  - Thunderstorms, wind, hail, lightning, tornadoes, microbursts, extreme heat.
- Weather hazards more severe in recent years due to climate change.
  - County projected to have 39 days/year over 95 degrees by mid-century.
- Weather records in Rosebud County
  - 92 mph gusts measured 7 miles west of Forsyth in 7/1999. Three buildings damaged and widespread power outages. Corn and beet crops heavily damaged.
  - 80 mph winds measured in 6/2005 and 6/2006.
  - Colstrip reported 4.0-inch hail in 2006 and 2.75-inch hail in 2014.
  - Baseball-sized hail in Ashland 6/2001. Many windows and windshields smashed, bark and leaves stripped from trees, birds knocked from trees and killed.
  - Since 1950, 9 confirmed tornadoes and 3 funnel clouds. 7/1993 tornado caused 3 injuries and two mobile homes destroyed south of Lame Deer
- Hail can damage crops.
- Extended heat can prove dangerous and even fatal to physically and socially vulnerable.

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## RISK SUMMARY – SEVERE SUMMER WEATHER

- Uniform Exposure Across County
- Annual Loss
  - Frequency x Magnitude x Exposure

Table 4.4-6. Rosebud County Severe Summer Weather Annual Loss

No. of Events	Period of Record (Yrs)	Frequency	Property Damage	Magnitude	Exposure	Annual Loss
108	40	2.7	\$3,944,448	0.006217%	\$587,442,731	\$98,497

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## SEVERE SUMMER WEATHER MITIGATION STRATEGY

- 3.1.1 Implement the tree maintenance ordinance and address problem trees.
- 3.2.1 Promote preparedness through outreach to community and schools.
- 3.2.2 Partner with National Weather Service on the Weather Ready Nation Ambassador Program.
- 3.3.1 Provide preparedness training to community members and homeowners.
- 3.4.1 Encourage utility companies to bury electric and communication lines in hazard areas.

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### HAZARD SUMMARY COMMUNICABLE DISEASE

- Covid-19 Pandemic
  - 128,835 confirmed cases, 1,807 deaths in Montana
  - 1,248 confirmed cases, 50 deaths in Rosebud County
  - Counties with large Native American population have had disproportionate burden of Covid-19
- Influenza – 70 to 270 cases per year
- Vector-borne diseases
  - Transmitted to humans from mosquitoes, ticks, fleas.
  - West Nile Virus, Lyme disease, Dengue fever, Malaria.
- Livestock disease – Foot and Mouth, Mad Cow Disease, Exotic Newcastle, Rabies, Scabies, Brucellosis
- Wildlife disease – Chronic wasting disease
- Uniform exposure across county

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### COMMUNICABLE DISEASE MITIGATION STRATEGY

- 4.1.1 Control mosquito populations during summer in cities and town.
- 4.1.2 Prevent and control communicable disease through surveillance, testing and immunization.
- 4.2.1 Promote public education on preventing communicable disease.
- 4.3.1 Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.
- 4.3.2 Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.

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### HAZARD SUMMARY SEVERE WINTER WEATHER

- Winter Weather Events – November through April each year.
  - Sleet, ice storms, freezing rain, heavy snowfall, blizzards, low temperatures, wind chill.
- Common occurrences – generally don’t cause problems as residents are used to winter weather and are prepared for it.
  - Blizzards can overwhelm ability to keep roads passable.
  - Livestock impacted by snow and cold during calving season
  - Heavy snow can bring down powerlines and trees.
  - Extreme wind chill temperatures can harm residents if unprotected outdoors or if heating mechanisms disrupted.
  - Black ice, blowing snow create dangerous driving conditions. 972 winter crashes in past 10 years including 11 fatalities, and 34 serious injury crashes.
  - Residents can get isolated and need to get plowed out.
  - Utility failure, frozen pipes, homes without heat.

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### RISK SUMMARY – SEVERE WINTER WEATHER

- Uniform Exposure Across County
- Annual Loss
  - Frequency x Magnitude x Exposure

Table 4.6-6. Rosebud County Severe Winter Weather Annual Loss

No. of Events	Period of Record (Yrs)	Frequency	Property Damage	Magnitude	Exposure	Annual Loss
108	25	4.32	\$1,761,198	0.002776%	\$587,442,731	\$70,448

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## SEVERE WINTER WEATHER MITIGATION STRATEGY

- 5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.
- 5.2.1 Promote preparedness through outreach to community and schools.

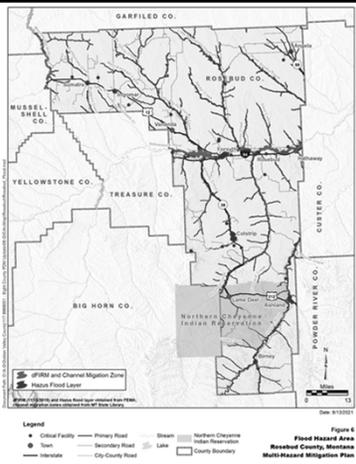
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## HAZARD SUMMARY - FLOODING

- Flooding on Yellowstone, Tongue, and Musselshell Rivers usually a combination of rapid snowmelt and high rainfall runoff.
  - Federal disaster declarations for flooding in 1997, 2011, and 2014.
- Vulnerabilities
  - Ice jams produce locally higher flood levels than free flowing floods.
  - Increased risk of flash flooding in areas burned by wildfire.
- Flood Protection Measures
  - Certified levee protects Forsyth – 2.4 miles long
  - Forsyth has System-Wide Improvement Framework to maintain levee
- National Flood Insurance Program
  - County and Forsyth participate.

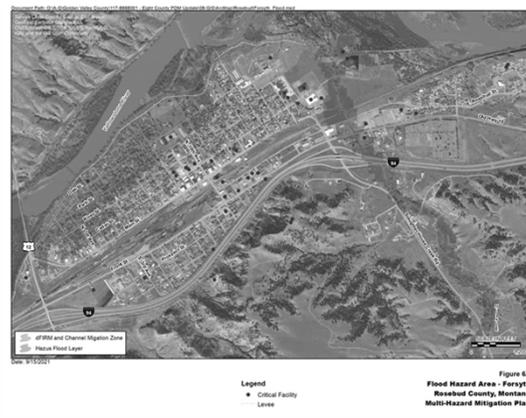
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## FLOOD HAZARD IMPACT AREA ROSEBUD COUNTY

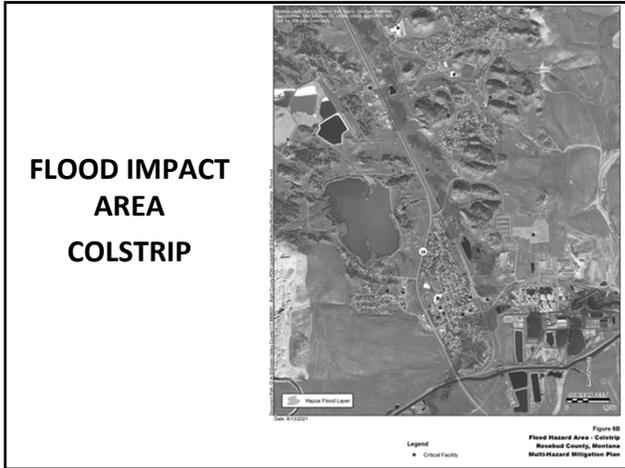


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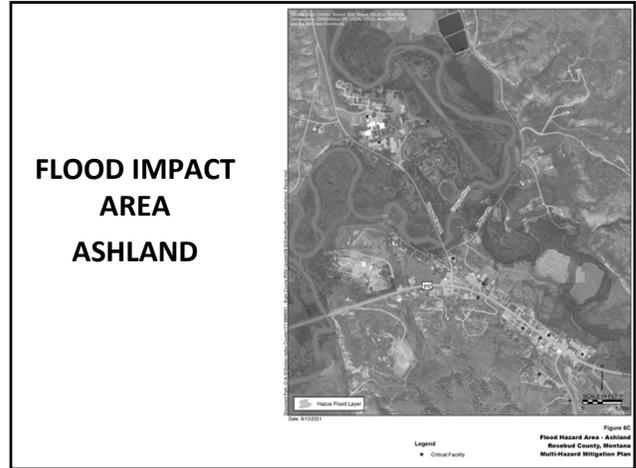
## FLOOD IMPACT AREA - FORSYTH



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- RISK ASSESSMENT SUMMARY  
FLOODING**
- **Rosebud County (balance)**
    - Residences at Risk – 184 worth \$10.8M
    - Commercial/Ag/Industrial Properties at Risk – 103 worth \$10.5M
    - Critical Facilities at Risk – 6 worth \$11M
    - Bridges at Risk – 53 bridges
    - Population at Risk – 590 persons
  - **City of Forsyth**
    - Residences at Risk – 6 worth \$163.6K
    - Commercial/Ag/Industrial Properties at Risk – 0
    - Critical Facilities at Risk – 2 worth \$2.4M
    - Bridges at Risk – 0 bridges
    - Population at Risk – 12 persons

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- RISK SUMMARY - FLOODING**
- **City of Colstrip**
    - Residences at Risk – 50 worth \$2.4M
    - Commercial/Ag/Industrial Properties at Risk – 1 worth \$89.3K
    - Critical Facilities at Risk – 0
    - Bridges at Risk – 0 bridges
    - Population at Risk – 103 persons

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## HAZARD SUMMARY – DAM FAILURE

Table 4.7-5. High Hazard Dams in or Potentially Impacting Rosebud County

Dam Name	County	Drainage	Height (feet)	Maximum Storage (acre-ft)	Dam Type/ Purpose	Owner
Colstrip Evaporation Pond Dam	Rosebud	Trib. E. Fork Armells Creek	88	3,834	Earth/Public Utility	PP&L Montana LLC
Colstrip Diversion Dam	Rosebud	Trib. E. Fork Armells Creek	44	260	Earth/Public Utility	PP&L Montana LLC
Castle Rock Saddle Dam	Rosebud	Trib. E. Fork Armells Creek	20	2,280	Earth/Public Utility	PP&L Montana LLC
Castle Rock Reservoir Dam	Rosebud	Trib. E. Fork Armells Creek	67	3,540	Earth/Power Generation	PP&L Montana LLC
Yellowtail Dam	Big Horn	Big Horn River	491	1,427,340	Concrete Arch/ Hydroelectric, Irrigation	USBR
Yellowtail Afterbay Dam	Big Horn	Big Horn River	59	3,141	Concrete Gravity/ Hydroelectric, Irrigation	USBR
Tongue River Dam	Big Horn	Tongue River	93	127,655	Earth/ Flood Control, Irrigation	Montana DNRC

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## DAM FAILURE IMPACT AREA ROSEBUD COUNTY

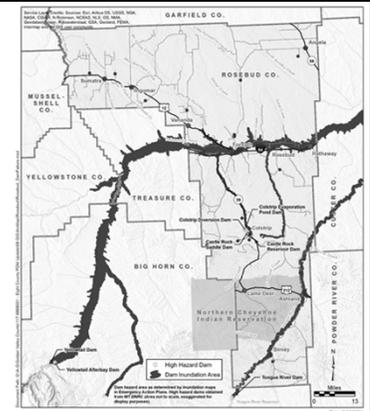


Figure 7  
Dam Failure Hazard Area  
Rosebud County, Montana  
Multi-Hazard Mitigation Plan  
Date: 8/15/2021

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## DAM FAILURE IMPACT FORSYTH



Figure 7A  
Dam Failure Hazard Area - Forsyth  
Rosebud County, Montana  
Multi-Hazard Mitigation Plan  
Date: 8/15/2021

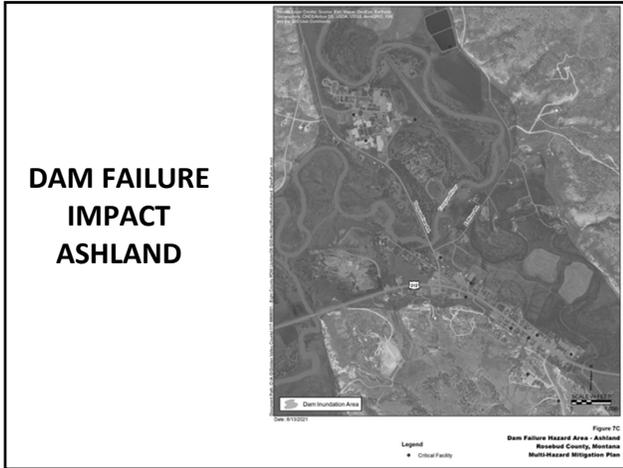
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## DAM FAILURE IMPACT COLSTRIP



Figure 7B  
Dam Failure Hazard Area - Colstrip  
Rosebud County, Montana  
Multi-Hazard Mitigation Plan  
Date: 8/15/2021

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### RISK ASSESSMENT SUMMARY DAM FAILURE

- **Rosebud County (balance)**
  - Residences at Risk – 369 worth \$26.8M
  - Commercial/Ag/Industrial Properties at Risk – 311 worth \$29.9M
  - Critical Facilities at Risk – 22 worth \$23.1M
  - Bridges at Risk – 65 bridges
  - Population at Risk – 1,374 persons
- **City of Forsyth**
  - Residences at Risk – 780 worth \$67.1M
  - Commercial/Ag/Industrial Properties at Risk – 63 worth \$12.5M
  - Critical Facilities at Risk – 36 worth \$49.8M
  - Bridges at Risk – 1 bridge
  - Population at Risk – 1,794 persons

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### FLOODING & DAM FAILURE MITIGATION STRATEGY

- 6.1.1 Address any issues related to the Forsyth levee on the Yellowstone River that arise during the current re-certification process.
- 6.1.2 Develop a stormwater management plan for Forsyth.
- 6.1.3 Support completion of floodplain mapping and update of Floodplain Ordinance.
- 6.2.1 Stabilize bank erosion at intersection of River and Old Mission Roads in Ashland.
- 6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.
- 6.3.1 Continue to promote the National Flood Insurance Program and compliance with the Floodplain ordinance.
- 6.4.1 Participate in dam exercises with emergency response partners.
- 6.4.2 Engage City of Colstrip in dam failure awareness and preparedness.

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### HAZARD SUMMARY STRUCTURE FIRE

- Uniform exposure across county.
- Data needed from local VFDs. Only data in Plan is from State Fire Marshall including only those fires they investigated.

Property Type	Fires	Fire Fighter Deaths	Fire Fighter Injuries	Civilian Deaths	Civilian Injuries	Property Loss
Dwellings	4	0	0	0	0	Not Reported
Mobile Homes	4	0	0	0	0	Not Reported
<b>Total Residential</b>	<b>8</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>Not Reported</b>
Education	1	0	0	0	0	\$500,000
Stores, Offices	2	0	0	0	0	\$50,000
<b>Total Commercial</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$550,000</b>
Storage	6	0	0	0	0	Not Reported
<b>Total Industrial</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>Not Reported</b>
<b>TOTALS</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>\$550,000</b>

40

### STRUCTURE FIRE MITIGATION STRATEGY

- 7.1.1 - Support the education program in school on topics supplied by International Fire Council.
- 7.2.1 - Recruit and train volunteers for city fire departments.
- 7.2.2 - Update equipment needed for suppressing structure fires.

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### HAZARD SUMMARY HAZ MAT & TRANSPORTATION ACCIDENTS

- Hazardous Materials and Petroleum Release Incidents
  - 31 incidents over past 30 years; 4 from railroad, 10 from fixed facilities, 5 from pipelines, 5 mobile incidents. Most minor.
  - Two Toxic Release Inventory (TRI) facilities; Colstrip Rosebud Power Plant, Colstrip Steam Electric Station
  - 6 Haz-Mat facilities in county have Tier II reporting requirements.
- Highway Crashes
  - 2,190 accidents in past 10 years; 46 crashes with fatalities, 103 crashes with severe injuries.
- Railroad Accidents
  - Accidents at Railroad Crossings – 8 incidents in past 40 years; 1 fatality, 9 injuries
  - Derailments – 40 incidents in past 40 years including 2 derailments involving railcars carrying hazardous materials. No haz-mat car damaged. No haz-mat released.

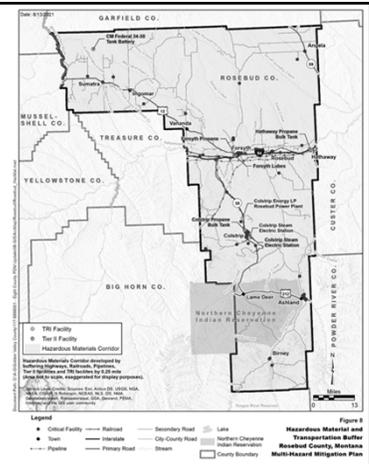
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### HAZARD SUMMARY HAZ MAT & TRANSPORTATION ACCIDENTS

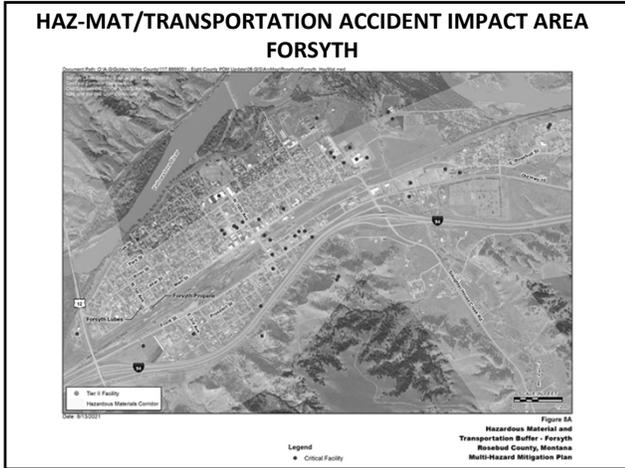
- Aircraft Accidents – 7 fatalities in past 55 years
- County within Powder River Training Complex
  - USAF exercises involving detection-evading stealth aircraft flying over at low altitudes. 10-15 days/year allowed.
- Hazard Impact Area – ¼ mile buffer along highways, railroads, pipelines, haz-mat facilities

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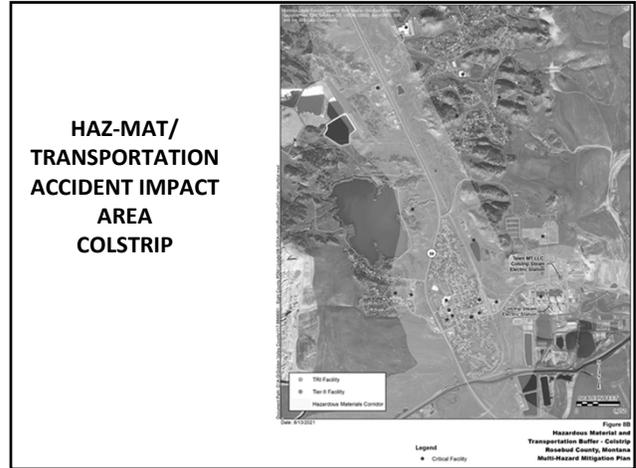
### HAZ-MAT/ TRANSPORTATION ACCIDENT IMPACT AREA ROSEBUD COUNTY



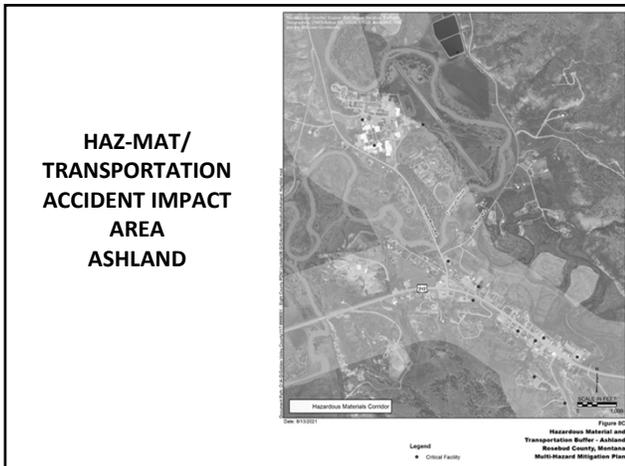
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**RISK ASSESSMENT SUMMARY  
 HAZ-MAT / TRANSPORTATION ACCIDENTS**

- **Rosebud County (balance)**
  - Residences at Risk – 241 worth \$14.7M
  - Commercial/Ag/Industrial Properties at Risk – 273 worth \$35.8M
  - Critical Facilities at Risk – 33 worth \$24.8M
  - Bridges at Risk – 109 bridges
  - Population at Risk – 911 persons
- **City of Forsyth**
  - Residences at Risk – 780 worth \$67.1M
  - Commercial/Ag/Industrial Properties at Risk – 63 worth \$12.5M
  - Critical Facilities at Risk – 33 worth \$33.9M
  - Bridges at Risk – 1 bridge
  - Population at Risk – 1,794 persons

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## RISK SUMMARY – HAZ-MAT/ TRANSPORTATION ACCIDENTS

- **City of Colstrip**
  - Residences at Risk – 823 worth \$83.8M
  - Commercial/Ag/Industrial Properties at Risk – 36 worth \$10.4K
  - Critical Facilities at Risk – 14 worth \$56.3M
  - Bridges at Risk – 0 bridges
  - Population at Risk – 2,295 persons

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## HAZ-MAT & TRANSPORTATION ACCIDENT MITIGATION STRATEGY

- 8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.
- 8.1.2 Encourage railroad, pipeline companies, mining company, and power plant to more consistently attend LEPC meetings to plan for haz-mat response.
- 8.1.3 Encourage power plant, mining company, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.

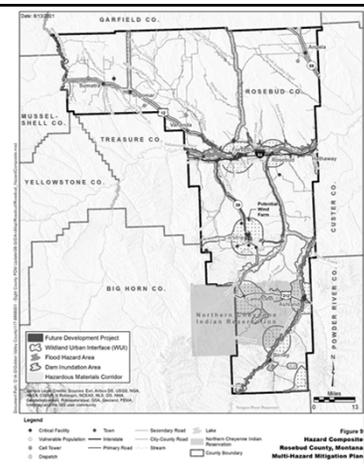
50

## ALL HAZARD MITIGATION STRATEGY

- 9.1.1 Obtain back-up power for water and wastewater treatment plants.
- 9.1.2 Educate dispatch and responders about siren systems and procure additional equipment, as needed.
- 9.1.3 Obtain back-up power for county and city critical facilities.
- 9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.
- 9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.
- 9.2.1 Adopt updated building codes.
- 9.2.2 Update Growth Policies to encourage growth in low hazard areas.
- 9.2.3 Consider updating subdivision regulations to adopt higher minimum standards that improve disaster resistance.
- 9.3.1 Promote registration of cell phones for "Regroup" emergency notification system.

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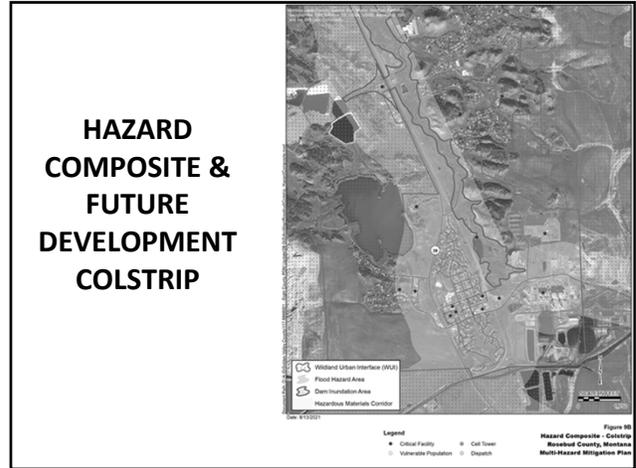
## HAZARD COMPOSITE & FUTURE DEVELOPMENT ROSEBUD COUNTY



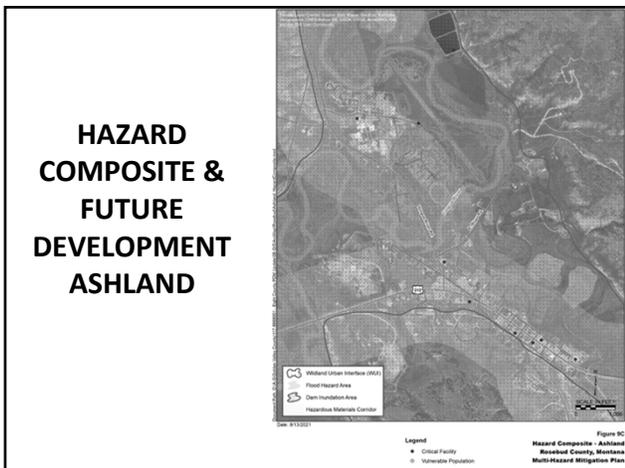
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- ### CAPABILITY ASSESSMENT RESOURCES & PROGRAMS
- Rosebud County Disaster & Emergency Services
  - Local Emergency Planning Committee (LEPC)
  - City-County Planning Board
  - Rosebud Co. Fire Protection Services
  - SE Montana Economic Development Corp.
  - Montana DES
  - National Weather Service
  - Montana DNRC, U.S. Forest Service, BLM
  - Montana DPHHS
  - Montana Governor's Drought and Water Supply Committee

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## PLAN MAINTENANCE PROCEDURES

### Monitoring, Evaluating and Updating the Plan

- Evaluated annually
- 5-Year updates

### Management of Mitigation Program

- DES Coordinator/LEPC
- Review mitigation strategy once/year
- Update on progress

### Implementation Through Existing Programs

- Integrate MHMP goals into existing programs

### Continued Public Involvement

- Copies of Plan at appropriate agencies
- Public meetings when Plan is updated

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## 2021 MHMP PLAN UPDATE SCHEDULE

- Public Meeting to review draft plan – October 2021
- Stakeholder review of draft Plan (1 month) – Oct. 1 - Nov. 1, 2021
  - [www.MTmitigation.com](http://www.MTmitigation.com) password: Forsyth
- Plan Revision – November 2021
- Submit to Montana DES & FEMA for approval – Dec. 1, 2021 (can take 90 days – 45 days each agency)
- Second public Plan review (2 months) – Dec. 1, 2021 through Feb. 1, 2022
- Additional revision if necessary
- Submit to County and incorporated communities for adoption after FEMA approval – Approx. Feb. 2022.

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**THANK YOU**  
**QUESTIONS?**

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APPENDIX B-4

PLANNING TEAM  
MEETING NOTES

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #1  
FEBRUARY 17, 2021  
9am - 10:30am**

Attendance:

Keith Raymond	Rosebud County DES
Courtney Haus	Rosebud County Public Information Officer
Dennis Kopitzke	Forsyth Mayor
Tom Frieders	National Weather Service
Rodney Dresbach	Rosebud County Rural Fire Chief
Jennifer Anderson	Rosebud County Extension Office
Ed Joiner	Rosebud Co. Commissioner
Daphne Digiridakis	Tetra Tech

Agenda:

1. Review and Discuss Calculated Priority Risk Index Matrix
  - o Probability Description
  - o Magnitude/Severity Description
2. Score Hazards
3. Review Scored Ranking
4. Determine Which Hazards to Group for MHMP Hazard Profiles. Consider the following:
  - o Haz-Mat & Transportation Accident Profile - Highway, Railroad, Aviation Accidents
  - o Severe Weather Profile - Winter Weather, Summer Weather and Drought
  - o Terrorism, Violence, Civil Unrest, Cyber Security
5. Identify 8 Hazard Profiles to include in MHMP
6. Prioritize Top 8 Hazards

**Notes:**

**Flooding**

Debris flows after wildfire. no impacts to roads

**Haz-Mat**

Pipeline Spill 12K gal of Diesel 2013

Railroad dumped whole load of coal in Rosebud - 20 yrs ago

**Terrorism - Violence - Civil Unrest - Cyber Security**

Not interested in profiling in MHMP

**Calculated Priority Risk Index Score - See Next Page**

**County Hazard Priorities - See Next page**

**Next - Planning Team Meeting #2**

Wednesday, March 10 at 9am

Join Meeting Online or Call: +1 406-247-0698

Meeting ID: 464 833 225#

TOPIC: Review Critical Facility and Hazard Profile Maps

**ROSEBUD COUNTY 2021 MHMP UPDATE  
 PLANNING TEAM MEETING #1  
 FEBRUARY 17, 2021  
 9am - 10:30am**

<b>2021 ROSEBUD COUNTY MHMP - CPRI RANKING &amp; COUNTY PRIORITIES</b>				
<b>HAZARD</b>	<b>CPRI SCORE</b>			<b>COUNTY PRIORITIES/PROFILE IN MHMP</b>
Wildfire >10 acres	3.35		1	Wildfire
Terrorism	3.1		2	Drought
Severe Summer Weather	3		3	Severe Summer Weather
Communicable Disease (human)	2.9		4	Communicable Disease
Dam Failure	2.85		5	Severe Winter Weather
Structure Fire (urban fire)	2.85		6	Flooding & Dam Failure
Highway Accidents	2.85		7	Structure Fire
Severe Winter Weather	2.75		8	Hazardous Material & Transportation Accidents
Flooding	2.7			
Drought	2.55			
Hazardous Materials Incidents	2.35			
Aircraft Accidents	2.25			
Pipeline Spills	2.1			
Railroad Accidents w impacts	1.85			
Communicable Disease (livestock)	1.8			
Landslides	1.75			
Volcanic Ash	1.5			
Earthquake	1.45			

**ROSEBUD COUNTY 2021 MHMP UPDATE  
 PLANNING TEAM MEETING #1  
 FEBRUARY 17, 2021  
 9am - 10:30am**

**ROSEBUD COUNTY MULTI-HAZARD MITIGATION PLAN - 2021 UPDATE  
 CALCULATED PRIORITY RISK INDEX**

Hazard	Probability				Magnitude/Severity				Economic Impact				Warning Time				Duration				CPRI Score
	Unlikely	Possibly	Likely	Highly Likely	Negligible	Limited	Critical	Catastrophic	Negligible	Limited	Critical	Catastrophic	< 6 hours	6 - 12 hours	12 - 24 hours	> 24 hours	< 6 hours	< 24 hours	< 1 week	> 1 week	
Wildfire >10 acres				x			x			x			x							x	3.35
Severe Summer Weather				x		x					x		x				x				3.00
Drought			x			x					x				x					x	2.55
Severe Winter Weather				x			x		x						x				x		2.75
Flooding				x		x				x					x				x		2.70
Dam Failure	x							x				x							x		2.85
Communicable Disease (livestock)		x			x					x					x					x	1.80
Hazardous Materials Incidents				x	x				x				x				x				2.35
Pipeline Spills		x				x			x				x					x			2.10
Railroad Accidents w impacts		x			x				x				x						x		1.85
Highway Accidents				x			x		x				x				x				2.85
Aircraft Accidents		x					x		x				x				x				2.25
Landslides		x			x				x				x				x				1.75
Communicable Disease (human)				x			x			x					x					x	2.90
Terrorism	x							x				x								x	3.10
Violence																					0.00
Civil Unrest																					0.00
Cyber Security																					0.00
Structure Fire (urban fire)			x				x			x			x						x		2.85
Earthquake	x				x				x				x				x				1.45
Volcanic Ash	x				x				x					x						x	1.50

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #2  
MARCH 10, 2021  
9am - 10:30am**

Attendance:

Dennis	Kopitzke	Forsyth Mayor
Courtney	Haus	Rosebud County Public Information Officer
Doris	Pinkerton	Forsyth Clerk/Treasurer
Ed	Joiner	Rosebud County Commissioner, District 3
Keith	Raymond	Rosebud County DES & Emergency Medical Services
Pat	Zent	Forsyth Water/Wastewater
Rodney	Dresbach	Rosebud County Rural Fire Chief
Shelly	Schnitzmeier	Rosebud County Public Health
Daphne	Digrindakis	Tetra Tech

**Agenda:**

- Review Critical Facility Maps (see Project Website)
- Review Hazard Maps (See Project Website)
- Review County Base Map (See Project Website)

**Handouts:**

- Rosebud County Critical Facilities

**Notes:** Highlighted items indicate Planning Team needs to provide info to Tetra Tech.

**Critical Facility Review:**

- Critical Facility Changes: Please provide an address and/or coordinates in decimal degrees for all critical facility locations. If needed, use Google Earth to locate facility. Place cursor on facility and coordinates will be provided in lower right edge of screen.
- Critical Facility Values: Please provide a replacement value for structures with or without equipment included.
  - ADD: Angela / Rosebud Co. Shop (south of post office)
  - CHANGE: Ashland / Sheriff's Dept. is also Ambulance and Public Health
  - ADD: Birney Post Office
  - CHANGE: Add "/Shelter" after Colstrip Parks & Recreation
  - ADD: Colstrip Water Towers (2) - (1 is by clinic, need location on other)
  - CHANGE: Location of Colstrip City Shop is wrong. Need new location.
  - COMBINE: Colstrip Police/Colstrip Fire Station 1/Ambulance
  - CHANGE: Rosebud Power Plant to Talon Energy Plant (Willow Ave.)
  - CHANGE: Reduce scale of Colstrip CF Map to show Rosebud Power Plant on southwest and high school on northeast.
  - ADD: Senior Center to Colstrip/Rosebud Co. Human Services
  - ADD: Colstrip Food/Fuel - Rosebud Food. Need location.
  - ADD: Colstrip Senior / Lakeview Assisted Living. Need location.
  - ADD: Dispatch Repeaters (3) one at Sheriff's Office. Need location of others.
  - ADD: Cell Towers (10-12). Need location.
  - CHANGE: Forsyth / Fire Station 1 is at 1310 Front Street
  - CHANGE: Forsyth / Rosebud Co. Fire is at 242 E. Front
  - CHANGE: Forsyth City Hall is co-located with Fire Station 2 at 247 N. 9<sup>th</sup> Ave.
  - CHANGE: Rosebud Healthcare Center is the hospital. Also has Nursing Home
  - CHANGE: Hospital/Medical Center to Rosebud Co. Public Health

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #2**  
**MARCH 10, 2021**  
**9am - 10:30am**

- ADD: Address of Forsyth Water Treatment Plant/Pump House is 550 N. 3rd.
- ADD: Forsyth / Fountain View Assisted Living – 21 Vine Street
- ADD: Forsyth / Water Tower south of Interstate. Need Location.
- CHANGE: Forsyth / Rosebud Co. DES Office is also Ambulance
- REMOVE: Rosebud Co. Public Health Office (duplicate with above)
- CHANGE: Location of landfill is not correct. Need location.
- ADD: Forsyth Transfer Station (west end of town). Need Location.
- CHANGE: Forsyth / Middle School on 917 Park St. to Daycare
- CHANGE: Amish Parochial School is located in Ashland (not Forsyth). Need location.
- CHANGE: Forsyth / Riverview Villa Senior Housing to Hango Community Center/Shelter.
- ADD: Address for Forsyth Lift Station – 480 Rosebud Street.
- ADD: Address for Forsyth Lift Station – 1850 Cedar Street
- ADD: Forsyth / Water Tank – 330 Oak Street
- ADD: Forsyth Food/Fuel: IGA – 1026 Main Street
- ADD: Forsyth Food/Fuel: Town Pump – 974 Front Street
- ADD: Forsyth Food/Fuel: Watering Hole Gas – 1017 Front Street
- ADD: Forsyth / MT DOT Shop, Forsyth – Front Street
- ADD: Forsyth/ BNSF Railroad Station – Main Street
- ADD: Range Telephone Company Hub – 2325 Front Street
- ADD: Rosebud Co. Public Library/Shelter – 201 N. 9th
- REMOVE: All Lane Deer critical facilities
- REMOVE: Rosebud Co. / Rock Springs School

**Base Map Review:**

- REMOVE: Carterville, Thurlow, Rock Springs, Finch, Brandenburg, Birney Day School

**Hazard Map Review:**

- General: Do not show hazard layers extending into the No. Cheyenne Reservation.
- Wildfire: REMOVE: Pasture and crop layer because they're not accurate.
- Haz-Mat: Rosebud DES to provide Tier II facilities and pipeline locations

**Next - Planning Team Meeting #3**

Wednesday, March 31<sup>st</sup> at 9am

Join Meeting Online or Call: +1 406-247-0698

Meeting ID: 507 128 924#

Topic: Mitigation strategy update: Wildfire, Structure Fire, Communicable Disease

**ROSEBUD COUNTY MHMP 2021 UPDATE**  
**PLANNING TEAM MEETING #3**  
**MARCH 31, 2021**  
**9am - 10:30am**

Attendance:

Keith Raymond	Rosebud County DES
Dennis Kopitzke	Forsyth Mayor
Courtney Haus	Rosebud Co. Public Information Officer
Shelly Schnitzmeier	Rosebud Co. Public Health
Rod Dresbach	Rosebud Co. Fire Warden
Charlie Hanson	MT DES District Field Representative
Daphne Digrindakis	Tetra Tech

Agenda:

- Update Mitigation Strategy: Wildfire and Structure Fire

Handouts:

- Types of Mitigation (Objectives)
- Rosebud County Mitigation Strategy
- Example Mitigation Projects

See following pages for updated mitigation strategy for wildfire and structure fire.

**Next - Planning Team Meeting #4**

Wednesday, April 21<sup>st</sup> at 9am

Join Call Online or Call: +1 406-247-0698

Meeting ID: 782 116 043#

Topic: Update Mitigation Strategy: Flooding, Severe Winter Weather, Severe Summer Weather, Drought

**ROSEBUD COUNTY MHMP 2021 UPDATE  
PLANNING TEAM MEETING #3  
MARCH 31, 2021  
9am - 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY											
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Comments	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 1 - Reduce Impacts from Wildfire</b>											
	<i>Objective 1.1: Implement Property Protection Projects to Reduce Impacts from Wildfire</i>										
		1.1.1 - Work with MT DNRC to create and maintain fuel breaks around City of Colstrip.	Retain	Colstrip	Medium	County Fire, DNRC		No progress made. Have tried campaigns numerous times on fuel reduction. Private landowners not interested. After 2012 fires, meeting held with federal, state, local stakeholders including insurance companies to discuss wildfire mitigation. Only 8 private property	Continue outreach campaign targeting private landowners.	Long range	DNRC, County Fire
		1.1.2 - Work with MT FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the Yellowstone River on the east side of Forsyth.	Retain	County	Medium	County Fire		MT FWP comes in for 2 weeks during winter and drops trees. Have opened up area quite a bit with many hazardous trees removed.	Continue same	Ongoing	MFWP, County Fire
	<i>Objective 1.2: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Wildfire</i>										
		1.2.1 - Support coordination between private land owners, Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.	Reword. Remove No. Cheyenne Tribe.	County	Medium	County Fire	Fuel reduction has been natural selection due to extensive areas within county that have been burned in recent fires.	Coordination group meeting is held each spring to discuss upcoming fire season. Co-op agreement provides engines and air support during fires. County responsible for suppression on state land.	Continue same	Ongoing	Existing Budgets
	<i>Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire</i>										
		1.3.1 - Continue to make information available online through the county with links to additional information and resources.		County	High	County PIO	Property owners have not taken advantage of workshops on defensible space.	Information is posted on the County website (under Fire) where there are links to state fire website.	Continue same. County has Facebook page and PIO officer will post information on wildfire mitigation opportunities.	Ongoing	Existing Budgets
		1.3.2 - Provide recommendations for types of building materials in the WUI to reduce fire danger in new construction.	Reword. Public outreach on materials instead of regulation.	County	High	County PIO					
		1.3.3 - Continue to support Public Health Department's smoke advisories and alerts.	New Project	County	High	County Public Health		New project for 2021 MHMP.	Continue messaging through Facebook, newspaper, smart boxes in post office, radio, flyers, etc. to reach community members.	Ongoing	Existing Budgets
	<i>Objective 1.4: Implement Prevent Projects to Reduce Impacts from Wildfire</i>										
		1.4.1 - Extend building regulations adjacent to city limits, as potential future annexation areas, to require compliance with wildfire standards.	New Project	Forsyth, Colstrip	Medium	City Councils	Since county has no building dept. or zoning, city regulations could require fire resistant construction in future development.	New project for 2021 MHMP.	Educate city council on benefit of implementing project.	Mid-term	Existing Budgets

**ROSEBUD COUNTY MHMP 2021 UPDATE  
 PLANNING TEAM MEETING #3  
 MARCH 31, 2021  
 9am - 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY											
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Comments	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
	<i>Objective 1.5: Implement Emergency Service Capabilities to Reduce Impacts from Wildfire</i>										
		1.5.1 - Continue to update fire fighting equipment to enhance firefighting capabilities.	New Project	County	High	County Fire		New project for 2021 Plan.	Add fire station near Ingomar to house equipment year round. Continue to obtain surplus equipment from DNRC/DOT to build engines.	Ongoing	Existing Budgets, Grants
		COMPLETE - Implement "Fire Programs" software program.	COMPLETE	County	Medium	County Fire Warden	Database allows for effective tracking, management, and reporting of wildland fire	COMPLETE			Existing Budgets
		COMPLETE - When subdivision regulations are updated, review requirements for access (slope, egress, turnarounds, bridge standards, etc.).	COMPLETE	County	Medium	County Planning Board, County Commissioners	Subdivision regulations updated in 2018 and included state wildfire standards.	COMPLETE			Existing Budgets
<b>Goal 7 - Reduce Impacts from Structure Fire</b>			New Goal for 2021 Plan								
	<i>Objective 7.1: Implement Public Education and Awareness Projects to Reduce Impacts from Structure Fire</i>		New Objective for 2021 Plan								
		7.1.1 - Support the education program in school on topics supplied by International Fire Council.	New Project for 2021 Plan	Forsyth, Colstrip, Ashland	High	Forsyth, Colstrip, Ashland		New Project for 2021 Plan	Continue going to schools once a year and conducting active fire drills with smoke machines. Show students fire trucks.	Ongoing	Existing Budgets
	<i>Objective 7.2: Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire</i>		New Objective for 2021 Plan								
		7.2.1 - Recruit and train volunteer	New Project for 2021 Plan	Forsyth, Colstrip, Ashland	High	Forsyth, Colstrip, Ashland		New Project for 2021 Plan	Continue to recruit firefighters through word of mouth. Continue bi-monthly training on basics and send new recruits annually to Cody for fire school	Ongoing	Existing Budgets
		7.2.2 - Update equipment needed for suppressing structure fires.	New Project for 2021 Plan	Forsyth, Colstrip, Ashland	High	Forsyth, Colstrip, Ashland		New Project for 2021 Plan	Buy new equipment as needed. Look at grants for funding opportunities.	Ongoing	Existing Budgets, Grants

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #4  
APRIL 21, 2021  
9am - 10:30am**

Attendance:

Keith Raymond	Rosebud County DES
Courtney Haus	Rosebud County Public Information Officer
Dennis Kopitzke	Forsyth Mayor
Doris Pinkerton	Forsyth Clerk/Treasurer
Rodney Dresbach	Rosebud County Rural Fire Chief
Pat Zent	Forsyth Water/Wastewater
Ed Joiner	Rosebud Co. Commissioner
Tom Frieders	National Weather Service
Charlie Hanson	MT DES District Field Representative
Daphne Digrindakis	Tetra Tech

Agenda:

- Update Mitigation Strategy: Flooding, Severe Winter Weather, Severe Summer Weather, Drought

Handouts:

- Rosebud County Mitigation Strategy
- Example Mitigation Projects
- Types of Mitigation

Notes:

See following pages for updated mitigation strategy for Flooding, Severe Winter Weather, Severe Summer Weather, Drought

**Next - Planning Team Meeting #5**

Wednesday, May 12th at 9am

Join Meeting Online or Call +1 406-247-0698

Meeting ID: 780 992 971#

Topic: Update Mitigation Strategy: Hazardous Material Incidents, Transportation Accidents, Communicable Disease

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #4  
APRIL 21, 2021**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 2 - Reduce Impacts from Drought</b>			New Goal for 2021 Plan							
	<i>Objective 2.1: Implement Public Education and Awareness Projects to Reduce Impacts from Drought</i>		New Objective for 2021 Plan							
	2.1.1 Support MSU Extension's efforts to develop and distribute range and agriculture management tools to mitigate affects of drought.		New Project for 2021 Plan	County	High	County Extension	New Project for 2021 Plan	Utilize social, broadcast, and print media to reach agricultural producers regarding resources available.	Ongoing	County Resources
	<i>Objective 2.2: Implement Structural Projects to Reduce Impacts from Drought</i>		New Objective for 2021 Plan							
	2.2.1 Improve water intake system for City of Forsyth.		New Project for 2021 Plan	Forsyth	High	Forsyth Water Dept.	New Project for 2021 Plan	City is completing Preliminary Engineering Report on how to make improvements to water intake system. Will implement action items	Mid-term	City Resources, Grants
	<i>Objective 2.3: Implement Prevention Projects to Reduce Impacts from Drought</i>		New Objective for 2021 Plan							
	2.3.1 Improve water conveyance efficiencies in agricultural, municipal, and industrial users.		New Project for 2021 Plan	County, Forsyth, Colstrip	Medium	County Extension	New Project for 2021 Plan	Municipalities to study and implement appropriate upgrades to their systems. Extension to work with agricultural users on conveyance improvements. Outreach to industrial users.	Ongoing	County Resources
	2.3.2 Encourage voluntary water conservation by domestic, municipal, and industrial users.		New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES, Forsyth & Colstrip Water Depts.	New Project for 2021 Plan	Utilize social, broadcast, and print media to promote conservation. Municipalities to consider watering restrictions during periods of severe drought.	Ongoing	County & City Resources
	<i>Objective 2.4: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Drought</i>		New Objective for 2021 Plan							
	2.4.1 Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.		New Project for 2021 Plan	County	High	County Extension	New Project for 2021 Plan	Utilize social, broadcast, and print media to promote drought mitigation programs.	Ongoing	County Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #4  
APRIL 21, 2021**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 3 - Reduce Impacts from Severe Summer Weather</b>			New Goal for 2021 Plan							
	<i>Objective 3.1: Implement Prevention Projects to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.1.1 Implement the tree maintenance ordinance and address problem trees in Forsyth.	New Project for 2021 Plan	Forsyth	High	Forsyth Public Works	New Project for 2021 Plan	City working with consultant to identify and assess problems trees. Tree ordinance will be updated upon completion of report. Tree maintenance ongoing.	Ongoing	City Resources
	<i>Objective 3.2: Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.2.1 Promote preparedness through outreach to community and schools.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New Project for 2021 Plan	Utilize social media and share NWS "Weather Ready Wednesdays" posts. Go into schools and provide outreach on preparedness to	Ongoing	County Resources, NWS
		3.2.2 Partner with National Weather Service on the Weather Ready Nation Ambassador Program	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New Project for 2021 Plan	Encourage organizations and business in communities to sign up and promote WRN program to their staff and post on websites.	Ongoing	County Resources, NWS
	<i>Objective 3.3: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.3.1 Provide preparedness training to community members and homeowners.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New Project for 2021 Plan	NWS will continue to provide spotter training every other year. Promote Storm Ready communications links as this program is modernized.	Ongoing	County Resources, NWS
	<i>Objective 3.4: Implement Property Protection Projects to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.4.1 Encourage utility companies to bury electric and communication lines in hazard areas.	New Project for 2021 Plan	County	Medium	County Commissioners	New Project for 2021 Plan	MDU and Range Telephone have buried utilities in some areas. Have brought secondary feed into Forsyth from different set of lines. Mid-Yellowstone Rural Electric Co-op and Tongue River Electric in Ashland also provide utilities in county.	Ongoing	County Resources, Utilities

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #4  
APRIL 21, 2021**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 5 - Reduce Impacts from Severe Winter Weather</b>										
		<i>Objective 5.1: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Winter Weather</i>	New Objective for 2021 Plan							
		5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.	Retain	County	Medium	Rural addressing, 911	Reflective address signs at driveways are about 10% complete in county. Have been promoted through 911 and 4-	Continue promoting through community service and fundraising projects.	Ongoing	County Resources, Landowners
		<i>Objective 5.2: Implement Public Education and Awareness to Reduce Impacts from Severe Winter Weather</i>	New Objective for 2021 Plan							
		5.2.1 Promote preparedness through outreach to community and schools.	New Project for 2021 Plan	County, Forsyth, Colstrip	Medium	DES, City Chamber	New Project for 2021 Plan	Obtain MT Dept. of Transportation Winter Weather Survival guides and make available at courthouse and community events. Bring materials to schools for distribution.	Ongoing	County & City Resources
<b>Goal 6 - Reduce Impacts from Flooding &amp; Dam Failure</b>										
		<i>Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure</i>	New Objective for 2021 Plan							
		6.1.1 Address any issues related to the Forsyth levee on the Yellowstone River that arise during the current re-certification process. These could include encroachment and vegetation.	Retain	Forsyth	High	City, County DES	City working with ACOE on System-wide Improvement Framework (SWIF). Levee inspected annually. City has invested in tree & brush removal, installing culverts, working with every property owner, levee has been surveyed, owners have removed anything that infringes. County did tree removal and	Continue same. Major rip-rap project in future.	Ongoing	City & County Resources, Grants
		6.1.2 Develop a stormwater management plan for Forsyth.	New Project for 2021 Plan	Forsyth	Medium	Forsyth Public Works	New Project for 2021 Plan.	Hire consultant to complete stormwater management plan. Implement project as funding allows.	Mid-term	City Resources, Grants
		6.1.3 Support completion of floodplain mapping and update Flood Ordinance when complete.	New Project for 2021 Plan	County, Forsyth	High	County & Forsyth Floodplain Administrators	New Project for 2021 Plan.	High accuracy LiDAR available for Yellowstone River in county. DNRC in process of applying for a grant to update the studies. Inquiry by wind farm north of Forsyth would be in floodplain.	Mid-term	FEMA, County Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #4  
APRIL 21, 2021**

<b>ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY</b>										
<b>Goal</b>	<b>Objective</b>	<b>Mitigation Project</b>	<b>Status: Reword, Retain, Delete, New for 2021</b>	<b>Jurisdiction</b>	<b>Priority</b>	<b>Responsible Dept.</b>	<b>Progress Made 2013-2020</b>	<b>Planned Activities 2021-2026</b>	<b>Schedule</b>	<b>Potential Funding Source(s)</b>
		<i>Objective 6.2: Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure</i>	New Objective for 2021 Plan							
		6.2.1 Stabilize bank erosion at intersection of River and Old Mission Roads.	Retain	County (Ashland)	Low	County Road Dept.	No progress to report.	Tongue River makes 90 degree turn here. Tongue River Electric had to move a couple of poles due to erosion. Used to be bridge pilings there that slowed river from pounding into bank. Future project to put in some riprap.	Long-term	County Resources, Grants
		6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.	New Project for 2021 Plan	County, Forsyth	High	County Road Dept, Forsyth Public Works	New Project for 2021 Plan.	Upgrade culverts when washouts occur. Encourage MDT to upgrade bridges that need work.	Ongoing	County & City Resources
		<i>Objective 6.3: Implement Public Education and Awareness Projects to Reduce Impacts from Flooding and Dam Failure</i>	New Objective for 2021 Plan							
		6.3.1 Continue compliance with the National Flood Insurance Program and the County Flood Ordinance.	New Project for 2021 Plan	County, Forsyth	Medium	County & Forsyth Floodplain Administrators	New Project for 2021 Plan.	Flood insurance not required inside levee in Forsyth. Most properties outside levee are higher than river bank. Continue NFIP compliance.	Ongoing	County & City Resources
		<i>Objective 6.4: Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure</i>	New Objective for 2021 Plan							
		6.4.1 Participate in dam exercises with emergency response partners.	New Project for 2021 Plan	County, Forsyth	High	County DES	New Project for 2021 Plan.	Encourage dam owners to conduct exercises every couple of years. Ensure county response agencies participate.	Ongoing	County & City Resources, Dam Owners

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #5**  
**MAY 12, 2021**  
**9:00 am – 10:30 am**

Attendance:

Keith Raymond	Rosebud County DES
Dennis Kopitzke	Forsyth Mayor
Pat Zent	Forsyth Water/Wastewater
Ed Joiner	Rosebud Co. Commissioner
Shelly Schnitzmeier	Rosebud Co. Public Health
Daphne Digrindakis	Tetra Tech

Agenda:

- Update Mitigation Strategy: Communicable Disease, Hazardous Material Incidents, Transportation Accidents, All Hazards

Old Business:

- Need data to complete risk assessment analysis:
  - Tier II facility names and address for risk assessment analysis.
  - Map of homes protected by levee in Forsyth.
  - Values of county critical facilities

Handouts:

- Rosebud County Mitigation Strategy
- Example Mitigation Projects
- Types of Mitigation

Notes: See next pages for updated mitigation strategy for Communicable Disease, Hazardous Material Incidents, Transportation Accidents, and All Hazards.

**Next – Planning Team #6**

Wednesday, June 2nd at 9am

Join Meeting Online or Call: +1 406-247-0698

Meeting ID: 125 108 312#

Topic: Discuss: Plan Maintenance Procedures, Capability Assessment, Future Development

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #5  
MAY 12, 2021  
9:00 am – 10:30 am**

<b>ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY</b>										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 4 - Reduce Impacts from Communicable Disease</b>			New Goal for 2021 Plan							
	<i>Objective 4.1: Implement Prevention Projects to Reduce Impacts from Communicable Disease</i>									
	4.1.1	Control mosquito populations during summer in cities and town.	New project for 2021 Plan	Forsyth, Colstrip, Ashland	High	City Public Works	New project for 2021 Plan.	Spray on a weekly basis during summer as problem becomes apparent.	Ongoing	City & Town Resources
	4.1.2	Prevent and control communicable disease through surveillance, testing and immunization.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Monitor Health Alert Network. Conduct annual flu clinics at Public Health Dept. and fairgrounds. Hold drive thru clinics during pandemic. Public Health to go to other places in communities, as needed, to reach vulnerable populations.	Ongoing	County Resources
	<i>Objective 4.2: Implement Public Education and Awareness Projects to Reduce Impacts from Communicable Disease</i>									
	4.2.1	Provide more opportunities for public education in cooperation with Public Health.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Utilize broadcast, print, and social media to provide education. Medical director to give weekly updates, as needed, on the radio. PIO to post on EMS/DES and Public Health Facebook pages. Utilize smart box at post office for elderly who don't do facebook. Hang posters in public places. Use electronic billboards of PSAs.	Ongoing	County Resources
	<i>Objective 4.3: Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease</i>									
	4.3.1	Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Open pod for mass immunization once a year. Collaborate with Sheriff's Dept., EMS, Commissioners, and Hospital.	Ongoing	County Resources
	4.3.2	Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Receive HANs from state. Make decision who to distribute HAN to. Broad lists go to schools, veterinarians, every entity in county. Small list goes to medical providers.	Ongoing	County Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #5**  
**MAY 12, 2021**  
**9:00 am – 10:30 am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents</b>			New Goal for 2021 Plan							
	<i>Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents</i>									
		8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County & City Fire Depts.	New project for 2021 Plan	Provide haz-mat awareness training to first responders every two years (ambulance, EMS, Fire Dept., Sheriff's Dept.)	Ongoing	County & City Resources
		8.1.2 Encourage railroad, pipeline companies, and Power Plant to more consistently attend LEPC meetings to plan for haz-mat response.	New project for 2021 Plan	County	High	County DES	New project for 2021 Plan	Request entities to provide more than sporadic attendance to ensure a more cohesive planning effort takes place.	Ongoing	County Resources
		8.1.3 Encourage Power Plant, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.	New project for 2021 Plan	County, Colstrip	High	County DES	New project for 2021 Plan	Ensure County and Colstrip Fire Depts. participate in training offered at Power Plant and annual safety meetings. Train with Safety & Rescue Teams at both Power Plant and mine. Coordinate training with railroad and pipeline companies.	Ongoing	County Resources
		DELETE - Assist Rosebud school in preparation for railroad hazmat incident.	DELETE. Don't feel it is necessary to go into schools with haz-mat message.							
		DELETE - Educate Rosebud area residents on what to during a hazardous material spill by the railroad.	DELETE. Don't feel it is necessary to educate residents on this topic.							
<b>Goal 9 - Reduce Impacts from All Hazards</b>			New Goal for 2021 Plan							
	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>									
		9.1.1 Obtain back-up power for water and wastewater treatment plants.	Retain	Forsyth, Colstrip, Ashland	High	City Public Works, Water Users	Have generators for lift stations. No other progress to report	Be aware of grants to provide funding for Forsyth water system generator. Determine generator needs for Colstrip and Ashland water and wastewater systems.		County & City Resources, Grants
		9.1.2 Educate dispatch and responders about siren systems and procure additional equipment, as needed.	Reword to include new equipment.	Forsyth, Colstrip, Ashland	Medium	Sheriff's Office	Forsyth has two sirens which are tested every month.	Be aware of funding opportunities for third siren in Forsyth.		County & City Resources, Grants
		9.1.3 Obtain back-up power for county and city critical facilities.	Reword to include critical facilities.	County, Forsyth	High	City, County, DES	Sheriff's office & hospital have automated systems. EMS/DES has a manual generator.	Be aware of grants to provide funding. Generator still needed for Forsyth City Hall and County		County & City Resources, Grants
		9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.	New project for 2021 Plan	County, Forsyth, Colstrip,	High	County DES	New project for 2021 Plan	Ongoing effort to recruit first responders. Training to be held in next year for new recruits.	Ongoing	County Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #5  
MAY 12, 2021  
9:00 am – 10:30 am**

<b>ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY</b>										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
		9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.	New project for 2021 Plan	County	High	County DES	New project for 2021 Plan	Continue to be aware of First Net project and implement when available.	Mid-term	County Resources
		<i>Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards</i>								
		9.2.1 Adopt updated building codes.	Retain	Forsyth, Colstrip	High	City Planning	Forsyth has updated building codes each time new ones come down from the state.	Continue same.	Ongoing	City Resources
		9.2.2 Update Growth Policies to encourage growth in low hazard areas.	New project for 2021 Plan	County, Forsyth, Colstrip	Medium	County & City Planning	New project for 2021 Plan	City of Forsyth to update Growth Policy in 2021. County to update every 5 years.	Ongoing	County & City Resources, Grants
		<i>Objective 9.3: Implement Public Education &amp; Awareness Projects to Reduce Impacts from All Hazards</i>								
		9.3.1 Promote reistration of cell phones for "Regroup" emergency notification system.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New project for 2021 Plan	County added "Regroup" for mass notification in 2016. Utilize print, broadcast and social media to inform citizens that they need to register their cell phones to receive notifications.	Ongoing	County Resources
		COMPLETE - Enhance communications infrastructure in Ashland area by constructing radio tower site and fireproof shed.	Completed in 2015. Shed for backup generator.							
		COMPLETE - Enhance communications infrastructure by upgrading Treasure County repeater.	Completed in 2015.							
		COMPLETE - Enhance communications infrastructure by upgrading Little Wolf radio repeater.	Completed in 2015.							
		COMPLETE - Replace the radio tower at the Sheriff's office in Forsyth.	Completed in 2017.							
		COMPLETE - Complete implementation of enhanced 911 system.	Completed in 2018.							
		DELETE - Install/activate base unit in Sheriff's office for Sarpy Creek.	Delete - Commissioner not aware of any problems. Project may be							

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #6  
JUNE 2, 2021  
9am – 10:30am**

Attendance:

Keith Raymond	Rosebud County DES
Dennis Kopitzke	Forsyth Mayor
Pat Zent	Forsyth Water/Wastewater
Ed Joiner	Rosebud Co. Commissioner
Courtney Haus	Rosebud County Public Information Officer
Rodney Dresbach	Rosebud County Rural Fire Chief
Charlie Hanson	MT DES District Field Representative
John Williams	Colstrip Mayor
Tina Beach	CHS Pipeline
Bryan Swan	Colstrip Public Works
Cory Hert	Colstrip Police Dept.
Jaylene Allison	Colstrip Fire Dept.
Daphne Digrindakis	Tetra Tech

Agenda:

- Review and update 2021 Mitigation Strategy with City of Colstrip
- Update Capability Assessment
- Update Plan Maintenance Procedures
- Discuss Future Development Projects
- Schedule and Plan Review Process

Notes: See next pages for updated mitigation strategy.

Capability Assessment Update:

- DES. Keith is full time ambulance director which encompasses DES (he has other responsibilities besides DES). Two deputy DES coordinators assist, as needed. DES and deputy positions are funded through county and not EMPG.
- LEPC meets on monthly basis each month except August.
- Fire – four active fire departments with equipment including: Rosebud County, City of Forsyth, City of Colstrip, and Ashland fire district.
- Southeast MT economic development authority serves entire county.

**Table 5.4-1. Capability Assessment Summary**

Capability	Rosebud County	City of Forsyth	City of Colstrip
Population (est.)	9,800	1,750	2,300
<b>Policies and Programs</b>			
Growth Policy that Supports Hazard Mitigation	Yes	Yes	Yes
Subdivision Regulations that Support Hazard Mitigation	Yes	Yes	Yes
Zoning that Recognizes Hazard Areas	No	Yes	Yes
National Flood Insurance Program Participation	Yes	Yes	No

**ROSEBUD COUNTY 2021 MHMP UPDATE  
 PLANNING TEAM MEETING #6  
 JUNE 2, 2021  
 9am – 10:30am**

**Table 5.4-1. Capability Assessment Summary**

Capability	Rosebud County	City of Forsyth	City of Colstrip
Local Building Codes	No. Septic permits.	Yes	Yes
<b>Technical Capabilities</b>			
Emergency Manager	Yes	No	No
Public Works Engineer	No - contracted	No - contracted	No - contracted
GIS Mapping Capabilities	Limited.	No	No
Floodplain Administrator	Yes	Yes	No
Community Planners	Not currently. Planning Board meets infrequently	No. City-County Planning Board	No. City Planning Board

**Plan Maintenance Update:**

- Plan updated again in 5 years
- DES & LEPC to run mitigation program.
  - Each county dept. will manage their own grants and report to DES.
  - Flood projects will be managed by County Road Dept.
  - Wildfire projects will be managed by County Fire Dept.
  - Drought projects will be managed by County Extension Agent.
  - Communicable Disease projects will be managed by County Public Health.
  - Severe Weather and All Hazard projects will be managed by County DES/PIO.
  - Forsyth and Colstrip will manage grants through mayor’s office with assistance from Clerk-Treasurer and departments, as needed. Will report to County DES.
- 2012 Plan – Looked at pieces of old plan during LEPC meetings, didn’t do whole review. Looked at hazard profile sections ahead of season.
- 2021 Plan - Once every fiscal year LEPC will review plan. Depending on season LEPC will discuss relevant hazards.
- DES and LEPC will be responsible for project monitoring and evaluation.

**Future Development Projects:**

- Subdivisions? Where?
  - County – None.
  - Forsyth – None.
  - Colstrip – None.
- Infrastructure Improvements? Schools? Fire Stations? Where?
  - County – None.
  - Forsyth - None.
  - Colstrip reverse of growth. combining schools/combining/demolition.
- Energy Developments? Wind? Solar? Substations? Where?
  - New windfarm up and running. Another wind farm project being planned. Ed to provide location
  - Discussions in Colstrip with several large companies but nothing concrete yet.

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #6**  
**JUNE 2, 2021**  
**9am - 10:30am**

Timeline for Finishing Plan:

- Complete Risk Assessment – July & August 2021
- Write Plan – June – September 2021
- Draft to be submitted for 30+ day review period – October 1, 2021
  - Hard copy of draft plan will be Commissioner’s Office
- Public Meeting (virtual or in-person hasn’t been determined) – October 2021
- Plan Revision – November 15, 2021
- MT DES & FEMA (45-day review each) – December 1<sup>st</sup> through February 28, 2022
- Second Public Review for 12 weeks - December 1<sup>st</sup> through February 28, 2022
- Adoption – March & April 2022

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #6  
JUNE 2, 2021  
9am – 10:30am**

<b>ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY</b>										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 1 - Reduce Impacts from Wildfire</b>										
	<i>Objective 1.1: Implement Property Protection Projects to Reduce Impacts from Wildfire</i>									
		1.1.1 - Work with Montana DNRC to create and maintain fuel breaks around City of Colstrip.	Retain.	Colstrip	Medium	County Fire, DNRC	No progress to report.	High school area in hills northeast of Colstrip (state trust land) is where problem is. Fire history shows embers a concern. Coordinate w/ DNRC on thinning/ mitigation. Open up timber and get spacing. Keep ash rain down.	Ongoing	DNRC, County Resources
		1.1.2 - Work with Montana FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the Yellowstone River on the east side of Forsyth.	Retain.	County	Medium	County Fire	Montana FWP comes in for 2 weeks during winter and drops trees. Have opened up area quite a bit with many hazardous trees removed.	Continue same	Ongoing	MFWP, County Resources
	<i>Objective 1.2: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from</i>									
		1.2.1 - Support coordination between private landowners, Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.	Reword. Remove No. Cheyenne Tribe.	County	Medium	County Fire	Coordination group meeting is held each spring to discuss upcoming fire season. Co-op agreement provides engines and air support during fires. County responsible for suppression on state land.	Continue same	Ongoing	County Resources
	<i>Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire</i>									
		1.3.1 - Continue to make information available online through the county with links to additional resources.		County	High	County PIO	Information is posted on the County website (under Fire) where there are links to state fire website.	Continue same. County has Facebook page and PIO officer will post information on wildfire mitigation opportunities.	Ongoing	County Resources
		1.3.2 - Provide recommendations for types of building materials in the WUI to reduce fire danger in new construction.	Reword. Public outreach on materials instead of	County	High	County PIO	No progress to report.	Utilize MT WUI model Building Code recommendations. Consult FireSafe Montana.	Ongoing	County Resources
		1.3.3 - Continue to support Public Health Department's smoke advisories and alerts.	New Project	County	High	County Public Health	New project for 2021 MHMP.	Continue messaging through Facebook, newspaper, smart boxes in post office, radio, flyers, etc. to reach community members.	Ongoing	County Resources
	<i>Objective 1.4: Implement Prevent Projects to Reduce Impacts from Wildfire</i>									
		1.4.1 - Extend building regulations adjacent to city limits into potential future annexation areas, to require compliance with wildfire standards.	New Project	Forsyth	Medium	City Council	New project for 2021 MHMP.	Educate city council on benefit of implementing project.	Mid-term	City Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #6  
JUNE 2, 2021  
9am – 10:30am**

<b>ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY</b>										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
		<i>Objective 1.5: Enhance Emergency Service Capabilities to Reduce Impacts from Wildfire</i>								
		1.5.1 - Continue to update equipment to enhance firefighting capabilities.	New Project	County	High	County Fire	New project for 2021 Plan.	Add fire station near Ingomar to house equipment year round. Continue to obtain surplus equipment from DNRC/DOT to build engines.	Ongoing	County Resources, Grants
<b>Goal 2 - Reduce Impacts from Drought</b>			New Goal for 2021 Plan							
		<i>Objective 2.1: Implement Public Education and Awareness Projects to Reduce Impacts from Drought</i>	New Objective for 2021 Plan							
		2.1.1 Support MSU Extension's efforts to develop and distribute range and agriculture management tools to mitigate effects of drought.	New Project for 2021 Plan	County	High	County Extension	New Project for 2021 Plan	Utilize social, broadcast, and print media to reach agricultural producers regarding resources available.	Ongoing	County Resources
		<i>Objective 2.2: Implement Structural Projects to Reduce Impacts from Drought</i>	New Objective for 2021 Plan							
		2.2.1 Improve water intake system for City of Forsyth.	New Project for 2021 Plan	Forsyth	High	Forsyth Water Dept.	New Project for 2021 Plan	City is completing Preliminary Engineering Report on how to make improvements to water intake system. Will implement action items in future.	Mid-term	City Resources, Grants
		<i>Objective 2.3: Implement Prevention Projects to Reduce Impacts from Drought</i>	New Objective for 2021 Plan							
		2.3.1 Improve water conveyance efficiencies in agricultural, municipal, and industrial users.	New Project for 2021 Plan.	County, Forsyth, Colstrip	Medium	County Extension	New Project for 2021 Plan	Municipalities to study and implement appropriate upgrades to their systems. Extension to work with agricultural users on conveyance improvements. Outreach to industrial users.	Ongoing	County Resources
		2.3.2 Encourage voluntary water conservation by domestic, municipal, and industrial users.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES, Forsyth & Colstrip Water Depts.	New Project for 2021 Plan	Utilize social, broadcast, and print media to promote conservation. Municipalities to consider watering restrictions during periods of severe drought.	Ongoing	County & City Resources
		<i>Objective 2.4: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Drought</i>	New Objective for 2021 Plan							
		2.4.1 Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.	New Project for 2021 Plan	County	High	County Extension	New Project for 2021 Plan	Utilize social, broadcast, and print media to promote drought mitigation programs.	Ongoing	County Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #6**  
**JUNE 2, 2021**  
**9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
		2.4.2 Support completion of Colstrip Water Supply Feasibility Study.	New Project for 2021 Plan	Colstrip	High	MDEQ, Colstrip Mayor	New Project for 2021 Plan	Study mandated by 2021 state legislature. MDEQ to be administrator. Colstrip water supply comes via pipeline (owned by power plant) from Yellowstone River. With closing of power plant, study will ensure water for City of Colstrip.	Short-term	Power Plant owners. City Resources
<b>Goal 3 - Reduce Impacts from Severe Summer Weather</b>			New Goal for 2021 Plan							
	<i>Objective 3.1: Implement Prevention Projects to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.1.1 Implement the tree maintenance ordinance and address problem trees.	New Project for 2021 Plan	Forsyth, Colstrip	High	Forsyth & Colstrip Public Works	New Project for 2021 Plan	Forsyth working with consultant to identify and assess problems trees. Tree ordinance will be updated upon completion of report. Tree maintenance ongoing. Colstrip may try to form a Tree Board.	Ongoing	City Resources
	<i>Objective 3.2: Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.2.1 Promote preparedness through outreach to community and schools.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New Project for 2021 Plan	Utilize social media and share NWS "Weather Ready Wednesdays" posts. Go into schools and provide outreach on preparedness to students.	Ongoing	County Resources, NWS
		3.2.2 Partner with National Weather Service on the Weather Ready Nation Ambassador Program.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New Project for 2021 Plan	Encourage organizations and business in communities to sign up and promote WRN program to their staff and post on websites.	Ongoing	County Resources, NWS
	<i>Objective 3.3: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Summer Weather</i>		New Objective for 2021 Plan							
		3.3.1 Provide preparedness training to community members and homeowners.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	NWS	New Project for 2021 Plan	NWS will continue to provide spotter training every other year. Promote Storm Ready communications links as this program is modernized.	Ongoing	County Resources, NWS

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #6  
JUNE 2, 2021  
9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
		<i>Objective 3.4: Implement Property Protection Projects to Reduce Impacts from Severe Summer Weather</i>	New Objective for 2021 Plan							
		3.4.1 Encourage utility companies to bury electric and communication lines in hazard areas.	New Project for 2021 Plan	County	Medium	County Commissioners	New Project for 2021 Plan	MDU and Range Telephone have buried utilities in some areas. Have brought secondary feed into Forsyth from different set of lines. Mid-Yellowstone Rural Electric Co-op and Tongue River Electric in Ashland also provide utilities in county.	Ongoing	County Resources, Utilities
<b>Goal 4 - Reduce Impacts from Communicable Disease</b>			New Goal for 2021 Plan							
		<i>Objective 4.1: Implement Prevention Projects to Reduce Impacts from Communicable Disease</i>								
		4.1.1 Control mosquito populations during summer in cities and town.	New project for 2021 Plan	Forsyth, Colstrip, Ashland	High	City Public Works	New project for 2021 Plan.	Spray on a weekly basis during summer as problem becomes apparent.	Ongoing	City & Town Resources
		4.1.2 Prevent and control communicable disease through surveillance, testing and immunization.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Monitor Health Alert Network. Conduct annual flu clinics at Public Health Dept. and fairgrounds. Hold drive thru clinics during pandemic. Public Health to go to other places in communities, as needed, to reach vulnerable populations.	Ongoing	County Resources
		<i>Objective 4.2: Implement Public Education and Awareness Projects to Reduce Impacts from Communicable Disease</i>								
		4.2.1 Promote public education on preventing communicable disease.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Utilize broadcast, print, and social media to provide education. Medical director to give weekly updates, as needed, on the radio. PIO to post on EMS/DES and Public Health Facebook pages. Utilize smart box at post office for elderly who don't do Facebook. Hang posters in public places. Use electronic billboards of PSAs.	Ongoing	County Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE  
 PLANNING TEAM MEETING #6  
 JUNE 2, 2021  
 9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
	<i>Objective 4.3: Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease</i>									
		4.3.1 Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Open pod for mass immunization once a year. Collaborate with Sheriff's Dept., EMS, Commissioners, and Hospital.	Ongoing	County Resources
		4.3.2 Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County Public Health	New project for 2021 Plan.	Receive HANs from state. Make decision who to distribute HAN to. Broad lists go to schools, veterinarians, every entity in county. Small list goes to medical	Ongoing	County Resources
<b>Goal 5 - Reduce Impacts from Severe Winter Weather</b>										
	<i>Objective 5.1: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Winter Weather</i>		New Objective for 2021 Plan							
		5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.	Retain	County	Medium	Rural addressing, 911	Reflective address signs at driveways are about 10% complete in county. Have been promoted through 911 and 4-H/Boy Scout fundraisers.	Continue promoting through community service and fundraising projects.	Ongoing	County Resources, Landowners
	<i>Objective 5.2: Implement Public Education and Awareness to Reduce Impacts from Severe Winter Weather</i>		New Objective for 2021 Plan							
		5.2.1 Promote preparedness through outreach to community and schools.	New Project for 2021 Plan	County, Forsyth, Colstrip	Medium	County DES, City	New Project for 2021 Plan	Obtain MDT Winter Weather Survival guides and make available at courthouse and community events. Bring materials to schools for distribution.	Ongoing	County & City Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE  
PLANNING TEAM MEETING #6  
JUNE 2, 2021  
9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 6 - Reduce Impacts from Flooding &amp; Dam Failure</b>			New Goal for 2021 Plan							
	<i>Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure</i>		New Objective for 2021 Plan							
		6.1.1 Address any issues related to the Forsyth levee on the Yellowstone River that arise during the current re-certification process.	Retain	Forsyth	High	City, County DES	City working with ACOE on System-wide Improvement Framework (SWIF). Levee inspected annually. City has invested in tree & brush removal, installing culverts, working with every property owner, levee has been surveyed, owners have removed anything that infringes. County did tree removal and repair of washout at far east end.	Continue same. Major rip-rap project in future.	Ongoing	City & County Resources, Grants
		6.1.2 Develop a stormwater management plan for Forsyth.	New Project for 2021 Plan	Forsyth	Medium	Forsyth Public Works	New Project for 2021 Plan.	Hire consultant to complete stormwater management plan. Implement project as funding allows.	Mid-term	City Resources, Grants
		6.1.3 Support completion of floodplain mapping and update Flood Ordinance when complete.	New Project for 2021 Plan	County, Forsyth	High	County & Forsyth Floodplain Administrators	New Project for 2021 Plan.	High accuracy LiDAR available for Yellowstone River in county. DNRC in process of applying for a grant to update the studies. Inquiry by wind farm north of Forsyth would be in floodplain.	Mid-term	FEMA, DNRC, County Resources
	<i>Objective 6.2: Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure</i>		New Objective for 2021 Plan							
		6.2.1 Stabilize bank erosion at intersection of River and Old Mission Roads in Ashland.	Retain	County (Ashland)	Low	County Road Dept.	No progress to report.	Tongue River makes 90 degree turn here. Tongue River Electric had to move a couple of poles due to erosion. Used to be bridge pilings there that slowed river from pounding into bank. Future project to put in some riprap.	Long-term	County Resources, Grants
		6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.	New Project for 2021 Plan	County, Forsyth	High	County Road Dept., Forsyth Public Works	New Project for 2021 Plan.	Upgrade culverts when washouts occur. Encourage MDT to upgrade bridges that need work.	Ongoing	County & City Resources
	<i>Objective 6.3: Implement Property Protection Projects to Reduce Impacts from Flooding and Dam Failure</i>		New Objective for 2021 Plan							
		6.3.1 Continue compliance with the National Flood Insurance Program and the County Flood Ordinance.	New Project for 2021 Plan	County, Forsyth	Medium	County & Forsyth Floodplain Administrators	New Project for 2021 Plan.	Flood insurance not required inside levee in Forsyth. Most properties outside levee are higher than river bank. Continue NFIP compliance.	Ongoing	County & City Resources

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #6**  
**JUNE 2, 2021**  
**9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
		<i>Objective 6.4: Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure</i>	New Objective for 2021 Plan							
		6.4.1 Participate in dam exercises with emergency response partners.	New Project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New Project for 2021 Plan.	Encourage dam owners to conduct annual tabletop exercises. Ensure county and city response agencies participate.	Ongoing	County & City Resources, Dam Owners
		6.4.2 Engage City of Colstrip in dam failure awareness and preparedness.	New project for 2021 Plan.	Colstrip	High	County Commissioners, City of Colstrip	New Project for 2021 Plan.	Ensure City is invited to annual tabletop exercises. Obtain copy of Castlerock Lake Dam EAP. Provide info to public on exercises and dam failure risk via social media.	Ongoing	County & City Resources
<b>Goal 7 - Reduce Impacts from Structure Fire</b>			New Goal for 2021 Plan							
		<i>Objective 7.1: Implement Public Education and Awareness Projects to Reduce Impacts from Structure Fire</i>	New Objective for 2021 Plan							
		7.1.1 - Support the education program in school on topics supplied by International Fire Council.	New Project for 2021 Plan	Forsyth, Colstrip, Ashland	High	Forsyth, Colstrip, Ashland VFDs	New Project for 2021 Plan	Continue going to schools once a year and conduct active fire drills with smoke machines. Show students fire trucks. Colstrip will continue to fall fire prevention program in schools and include articles in quarterly city newsletter.	Ongoing	County & City Resources
		<i>Objective 7.2: Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire</i>	New Objective for 2021 Plan							
		7.2.1 - Recruit and train volunteers.	New Project for 2021 Plan	Forsyth, Colstrip, Ashland	High	Forsyth, Colstrip, Ashland VFDs	New Project for 2021 Plan	Continue to recruit firefighters through word of mouth. Continue bi-monthly training on basics and send new recruits annually to Cody for fire school	Ongoing	County & City Resources
		7.2.2 - Update equipment needed for suppressing structure fires.	New Project for 2021 Plan	Forsyth, Colstrip, Ashland	High	County Fire, Forsyth, Colstrip, Ashland VFDs	New Project for 2021 Plan	Buy new equipment, as needed. Look at grants for funding opportunities.	Ongoing	County & City Resources, Grants

**ROSEBUD COUNTY 2021 MHMP UPDATE**  
**PLANNING TEAM MEETING #6**  
**JUNE 2, 2021**  
**9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
<b>Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents</b>			New Goal for 2021 Plan							
	<i>Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents</i>									
		8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County & City Fire Depts.	New project for 2021 Plan	Provide haz-mat awareness training to first responders every two years (ambulance, EMS, Fire Dept., Sheriff's Dept.). Colstrip to continue to train with power plant and mine haz-mat teams. Joint training with Police Dept., clinic, EMS.	Ongoing	County & City Resources
		8.1.2 Encourage railroad, pipeline companies, mining company, and power plant to more consistently attend LEPC meetings to plan for haz-mat response.	New project for 2021 Plan	County	High	County DES	New project for 2021 Plan	Request entities to provide more than sporadic attendance to ensure a more cohesive planning effort takes place.	Ongoing	County Resources
		8.1.3 Encourage power plant, mining company, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.	New project for 2021 Plan	County, Colstrip	High	County DES	New project for 2021 Plan	Ensure County and Colstrip Fire Depts. participate in training offered at Power Plant and annual safety meetings. Train with Safety & Rescue Teams at both Power Plant and mine. Coordinate training with railroad and pipeline companies.	Ongoing	County & City Resources
<b>Goal 9 - Reduce Impacts from All Hazards</b>			New Goal for 2021 Plan							
	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>									
		9.1.1 Obtain back-up power for water and wastewater treatment plants.	Retain	Forsyth, Ashland	High	City Public Works, Water Users	Colstrip and Forsyth have generators for lift stations. No other progress to report.	Be aware of grants to provide funding for Forsyth water system generator. Determine generator needs Ashland water and wastewater systems.	Mid-term	County & City Resources, Grants
		9.1.2 Educate dispatch and responders about siren systems and procure additional equipment, as needed.	Reword to include new equipment.	Forsyth, Colstrip, Ashland	Medium	Sheriff's Office	Forsyth has two sirens which are tested every month. Colstrip has four sirens that are tested monthly in conjunction with sirens at the power plant.	Continue same. Be aware of funding opportunities for third siren in Forsyth.	Ongoing	County & City Resources, Grants
		9.1.3 Obtain back-up power for county and city critical facilities.	Reword to include critical facilities.	County, Forsyth	High	City Public Works, County DES	Sheriff's office & hospital have automated systems. EMS/DES has a manual generator. Colstrip law enforcement has generator.	Be aware of grants to provide funding. Generator still needed for Forsyth City Hall and County Courthouse.	Mid-term	County & City Resources, Grants
		9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.	New project for 2021 Plan	County, Forsyth, Colstrip,	High	County DES	New project for 2021 Plan	Ongoing effort to recruit first responders. Training to be held in next year for new recruits.	Ongoing	County Resources

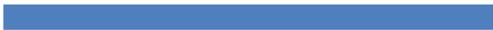
**ROSEBUD COUNTY 2021 MHMP UPDATE  
 PLANNING TEAM MEETING #6  
 JUNE 2, 2021  
 9am – 10:30am**

ROSEBUD COUNTY MHMP UPDATE - 2021 MITIGATION STRATEGY										
Goal	Objective	Mitigation Project	Status: Reword, Retain, Delete, New for 2021	Jurisdiction	Priority	Responsible Dept.	Progress Made 2013-2020	Planned Activities 2021-2026	Schedule	Potential Funding Source(s)
		9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.	New project for 2021 Plan	County	High	County DES	New project for 2021 Plan	Continue to be aware of First Net project and implement when available.	Mid-term	County Resources
	<i>Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards</i>									
		9.2.1 Adopt updated building codes.	Retain	Forsyth, Colstrip	High	City Planning	Forsyth and Colstrip update building codes each time new ones released by state.	Continue same.	Ongoing	City Resources
		9.2.2 Update Growth Policies to encourage growth in low hazard areas.	New project for 2021 Plan	County, Forsyth, Colstrip	Medium	County & City Planning	New project for 2021 Plan	City of Forsyth to update Growth Policy in 2021. County to update every 5 years. Colstrip updated in 2012.	Ongoing	County & City Resources, Grants
	<i>Objective 9.3: Implement Public Education &amp; Awareness Projects to Reduce Impacts from All Hazards</i>									
		9.3.1 Promote registration of cell phones for "Regroup" emergency notification system.	New project for 2021 Plan	County, Forsyth, Colstrip	High	County DES	New project for 2021 Plan	County added "Regroup" for mass notification in 2016. Utilize print, broadcast and social media to inform citizens that they need to register their cell phones to receive notifications.	Ongoing	County Resources



Rosebud County  
Multi-Hazard  
Mitigation Plan  
2021 Update

**APPENDIX C**  
Risk Assessment  
Documentation



APPENDIX C-1

CPRI SUMMARY  
TABLE

**ROSEBUD COUNTY MULTI-HAZARD MITIGATION PLAN - 2021 UPDATE  
CALCULATED PRIORITY RISK INDEX**

Hazard	Probability				Magnitude/Severity				Economic Impact				Warning Time				Duration				CPRI Score
	Unlikely	Possibly	Likely	Highly Likely	Negligible	Limited	Critical	Catas-trophic	Negligible	Limited	Critical	Catas-trophic	< 6 hours	6 - 12 hours	12 - 24 hours	> 24 hours	< 6 hours	< 24 hours	< 1 week	> 1 week	
Wildfire >10 acres				x			x			x			x							x	3.35
Severe Summer Weather				x		x					x		x				x				3.00
Drought			x			x					x					x				x	2.55
Severe Winter Weather				x			x		x						x				x		2.75
Flooding				x		x				x					x				x		2.70
Dam Failure	x							x						x					x		2.85
Communicable Disease (livestock)		x			x											x				x	1.80
Hazardous Materials Incidents				x	x				x								x				2.35
Pipeline Spills		x				x			x									x			2.10
Railroad Accidents w impacts		x			x				x									x			1.85
Highway Accidents				x			x		x								x				2.85
Aircraft Accidents		x					x		x								x				2.25
Landslides		x			x				x								x				1.75
Communicable Disease (human)				x			x			x						x				x	2.90
Terrorism	x							x												x	3.10
Violence																					0.00
Civil Unrest																					0.00
Cyber Security																					0.00
Structure Fire (urban fire)			x				x			x								x			2.85
Earthquake	x				x				x								x				1.45
Volcanic Ash	x				x				x					x					x		1.50

**NOTE: To use spreadsheet, place a lower-case "x" in the appropriate box for each category. USE ONLY ONE "x" FOR EACH CATEGORY.  
The spreadsheet will automatically calculate the CPRI. The Terrorism hazard is shown as an example, but can be changed by the community if desired.**

## 2021 ROSEBUD COUNTY MHMP - CPRI RANKING & COUNTY PRIORITIES

HAZARD	CPRI SCORE	COUNTY PRIORITIES/PROFILE IN MHMP
Wildfire >10 acres	3.35	1 Wildfire
Terrorism	3.1	2 Drought
Severe Summer Weather	3	3 Severe Summer Weather
Communicable Disease (human)	2.9	4 Communicable Disease
Dam Failure	2.85	5 Severe Winter Weather
Structure Fire (urban fire)	2.85	6 Flooding & Dam Failure
Highway Accidents	2.85	7 Structure Fire
Severe Winter Weather	2.75	8 Hazardous Material & Transportation Accidents
Flooding	2.7	
Drought	2.55	
Hazardous Materials Incidents	2.35	
Aircraft Accidents	2.25	
Pipeline Spills	2.1	
Railroad Accidents w impacts	1.85	
Communicable Disease (livestock)	1.8	
Landslides	1.75	

APPENDIX C-2

CRITICAL FACILITIES &

BRIDGES

**APPENDIX C-2. ROSEBUD COUNTY BRIDGE INVENTORY**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	County	Bridge Value	Latitude	Longitude
1	P00018035+01041	305401000.BRG.3390	Rock Spings Creek	39.0	Rosebud	\$155,997	46.82211150080	-106.25453679400
2	L44109007+09001	305401000.BRG.2366	Rattlesnake Creek 002	131.0	Rosebud	\$654,987	46.81695992890	-107.84634738600
3	L44116001+03001	305401000.BRG.2367	McGinnis Creek 004	38.0	Rosebud	\$152,000	46.77546535980	-107.35177841800
4	L44118003+01001	305401000.BRG.2368	Musselshell River 001	140.0	Rosebud	\$700,000	46.72001153550	-107.82224614800
5	L44105013+06001	305401000.BRG.2364	Great Porcupine Cr 005	41.0	Rosebud	\$163,990	46.69230569810	-107.21095442300
6	P00018025+01631	305401000.BRG.3389	Dry House Creek	96.0	Rosebud	\$383,990	46.68691862730	-106.17499797500
7	P00014217+00431	305401000.BRG.3342	Home Creek	40.0	Rosebud	\$160,000	46.63757788500	-107.62103633200
8	P00014216+08591	305401000.BRG.3341	Home Creek	286.0	Rosebud	\$1,716,000	46.63755646120	-107.62479946700
9	P00014216+05861	305401000.BRG.3340	Home Creek	35.0	Rosebud	\$140,000	46.63752474500	-107.63055505300
10	P00014216+00991	305401000.BRG.3339	Home Creek	57.0	Rosebud	\$227,992	46.63746358100	-107.64082090700
11	P00014216+00001	305401000.BRG.3338	Stockpass	15.0	Rosebud	\$60,000	46.63745769280	-107.64237753000
12	P00014209+04361	305401000.BRG.3337	Home Creek	225.0	Rosebud	\$1,125,000	46.63656113060	-107.63054225200
13	P00014207+09671	305401000.BRG.3336	Drainage	39.0	Rosebud	\$155,997	46.62745038080	-107.80773365100
14	L44105006+02001	305401000.BRG.2363	W Blacktail Creek 007	30.0	Rosebud	\$120,000	46.62735540260	-107.26777066300
15	P00014219+09281	305401000.BRG.3343	Muggins Creek	58.0	Rosebud	\$231,995	46.62342184900	-107.21606085100
16	P00014207+01501	305401000.BRG.3335	Musselshell River	218.0	Rosebud	\$1,090,000	46.62047417470	-107.82162282000
17	P00014223+06841	305401000.BRG.3344	Drainage	20.0	Rosebud	\$80,000	46.61345572920	-107.49171419800
18	P00014224+06031	305401000.BRG.3345	Drainage	116.0	Rosebud	\$464,000	46.60690176940	-107.47363167300
19	P00014227+03151	305401000.BRG.3346	Dry Wash	58.0	Rosebud	\$231,995	46.58785333050	-107.43630295400
20	L44103010+04001	305401000.BRG.2362	Great Porcupine Cr 008	42.0	Rosebud	\$167,992	46.58472475350	-107.09566498000
21	P00014209+03431	305401000.BRG.3347	Drainage	26.0	Rosebud	\$103,990	46.58220825770	-107.78678740700
22	P00014235+08741	305401000.BRG.3348	Drainage	58.0	Rosebud	\$231,995	46.53979525950	-107.27026072000
23	P00014238+01851	305401000.BRG.3349	Drainage	20.0	Rosebud	\$80,000	46.52225416340	-107.22973984600
24	P00014238+09851	305401000.BRG.3350	Drainage	58.0	Rosebud	\$231,995	46.51499413030	-107.21606085100
25	P00014239+08151	305401000.BRG.3351	Drainage	57.0	Rosebud	\$227,992	46.50732623190	-107.20256764200
26	L44012005+06001	305401000.BRG.2360	W Fk Froze To Death 006	64.0	Rosebud	\$255,997	46.50419160400	-107.37779129600
27	L44108008+02001	305401000.BRG.2365	Big Porcupine Creek 011	73.0	Rosebud	\$291,995	46.49152530690	-107.00100384300
28	P00014243+07041	305401000.BRG.3352	Drainage	58.0	Rosebud	\$231,995	46.46635245030	-107.14651453500
29	P00014245+03171	305401000.BRG.3353	Drainage	58.0	Rosebud	\$231,995	46.45184659550	-107.11991774600
30	P00014246+03161	305401000.BRG.3354	Drainage	58.0	Rosebud	\$231,995	46.44562373640	-107.10106699400
31	L44126007+00001	305401000.BRG.2369	Great Porcupine Cr 010	88.0	Rosebud	\$351,995	46.44091118440	-106.93460656600
32	L44202011+04001	305401000.BRG.2378	Little Porcupine Cr 014	90.0	Rosebud	\$360,000	46.41533246060	-106.63417781900
33	P00014250+05661	305401000.BRG.3355	Horse Creek	101.0	Rosebud	\$403,990	46.40759921280	-107.03189042000
34	P00014252+00981	305401000.BRG.3356	Anderson Creek	58.0	Rosebud	\$231,995	46.39283287470	-107.00804667000
35	P00014253+00221	305401000.BRG.3357	Drainage	39.0	Rosebud	\$155,997	46.38478458580	-106.99281857200
36	P00014254+05001	305401000.BRG.3358	Stockpass	21.0	Rosebud	\$83,990	46.37974474030	-106.95998272030
37	P00014257+00001	305401000.BRG.3359	Stockpass	21.0	Rosebud	\$83,990	46.36936124050	-106.91301790900
38	P00014257+02111	305401000.BRG.3360	Porcupine Creek	122.0	Rosebud	\$609,990	46.36870036710	-106.90965277100
39	P00014257+04721	305401000.BRG.3361	Porcupine Overflow Dr	78.0	Rosebud	\$312,000	46.36688330250	-106.90498066100
40	P00014258+03001	305401000.BRG.3362	Stockpass	21.0	Rosebud	\$83,990	46.36007909030	-106.90060448100
41	P00014258+05001	305401000.BRG.3363	Stockpass	15.0	Rosebud	\$60,000	46.35668240990	-106.89823651900
42	P00014259+08241	305401000.BRG.3364	Drainage	39.0	Rosebud	\$155,997	46.34034926930	-106.87710921900
43	P00014260+03001	305401000.BRG.3365	Stockpass	15.0	Rosebud	\$60,000	46.33579762590	-106.86877544100
44	P00014261+05001	305401000.BRG.3366	Drainage	21.0	Rosebud	\$83,990	46.32559340000	-106.84866243700
45	P00014262+00001	305401000.BRG.3367	Drainage	20.0	Rosebud	\$80,000	46.32169674870	-106.84070864700
46	P00014262+04641	305401000.BRG.3368	Drainage	20.0	Rosebud	\$80,000	46.31753175280	-106.83362416700
47	P00014262+06001	305401000.BRG.3369	Drainage	21.0	Rosebud	\$83,990	46.31597748800	-106.83116128400
48	P00014262+08001	305401000.BRG.3370	Greasewood Creek	21.0	Rosebud	\$83,990	46.31351087220	-106.82727203000
49	L44219001+00001	305401000.BRG.2380	Sand Creek 031	41.0	Rosebud	\$163,990	46.31303122720	-106.36249453200
50	L44219000+08001	305401000.BRG.2379	Cartersville Canal 030	33.0	Rosebud	\$131,995	46.31018996150	-106.36273581400
51	L44200007+02001	305401000.BRG.2373	Little Porcupine Cr 027	74.0	Rosebud	\$295,997	46.30419253950	-106.57498880800
52	L44221000+03001	305401000.BRG.2381	Sand Creek 029	39.0	Rosebud	\$155,997	46.30324477800	-106.37024067000
53	L44201013+03001	305401000.BRG.2377	Bull Creek 054	44.0	Rosebud	\$175,997	46.30098953870	-106.19606889400
54	L44201004+07001	305401000.BRG.2376	Sand Creek 042	70.0	Rosebud	\$280,000	46.29882697850	-106.37574340000
55	P00014264+08411	305401000.BRG.3371	McGraws Coulee	41.0	Rosebud	\$164,000	46.29764817610	-106.79390336900
56	L44002001+00001	305401000.BRG.2358	Greasewood Creek 033	53.0	Rosebud	\$211,995	46.29593170830	-106.80875931800
57	L44002001+03001	305401000.BRG.2359	Great Porcupine Cr 034	87.0	Rosebud	\$347,992	46.29591374410	-106.81539221400
58	L44303014+09001	305401000.BRG.2386	Graveyard Creek 055	33.0	Rosebud	\$131,995	46.28033452470	-106.17962302500
59	I00094118+07362	305401000.BRG.752	Graveyard Creek	77.0	Rosebud	\$307,992	46.28013496050	-106.17956441900
60	I00094118+07361	305401000.BRG.751	Graveyard Creek	82.0	Rosebud	\$328,000	46.27996004370	-106.17945246200
61	L44020001+05001	305401000.BRG.2361	Reservation Creek 036	25.0	Rosebud	\$267,992	46.27550081310	-106.93039017800
62	L44177000+01001	305401000.BRG.2372	Int Hathway-I 94	64.0	Rosebud	\$1,463,996	46.27479389940	-106.19796839900
63	S00446001+02661	305401000.BRG.4469	Yellowstone River	694.0	Rosebud	\$4,858,000	46.27473692480	-106.46497873500
64	L44311012+01001	305401000.BRG.2391	Reservation Creek 043	25.0	Rosebud	\$100,000	46.27435254110	-106.92980928100
65	S00446001+01391	305401000.BRG.4468	BN Railroad	203.0	Rosebud	\$1,014,993	46.27301149280	-106.46425216000
66	L44303001+05001	305401000.BRG.2383	Butte Creek 041	86.0	Rosebud	\$344,000	46.27299091870	-106.44020024200
67	S00446000+03211	305401000.BRG.4467	Rosebud Creek	123.0	Rosebud	\$614,993	46.26882149800	-106.47752487500
68	I00094108+02112	305401000.BRG.745	Sep County Road	78.0	Rosebud	\$311,995	46.26771122390	-106.39357565800
69	I00094111+05932	305401000.BRG.747	Sweeney Creek, County Rd	221.0	Rosebud	\$1,104,987	46.26770984990	-106.32410477100
70	L44303002+00201	305401000.BRG.2384	Int E Rosebud-I 94	331.0	Rosebud	\$1,985,984	46.26754224680	-106.42306171900
71	I00094111+05931	305401000.BRG.746	Sweeney Creek, County Rd	221.0	Rosebud	\$1,104,987	46.26739781160	-106.32398040000
72	I00094108+02111	305401000.BRG.744	Sep County Road	78.0	Rosebud	\$311,995	46.26739508580	-106.39353152900
73	I00094104+02232	305401000.BRG.743	Rosebud Creek	173.0	Rosebud	\$864,993	46.26728167300	-106.47675972500
74	I00094095+02362	305401000.BRG.739	Int East Forsyth	190.0	Rosebud	\$950,000	46.267115376220	-106.66520276300
75	I00094103+09562	305401000.BRG.741	Int W Rosebud S 446/447	125.0	Rosebud	\$625,000	46.26708141280	-106.48232378300
76	I00094104+02231	305401000.BRG.742	Rosebud Creek	173.0	Rosebud	\$864,993	46.26696554620	-106.47671095800
77	I00094095+02361	305401000.BRG.738	Int East Forsyth	195.0	Rosebud	\$975,000	46.26691040070	-106.66500572600
78	I00094103+09561	305401000.BRG.740	Int W Rosebud S 446/447	162.0	Rosebud	\$810,000	46.26676252060	-106.48226916200
79	L44129000+03001	305401000.BRG.2370	Sep I 94 So Front Rd	305.0	Rosebud	\$1,830,000	46.26650596580	-106.62815939300
80	L44148000+02501	305401000.BRG.2371	Sep I 94	307.0	Rosebud	\$1,841,988	46.26585223240	-106.54976952000

**APPENDIX C-2. ROSEBUD COUNTY BRIDGE INVENTORY**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	County	Bridge Value	Latitude	Longitude
81	L44303007+07001	305401000.BRG.2385	Sweeney Creek 064	108.0	Rosebud	\$432,000	46.26561551090	-106.32606275700
82	I00094115+04991	305401000.BRG.750	Jr Grade Sep	17.3	Rosebud	\$69,029	46.26470486060	-106.24316562900
83	P00014270+03311	305401000.BRG.3372	Yellowstone River	834.0	Rosebud	\$5,838,000	46.26459108240	-106.69610404700
84	I00094114+02372	305401000.BRG.749	Sep County Road	124.0	Rosebud	\$619,997	46.26123029390	-106.27002667800
85	I00094081+09692	305401000.BRG.733	Int Reservation Creek Rd	180.0	Rosebud	\$900,000	46.26095832620	-106.93180990000
86	I00094114+02371	305401000.BRG.748	Sep County Road	124.0	Rosebud	\$619,997	46.26092340820	-106.27003753100
87	I00094081+09691	305401000.BRG.732	Int Reservation Creek Rd	180.0	Rosebud	\$900,000	46.26066009770	-106.93196631000
88	L44311005+07001	305401000.BRG.2389	Armells Creek 045	120.0	Rosebud	\$600,000	46.25970728200	-106.80521194700
89	L44311007+07001	305401000.BRG.2390	Wyant Coulee 044	64.0	Rosebud	\$256,000	46.25969759730	-106.84579143300
90	L44311002+06001	305401000.BRG.2388	Drainage 052	58.0	Rosebud	\$232,000	46.25848688060	-106.74510172500
91	P00014270+05031	305401000.BRG.3373	BN Railroad	234.5	Rosebud	\$1,172,736	46.25833086920	-106.69431929600
92	P00014270+08881	305401000.BRG.3374	Int West Forsyth I 94	246.0	Rosebud	\$1,476,000	46.25687486310	-106.69366854900
93	L44311001+01001	305401000.BRG.2387	Smith Creek 053	89.0	Rosebud	\$355,997	46.25372861630	-106.72095066700
94	I00094092+02622	305401000.BRG.737	Smith Creek, County Road	221.0	Rosebud	\$1,104,987	46.25292137820	-106.72091173300
95	I00094092+02621	305401000.BRG.736	Smith Creek, County Road	220.0	Rosebud	\$1,100,000	46.25264572900	-106.72092090400
96	I00094088+00982	305401000.BRG.735	Armells Cr, BN Railroad	422.0	Rosebud	\$2,953,986	46.25070054570	-106.80633168100
97	I00094088+00981	305401000.BRG.734	Armells Cr, BN Railroad	394.0	Rosebud	\$2,757,995	46.25038722220	-106.80629048600
98	P00039051+02161	305401000.BRG.3632	Int Colstrip I 94	245.0	Rosebud	\$1,470,000	46.24996497570	-106.81614080600
99	P00039050+05681	305401000.BRG.3631	Stockpass	15.0	Rosebud	\$60,000	46.23790650780	-106.81618578400
100	P00039049+05081	305401000.BRG.3630	Stockpass	15.0	Rosebud	\$60,000	46.22440294390	-106.81812616300
101	S00447005+00131	305401000.BRG.4470	Rosebud Creek	164.0	Rosebud	\$820,000	46.19801160010	-106.49279000410
102	S00447005+01041	305401000.BRG.4471	Rosebud Creek Overflow	138.0	Rosebud	\$689,993	46.19707133020	-106.49147809500
103	P00039046+00581	305401000.BRG.3629	Stockpass	15.0	Rosebud	\$60,000	46.17578571870	-106.82119388000
104	P00039043+08381	305401000.BRG.3628	Armells Creek	92.0	Rosebud	\$367,992	46.15186316440	-106.79834248800
105	P00039043+07941	305401000.BRG.3627	Armells Creek	213.0	Rosebud	\$1,064,993	46.15080597820	-106.79547007200
106	P00039043+06251	305401000.BRG.3626	BN Railroad	214.0	Rosebud	\$1,069,997	46.14969557300	-106.79245501800
107	P00039043+04701	305401000.BRG.3625	Stockpass	12.0	Rosebud	\$47,992	46.14860051450	-106.78948609800
108	P00039039+09401	305401000.BRG.3624	Stockpass	12.0	Rosebud	\$47,992	46.10297362490	-106.76062620900
109	L44402000+02001	305401000.BRG.2392	Armells Creek 038	50.0	Rosebud	\$200,000	46.10207955110	-106.76366575800
110	P00039038+07711	305401000.BRG.3623	BN Railroad	394.0	Rosebud	\$2,758,000	46.08960966430	-106.74596497000
111	P00039038+06861	305401000.BRG.3622	Sheep Creek	20.0	Rosebud	\$80,000	46.08838496850	-106.74446789200
112	P00039038+03951	305401000.BRG.3621	East Fork Armells Creek	109.0	Rosebud	\$435,997	46.08548057100	-106.74092176600
113	P00039037+02171	305401000.BRG.3620	Stockpass	15.0	Rosebud	\$60,000	46.07283276980	-106.72445803400
114	P00039036+04791	305401000.BRG.3619	Stockpass	12.0	Rosebud	\$47,992	46.06670059130	-106.71157901300
115	P00039030+06201	305401000.BRG.3618	Stockpass, McGilvrey Cr	12.0	Rosebud	\$47,992	45.99316418500	-106.65558832500
116	L44402013+09001	305401000.BRG.2393	Trail Creek 039	56.0	Rosebud	\$224,000	45.93274563410	-106.83527226800
117	P00039022+01521	305401000.BRG.3617	BN Railroad (Conveyor)	260.0	Rosebud	\$1,560,000	45.87474731810	-106.62654874800
118	S00332039+06161	305401000.BRG.4338	Tongue River	215.5	Rosebud	\$1,077,428	45.83971315070	-106.22030066900
119	L44200008+05001	305401000.BRG.2374	Rosebud Creek 047	41.0	Rosebud	\$163,990	45.82977302090	-106.42135342800
120	L44200008+07001	305401000.BRG.2375	Rosebud Cr Ovrflow 046	40.0	Rosebud	\$160,000	45.82913380700	-106.42340702200
121	L44300002+02001	305401000.BRG.2382	Rosebud Creek 048	60.0	Rosebud	\$240,000	45.78470034790	-106.54089957000
122	P00039013+04521	305401000.BRG.3615	Rosebud Creek	142.0	Rosebud	\$710,000	45.76731778730	-106.57011743000
123	P00039014+05001	305401000.BRG.3616	Stockpass, Drainage	20.0	Rosebud	\$80,000	45.76042886230	-106.59081721600
124	S00332047+08001	305401000.BRG.4339	Drainage	30.0	Rosebud	\$120,000	45.75388796660	-106.30231561300
125	P00037061+04521	305401000.BRG.3611	Tongue River	203.9	Rosebud	\$1,019,521	45.59313854700	-106.28693375000
126	P00037063+01241	305401000.BRG.3612	Otter Creek	112.0	Rosebud	\$447,992	45.58805511010	-106.25488544100
127	S00566004+00001	305401000.BRG.4578	Bridge Creek	33.0	Rosebud	\$131,995	45.54654066410	-106.29605267400
128	S00566024+00401	305401000.BRG.4579	Hanging Woman Creek	66.0	Rosebud	\$263,990	45.31997248510	-106.51898491700
129	L44524001+00001	305401000.BRG.2394	Hanging Woman Creek 074	60.0	Rosebud	\$240,000	45.29533705980	-106.50353757000
130	S00566031+03501	305401000.BRG.4580	Tongue River	179.0	Rosebud	\$894,997	45.26862203250	-106.62516688300
131	L44525000+02001	305401000.BRG.2395	Hanging Woman Creek 075	42.7	Rosebud	\$170,604	45.25862734670	-106.48971771600
132	S00566034+05801	305401000.BRG.4581	Canyon Creek	38.0	Rosebud	\$151,995	45.24111417700	-106.67606711400

**APPENDIX C-2. ROSEBUD COUNTY CRITICAL FACILITIES**

**ROSEBUD COUNTY MHM - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Angela Post Office	CF	Federal	Angela	1 Anglea Rd. S	\$242,160	46.729156	-106.200183
Rosebud Co. Shop	CF	Municipal	Angela		\$66,801	46.728818	-106.199978
Cell Tower	CF	Communications	Ashland	5992 Tongue River Rd.	\$175,000	45.586500	-106.263000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	Ashland	5992 Tongue River Rd.	\$19,000	45.586500	-106.263000
Ashland Post Office	CF	Federal	Ashland	304 Main St.	\$140,917	45.591150	-106.264844
USFS Ashland Ranger Station	CF	Federal	Ashland	2378 US Highway 212	\$300,000	45.593992	-106.271764
Ashland Volunteer Fire Dept.	CF	Fire	Ashland	5951 Tongue River Rd.	\$133,245	45.596823	-106.274093
St. Labre Volunteer Fire Dept.	CF	Fire	Ashland	1000 Tongue River Rd.	\$133,245	45.607014	-106.282099
Ashland Sheriff Dept., Ambulance & Public Health	CF	Law Enforcement/Medical	Ashland	Hwy 212 MM 62	\$149,121	45.590971	-106.265694
Bighorn Valley Health Center	CF	Medical	Ashland	501 Main St.	\$459,950	45.591711	-106.267397
Ashland Water & Sewer Facility	CF	Municipal	Ashland		\$200,000	45.611465	-106.272280
St. Labre Mission Airport	CF	Municipal	Ashland		\$79,607	45.606492	-106.276057
Ashland Elementary School and 7-8	VP	School	Ashland	8 Old Mission Rd.	\$4,595,000	45.594938	-106.271149
St. Labre Schools	VP	School	Ashland	1000 Tongue River Rd.	\$4,595,000	45.605177	-106.281006
Heritage Center Assisted Living	VP	Senior	Ashland	2232 Tongue River Rd.	\$4,771,030	45.588456	-106.265958
Tongue River Electric Co-op	CF	Utility	Ashland	2435 US Highway 212	\$195,000	45.589715	-106.261575
Birney Post Office	CF	Federal	Birney	302 Commercial St.	\$25,600	45.321889	-106.515688
Rosebud Co. Shop, Birney	CF	Municipal	Birney	120 Commercial St.	\$215,474	45.324520	-106.511834
Birney Elementary School	VP	School	Birney	205 Commercial St.	\$1,690,000	45.321930	-106.514414
Colstrip Translator	CF	Communications	Colstrip	Little Wolf Mount, 13.5 miles W.S.W. of town	\$100,000	45.837320	-106.904510
Dispatch Repeater	CF	Communications	Colstrip	303 Willow Ave.	\$19,000	45.882071	-106.625477
Colstrip Post Office	CF	Federal	Colstrip	6 Locust St.	\$97,220	45.882254	-106.628573
Colstrip Fire Station 2	CF	Fire	Colstrip	5 Wagoneer Dr.	\$238,994	45.906352	-106.619843
Rosebud Food	CF	Food and Fuel	Colstrip	3 Cherry St.	\$406,660	45.882885	-106.629063
Colstrip Police Dept., Fire Station 1, & Ambulance	CF	Law Enforcement/Fire/Medical	Colstrip	303 Willow Ave.	\$1,277,970	45.882021	-106.625625
Colstrip Medical Center	CF	Medical	Colstrip	6230 Main St.	\$662,000	45.884742	-106.634996
Colstrip City Hall	CF	Municipal	Colstrip	12 Cherry St.	\$1,103,814	45.881849	-106.629447
Colstrip City Shop	CF	Municipal	Colstrip	519 Willow Ave.	\$93,100	45.883611	-106.621482
Colstrip Parks & Recreation Shelter	CF	Municipal	Colstrip	110 Park Ave.	\$581,240	45.883932	-106.624179
Colstrip Waste Water Treatment Plant	CF	Municipal	Colstrip		\$200,000	45.890592	-106.624740
Colstrip Water Treatment Plant	CF	Municipal	Colstrip		\$90,000	45.894278	-106.634283
MT DOT Shop, Colstrip	CF	Municipal	Colstrip	2730 MT 39	\$199,464	45.907917	-106.639116
Rosebud Co. Human Services & Senior Center	CF	Municipal/Senior	Colstrip	417 Willow Ave.	\$1,582,878	45.882477	-106.624245
Colstrip High School	VP	School	Colstrip	5000 Pine Butte Dr.	\$7,500,000	45.914522	-106.634258
Frank Brattin Middle School	VP	School	Colstrip	216 Olive Dr.	\$4,595,000	45.883988	-106.629449
Pine Butte Elementary School	VP	School	Colstrip	2800 Durango Dr.	\$1,690,000	45.909075	-106.625499
Colstrip Water Tank	CF	Utility	Colstrip		\$100,000	45.904453	-106.626696
Colstrip Water Tower	CF	Utility	Colstrip		\$100,000	45.885003	-106.637517
NorthWestern Energy Switchyard	CF	Utility	Colstrip		\$800,000	45.890726	-106.613733
Talon Energy Plant	CF	Utility	Colstrip	580 Willow Ave.	\$45,500,000	45.884056	-106.614397
Cell Tower	CF	Communications	County	2 Nielsen Ln.	\$175,000	46.342200	-106.698000
Cell Tower	CF	Communications	County	6 Nielsen Ln.	\$175,000	46.343500	-106.698000
Cell Tower	CF	Communications	County	18 Howard Cannister Rd.	\$175,000	46.264700	-106.923000
Cell Tower	CF	Communications	County	19 Wright Ln.	\$175,000	46.268000	-106.391000
Cell Tower	CF	Communications	County	2446 Cartersville Rd.	\$175,000	46.296600	-106.247000
Cell Tower	CF	Communications	County	221 Yablonski Rd.	\$175,000	46.640400	-107.480000

**APPENDIX C-2. ROSEBUD COUNTY CRITICAL FACILITIES**

**ROSEBUD COUNTY MHM - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Cell Tower	CF	Communications	County	705-707 Little Wolf Mountain Trail	\$175,000	45.839100	-106.905000
Cell Tower	CF	Communications	County	717 Little Wolf Mountain Trail	\$175,000	45.838000	-106.905000
Cell Tower	CF	Communications	County	721 Little Wolf Mountain Trail	\$175,000	45.837000	-106.904000
Cell Tower	CF	Communications	County	1261 Highway 39	\$175,000	46.095100	-106.753000
Cell Tower	CF	Communications	County	1212 Oilfield Rd.	\$175,000	46.646600	-107.651000
Cell Tower	CF	Communications	County	520 Vananda Rd. N	\$175,000	46.463200	-107.008000
Cell Tower	CF	Communications	County	241 Thebes Rd.	\$175,000	46.513000	-107.283000
Cell Tower	CF	Communications	County	2423 Little Porcupine Creek Rd.	\$175,000	46.593500	-106.644000
Cell Tower	CF	Communications	County	208 Lockie Rd.	\$175,000	46.693000	-106.253000
Cell Tower	CF	Communications	County	258 Hanging Woman Creek Rd.	\$175,000	45.291800	-106.500000
Cell Tower	CF	Communications	County	480 Little Porcupine Creek Rd.	\$175,000	46.335300	-106.700000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	County	506 Little Porcupine Creek Rd.	\$19,000	46.338900	-106.698000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	County	719 Little Wolf Mountain Trail	\$19,000	45.837300	-106.905000
Forsyth Radio Tower	CF	Communications	County	Little Porcupine Cr. Rd.	\$88,501	46.335213	-106.698314
KIKC Radio Tower	CF	Communications	County	685 Butte Creek Rd.	\$10,000	46.174200	-106.406000
Lil Wolf Radio Site	CF	Communications	County		\$10,000	45.837573	-106.904289
North Radio Tower	CF	Communications	County		\$19,000	46.338044	-106.697314
Colstrip Airport	CF	Municipal	County		\$79,607	45.853083	-106.700458
Rosebud Co. Landfill	CF	Municipal	County	Highway 39	\$302,243	46.246714	-106.819426
Rosebud Co. Landfill	CF	Municipal	County	2382 Hwy 39	\$302,243	45.957693	-106.666649
Tillet Field Airport	CF	Municipal	County	2977 Old Hwy 10	\$79,607	46.269417	-106.622387
Amish Parochial School	VP	School	County	41 Amish Lane	\$1,000,000	45.696190	-106.297107
Colstrip Substation	CF	Utilities	County	MT Hwy 39	\$195,000	45.844970	-106.577055
Finch Substation	CF	Utility	County		\$195,000	46.290095	-107.006367
Howard Substation	CF	Utility	County		\$195,000	46.270375	-106.902498
Nichols Substation	CF	Utility	County		\$195,000	46.256087	-106.798479
Rosebud Substation	CF	Utility	County		\$195,000	46.266875	-106.462434
Smith Creek Substation	CF	Utility	County		\$195,000	46.252137	-106.721974
Sumatra Radio Site	CF	Utility	County		\$10,000	46.640868	-107.480504
Western Energy Mine	CF	Utility	County	138 Rosebud Lane	\$10,000,000	45.855759	-106.624816
BNSR Railroad Station	CF	Business	Forsyth	1025 Rosebud Lane	\$100,000	46.265685	-106.676458
KIKC Radio Station	CF	Communication	Forsyth	210 Front St.	\$99,525	46.258747	-106.689364
Range Telephone	CF	Communication	Forsyth	2325 Front St.	\$190,000	46.269813	-106.657490
Cell Tower	CF	Communications	Forsyth	205 Radio Tower Ln.	\$175,000	46.262800	-106.670000
Cell Tower	CF	Communications	Forsyth	117 S 12th Ave.	\$175,000	46.265900	-106.674000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	Forsyth	180 S 13th Ave	\$19,000	46.266200	-106.673000
Forsyth Translator	CF	Communications	Forsyth	F. Hill, 46 15' 39	\$10,000	46.263015	-106.669859
Forsyth Post Office	CF	Federal	Forsyth	216 N. 10th Ave.	\$237,557	46.266960	-106.679117
USDA Service Center, Forsyth	CF	Federal	Forsyth	270 S. Prospect St.	\$189,652	46.259437	-106.684344
Forsyth Fire Station 1	CF	Fire	Forsyth	1310 Front St.	\$238,994	46.265770	-106.672311
Rosebud Co. Fire	CF	Fire	Forsyth	242 E. Front St.	\$133,245	46.268298	-106.662574
Forsyth IGA	CF	Food and Fuel	Forsyth	1026 Main St.	\$500,000	46.266001	-106.676993
Town Pump	CF	Food and Fuel	Forsyth	974 Front St.	\$199,630	46.263695	-106.676282
Watering Hole Gas	CF	Food and Fuel	Forsyth	1017 Front St.	\$183,910	46.264675	-106.676304
Rosebud Co. Sheriff Office, Forsyth	CF	Law Enforcement	Forsyth	180 S. 13th Ave.	\$2,196,609	46.266176	-106.673561
Rosebud Co. Public Health	CF	Medical	Forsyth	281 N 17th	\$513,140	46.271173	-106.669848

**APPENDIX C-2. ROSEBUD COUNTY CRITICAL FACILITIES**

**ROSEBUD COUNTY MHMH - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Rosebud Hospital/Nursing Home	CF	Medical	Forsyth	383 N. 17th Ave.	\$12,372,282	46.271498	-106.670156
Forsyth Sewage Plant	CF	Municipal	Forsyth	2800 Cedar St.	\$200,000	46.273654	-106.663945
Forsyth Transfer Station	CF	Municipal	Forsyth		\$313,950	46.259729	-106.695846
Forsyth Water Treatment Plant/Pump House	CF	Municipal	Forsyth	550 N. 3rd St.	\$2,251,693	46.274119	-106.664367
MT DOT Shop, Forsyth	CF	Municipal	Forsyth	2275 Front St.	\$299,265	46.270085	-106.658924
Public Works Shop	CF	Municipal	Forsyth	283 E. Front St.	\$713,430	46.269229	-106.662404
Rosebud Co. Courthouse	CF	Municipal	Forsyth	1200 Main St.	\$6,765,887	46.267773	-106.675034
Rosebud Co. Fairgrounds	CF	Municipal	Forsyth	513 N 16th Ave.	\$3,872,093	46.273884	-106.671423
Rosebud Co. Public Library/Shelter	CF	Municipal	Forsyth	201 N. 9th Ave.	\$1,177,200	46.266594	-106.679690
Rosebud Co. Search & Rescue	CF	Municipal	Forsyth	201 N 8th Ave.	\$207,730	46.266202	-106.680945
Forsyth City Hall/Fire Station 2	CF	Municipal/Fire	Forsyth	247 N. 9th Ave.	\$926,314	46.266710	-106.679962
Rosebud Co. DES Office/Ambulance	CF	Municipal/Medical	Forsyth	1200 Main St.	\$143,508	46.265048	-106.674964
Forsyth Daycare	VP	School	Forsyth	1845 Cedar St.	\$75,000	46.271796	-106.668248
Forsyth Elementary School	VP	School	Forsyth	1850 Cedar St.	\$1,690,000	46.270996	-106.667635
Forsyth High School	VP	School	Forsyth	917 Park St.	\$7,500,000	46.268821	-106.681354
Forsyth Middle School	VP	School	Forsyth	917 Park St.	\$4,595,000	46.268821	-106.681354
Fountain View Assisted Living	VP	Senior	Forsyth	21 Vine St.	\$500,000	46.261189	-106.677612
Haugo Community Center/Shelter	VP	Senior	Forsyth	483 Rosebud St.	\$1,507,282	46.272873	-106.648428
Rosebud Co. Senior Center	VP	Senior	Forsyth	1060 Cedar St.	\$649,203	46.267114	-106.677488
Lift Station	CF	Utilities	Forsyth	480 Rosebud St.	\$150,000	46.272694	-106.648588
Forsyth Water Tower	CF	Utility	Forsyth		\$897,000	46.259130	-106.677607
Lift Station	CF	Utility	Forsyth		\$150,000	46.266462	-106.681194
Lift Station	CF	Utility	Forsyth		\$150,000	46.270776	-106.668909
Lift Station	CF	Utility	Forsyth	1850 Cedar St.	\$150,000	46.271069	-106.666617
Water Treatment Plant	CF	Utility	Forsyth	330 Oak St.	\$2,431,762	46.266058	-106.689535
Ingomar Post Office	CF	Federal	Ingomar	403 1st Ave.	\$40,000	46.577536	-107.373961
Rosebud Post Office	CF	Federal	Rosebud	125 Main St.	\$40,000	46.274794	-106.445026
Rosebud Schools	VP	School	Rosebud	601 Main St.	\$4,595,000	46.275506	-106.441740
Sumatra Post Office	CF	Federal	Sumatra	Sumatra Rd.	\$40,000	46.617853	-107.551533

APPENDIX C-3

LOW PRIORITY  
HAZARD PROFILES

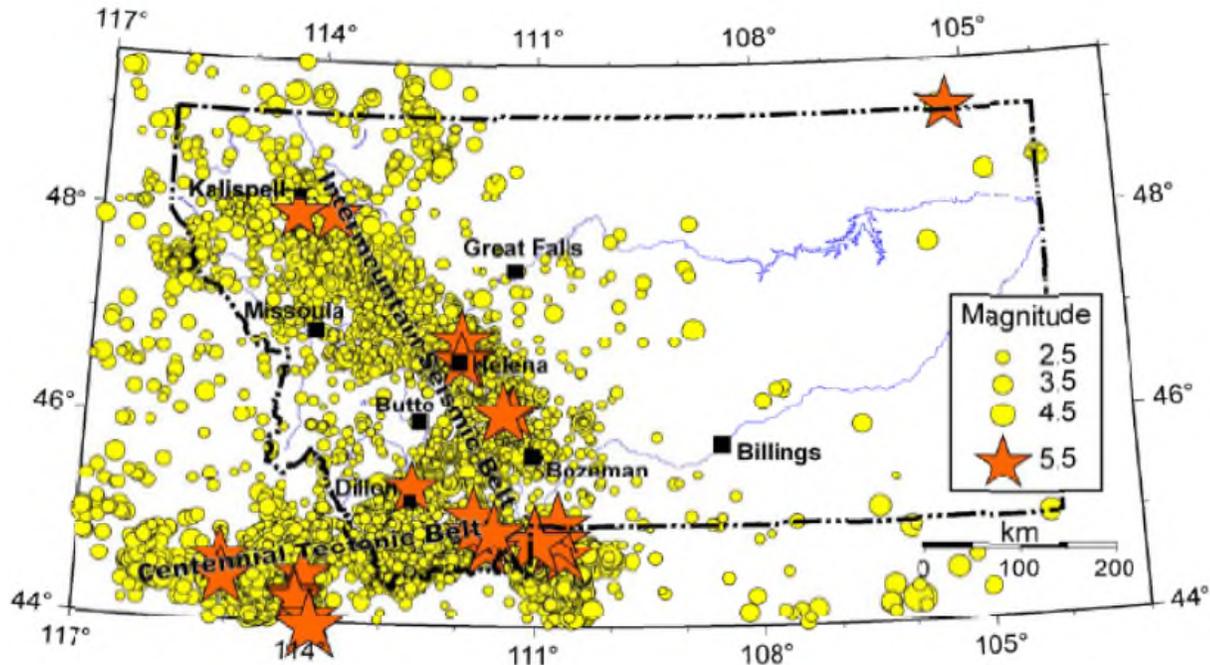
## 4.2 Earthquake

### Description

One of the most frightening and destructive phenomena of nature is a severe earthquake and its terrible aftereffects. An earthquake is the sudden movement of the Earth, caused by the abrupt release of strain that has accumulated over a long time. For hundreds of millions of years, the forces of plate tectonics have shaped the Earth's surface. Huge plates slowly move over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free, thus, producing an earthquake. (US Geological Survey, 1997)

Montana is generally known as a very seismic state, however, most of the activity occurs along the Intermountain Seismic Belt in western Montana as shown in Figure 4.2.1. Eastern Montana has a much lower frequency of earthquakes with no recognized surface faults, however, some sizable earthquakes (magnitude 4.0 and larger) have been centered in the region and the ground shaking from large earthquakes can travel hundreds of miles. Most shaking felt in Rosebud County likely originates from another, more active earthquake region.

**Figure 4.2.1 Intermountain Seismic Belt in Montana**



Source: 2010 Update to the State of Montana Multi-Hazard Mitigation Plan.

When earthquakes do occur, they can threaten structural stability, infrastructure, and other property with very little warning, depending on the severity of the earthquake. Geologists primarily measure earthquake severity in two ways: by magnitude and by intensity. Magnitude is based on the area of the fault plane and the amount of slip. The intensity is based on how strong the shock is felt and the degree of damage at a given location. The most commonly used scales are the Richter magnitude scale, moment magnitude scale, and modified Mercalli intensity scale. (National Earthquake Hazards Reduction Program, 2005)

A general comparison of magnitude and intensity is shown in Table 4.2.1.

**Table 4.2.1 Richter and Modified Mercalli Scales for Measuring Earthquakes**

<b>Magnitude (Richter Scale)</b>	<b>Modified Mercalli Intensity</b>
1.0 – 3.0	I
3.0 – 3.9	II, III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.0	VII – IX
7.0 and higher	VIII or higher

Source: USGS Earthquake Hazards Program

Intensity is gauged by how an earthquake affects people, structures and the natural environment. The Modified Mercalli Intensity Scale is the standard scale used in the United States to measure intensity. The following table provides the abbreviated descriptions for each intensity level.

**Table 4.2.2 Modified Mercalli Intensity (MMI) Scale**

<b>MMI</b>	<b>Felt Intensity</b>
I	Not felt except by a very few people under special conditions. Detected mostly by instruments.
II	Felt by a few people, especially those on upper floors of buildings. Suspended objects may swing.
III	Felt noticeably indoors. Standing automobiles may rock slightly.
IV	Felt by many people indoors; by a few outdoors. At night, some people are awakened. Dishes, windows, and doors rattle.
V	Felt by nearly everyone. Many people are awakened. Some dishes and windows are broken. Unstable objects are overturned.

<b>MMI</b>	<b>Felt Intensity</b>
VI	Felt by everyone. Many people become frightened and run outdoors. Some heavy furniture is moved. Some plaster falls.
VII	Most people are alarmed and run outside. Damage is negligible in buildings of good construction, considerable in buildings of poor construction.
VIII	Damage is slight in specially designed structures, considerable in ordinary buildings, and great in poorly built structures. Heavy furniture is overturned.
IX	Damage is considerable in specially designed buildings. Buildings shift from their foundations and partly collapse. Underground pipes are broken.
X	Some well-built wooden structures are destroyed. Most masonry structures are destroyed. The ground is badly cracked. Considerable landslides occur on steep slopes.
XI	Few, if any, masonry structures remain standing. Rails are bent. Broad fissures appear in the ground.
XII	Virtually total destruction. Waves are seen on the ground surface. Objects are thrown in the air.

Source: USGS Earthquake Hazards Program

The Richter magnitude scale expresses earthquake size as a number, such as 4.6. This scale is logarithmic where each increase in whole numbers represents a tenfold increase in size and 33 times the energy. Earthquakes with a magnitude of 2.0 or less are generally too small to be felt. Large earthquakes causing significant damage have measured 8.0 or larger. In the United States, a magnitude of 5.5 or greater is typically capable of causing building and infrastructure damage. Note, however, that the Richter scale measures energy released and not damage. (National Earthquake Hazards Reduction Program, 2005)

The moment magnitude scale is the preferred magnitude scale among geologists. This scale reduces the limitations found with the Richter scale and other magnitude scales. The moment magnitude scale gives the most reliable estimate of earthquake size when the earthquakes are more than approximately 6.0 or are very distant from recording devices. (National Earthquake Hazards Reduction Program, 2005)

The modified Mercalli intensity scale measures the intensities of an earthquake. This scale represents how the earthquake was felt by people and the resulting damages. Each earthquake has several intensities across the area over which it has an effect.

APPENDIX C-4

VULNERABILITY  
ASSESSMENT  
DOCUMENTATION

**APPENDIX C-4 - BRIDGES IN DAM FAILURE HAZARD IMPACT AREA  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	Value	Latitude	Longitude
37	P00014257+00001	305401000.BRG.3359	STOCKPASS	21.0	\$83,990	46.369361	-106.913018
38	P00014257+02111	305401000.BRG.3360	PORCUPINE CREEK	122.0	\$609,990	46.368700	-106.909653
39	P00014257+04721	305401000.BRG.3361	PORCUPINE OVERFLOW DR	78.0	\$312,000	46.366883	-106.904981
40	P00014258+03001	305401000.BRG.3362	STOCKPASS	21.0	\$83,990	46.360079	-106.900604
41	P00014258+05001	305401000.BRG.3363	STOCKPASS	15.0	\$60,000	46.356682	-106.898237
42	P00014259+08241	305401000.BRG.3364	DRAINAGE	39.0	\$155,997	46.340349	-106.877109
43	P00014260+03001	305401000.BRG.3365	STOCKPASS	15.0	\$60,000	46.335798	-106.868775
44	P00014261+05001	305401000.BRG.3366	DRAINAGE	21.0	\$83,990	46.325559	-106.848662
45	P00014262+00001	305401000.BRG.3367	DRAINAGE	20.0	\$80,000	46.321697	-106.840709
46	P00014262+04641	305401000.BRG.3368	DRAINAGE	20.0	\$80,000	46.317532	-106.833624
47	P00014262+06001	305401000.BRG.3369	DRAINAGE	21.0	\$83,990	46.315977	-106.831161
48	P00014262+08001	305401000.BRG.3370	GREASEWOOD CREEK	21.0	\$83,990	46.313511	-106.827272
49	L44219001+00001	305401000.BRG.2380	SAND CREEK 031	41.0	\$163,990	46.313031	-106.362495
50	L44219000+08001	305401000.BRG.2379	CARTERSVILLE CANAL 030	33.0	\$131,995	46.310190	-106.362736
51	L44200007+02001	305401000.BRG.2373	LITTLE PORCUPINE CR 027	74.0	\$295,997	46.304193	-106.574989
52	L44221000+03001	305401000.BRG.2381	SAND CREEK 029	39.0	\$155,997	46.303245	-106.370241
53	L44201013+03001	305401000.BRG.2377	BULL CREEK 054	44.0	\$175,997	46.300990	-106.196069
54	L44201004+07001	305401000.BRG.2376	SAND CREEK 042	70.0	\$280,000	46.298827	-106.375743
55	P00014264+08411	305401000.BRG.3371	MCGRAWS COULEE	41.0	\$164,000	46.297648	-106.793930
56	L44002001+00001	305401000.BRG.2358	GREASEWOOD CREEK 033	53.0	\$211,995	46.295932	-106.808759
57	L44002001+03001	305401000.BRG.2359	GREAT PORCUPINE CR 034	87.0	\$347,992	46.295914	-106.815392
58	L44303014+09001	305401000.BRG.2386	GRAVEYARD CREEK 055	33.0	\$131,995	46.280335	-106.179623
59	I00094118+07362	305401000.BRG.752	GRAVEYARD CREEK	77.0	\$307,992	46.280135	-106.179564
60	I00094118+07361	305401000.BRG.751	GRAVEYARD CREEK	82.0	\$328,000	46.279960	-106.179452
61	L44020001+05001	305401000.BRG.2361	RESERVATION CREEK 036	67.0	\$267,992	46.275501	-106.930930
62	L44177000+01001	305401000.BRG.2372	INT HATHWAY-I 94	244.0	\$1,463,996	46.274794	-106.197968
63	S00446001+02661	305401000.BRG.4469	YELLOWSTONE RIVER	694.0	\$4,858,000	46.274737	-106.464979
64	L44311012+01001	305401000.BRG.2391	RESERVATION CREEK 043	25.0	\$100,000	46.274353	-106.929809
65	S00446001+01391	305401000.BRG.4468	BN RAILROAD	203.0	\$1,014,993	46.273011	-106.464252
66	L44303001+05001	305401000.BRG.2383	BUTTE CREEK 041	86.0	\$344,000	46.272991	-106.440200
67	S00446000+03211	305401000.BRG.4467	ROSEBUD CREEK	123.0	\$614,993	46.268821	-106.477525
69	I00094111+05932	305401000.BRG.747	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267710	-106.324105
71	I00094111+05931	305401000.BRG.746	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267398	-106.323980
73	I00094104+02232	305401000.BRG.743	ROSEBUD CREEK	173.0	\$864,993	46.267282	-106.476760
74	I00094095+02362	305401000.BRG.739	INT EAST FORSYTH	190.0	\$950,000	46.267154	-106.665203
75	I00094103+09562	305401000.BRG.741	INT W ROSEBUD S 446/447	125.0	\$625,000	46.267081	-106.482324
76	I00094104+02231	305401000.BRG.742	ROSEBUD CREEK	173.0	\$864,993	46.266966	-106.476711
77	I00094095+02361	305401000.BRG.738	INT EAST FORSYTH	195.0	\$975,000	46.266910	-106.665006
78	I00094103+09561	305401000.BRG.740	INT W ROSEBUD S 446/447	162.0	\$810,000	46.266763	-106.482269
81	L44303007+07001	305401000.BRG.2385	SWEENEY CREEK 064	108.0	\$432,000	46.265616	-106.326063
82	I00094115+04991	305401000.BRG.750	JR GRADE SEP	17.3	\$69,029	46.264705	-106.243166
83	P00014270+03311	305401000.BRG.3372	YELLOWSTONE RIVER	834.0	\$5,838,000	46.264591	-106.696104
84	I00094114+02372	305401000.BRG.749	SEP COUNTY ROAD	124.0	\$619,997	46.261230	-106.270027
85	I00094081+09692	305401000.BRG.733	INT RESERVATION CREEK RD	180.0	\$900,000	46.260958	-106.931810
86	I00094114+02371	305401000.BRG.748	SEP COUNTY ROAD	124.0	\$619,997	46.260923	-106.270038
87	I00094081+09691	305401000.BRG.732	INT RESERVATION CREEK RD	180.0	\$900,000	46.260660	-106.931966
88	L44311005+07001	305401000.BRG.2389	ARMELLS CREEK 045	120.0	\$600,000	46.259707	-106.805212
89	L44311007+07001	305401000.BRG.2390	WYANT COULEE 044	64.0	\$256,000	46.259698	-106.845791
90	L44311002+06001	305401000.BRG.2388	DRAINAGE 052	58.0	\$232,000	46.258487	-106.745102
91	P00014270+05031	305401000.BRG.3373	BN RAILROAD	234.5	\$1,172,736	46.258331	-106.694319
92	P00014270+08881	305401000.BRG.3374	INT WEST FORSYTH I 94	246.0	\$1,476,000	46.256875	-106.693669
93	L44311001+01001	305401000.BRG.2387	SMITH CREEK 053	89.0	\$355,997	46.253729	-106.720951
94	I00094092+02622	305401000.BRG.737	SMITH CREEK, COUNTY ROAD	221.0	\$1,104,987	46.252921	-106.720912
95	I00094092+02621	305401000.BRG.736	SMITH CREEK, COUNTY ROAD	220.0	\$1,100,000	46.252646	-106.720921
101	S00447005+00131	305401000.BRG.4470	ROSEBUD CREEK	164.0	\$820,000	46.198012	-106.492790
105	P00039043+07941	305401000.BRG.3627	ARMELLS CREEK	213.0	\$1,064,993	46.150806	-106.795470
109	L44402000+02001	305401000.BRG.2392	ARMELLS CREEK 038	50.0	\$200,000	46.102080	-106.763666
112	P00039038+03951	305401000.BRG.3621	EAST FORK ARMELLS CREEK	109.0	\$435,997	46.085481	-106.740922
118	S00332039+06161	305401000.BRG.4338	TONGUE RIVER	215.5	\$1,077,428	45.839713	-106.220301
124	S00332047+08001	305401000.BRG.4339	DRAINAGE	30.0	\$120,000	45.753888	-106.202316
125	P00037061+04521	305401000.BRG.3611	TONGUE RIVER	203.9	\$1,019,521	45.593139	-106.286934
126	P00037063+01241	305401000.BRG.3612	OTTER CREEK	112.0	\$447,992	45.588055	-106.254885
127	S00566004+00001	305401000.BRG.4578	BRIDGE CREEK	33.0	\$131,995	45.546541	-106.296053
128	S00566024+00401	305401000.BRG.4579	HANGING WOMAN CREEK	66.0	\$263,990	45.319972	-106.519985
130	S00566031+03501	305401000.BRG.4580	TONGUE RIVER	179.0	\$894,997	45.268622	-106.625167
132	S00566034+05801	305401000.BRG.4581	CANYON CREEK	38.0	\$151,995	45.241114	-106.676067

**APPENDIX C-4. CRITICAL FACILITIES IN DAM FAILURE HAZARD IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Ashland Post Office	CF	Federal	Ashland	304 Main St.	\$140,917	45.591150	-106.264844
USFS Ashland Ranger Station	CF	Federal	Ashland	2378 US Highway 212	\$300,000	45.593992	-106.271764
Ashland Volunteer Fire Dept.	CF	Fire	Ashland	5951 Tongue River Rd.	\$133,245	45.596823	-106.274093
St. Labre Volunteer Fire Dept.	CF	Fire	Ashland	1000 Tongue River Rd.	\$133,245	45.607014	-106.282099
Ashland Sheriff Dept., Ambulance & Public Health	CF	Law Enforcement/Medical	Ashland	Hwy 212 MM 62	\$149,121	45.590971	-106.265694
Bighorn Valley Health Center	CF	Medical	Ashland	501 Main St.	\$459,950	45.591711	-106.267397
Ashland Water & Sewer Facility	CF	Municipal	Ashland		\$200,000	45.611465	-106.272280
St. Labre Mission Airport	CF	Municipal	Ashland		\$79,607	45.606492	-106.276057
Ashland Elementary School and 7-8	VP	School	Ashland	8 Old Mission Rd.	\$4,595,000	45.594938	-106.271149
St. Labre Schools	VP	School	Ashland	1000 Tongue River Rd.	\$4,595,000	45.605177	-106.281006
Tongue River Electric Co-op	CF	Utility	Ashland	2435 US Highway 212	\$195,000	45.589715	-106.261575
Birney Post Office	CF	Federal	Birney	302 Commercial St.	\$25,600	45.321889	-106.515688
Birney Elementary School	VP	School	Birney	205 Commercial St.	\$1,690,000	45.321930	-106.514414
Colstrip Waste Water Treatment Plant	CF	Municipal	Colstrip		\$200,000	45.890592	-106.624740
MT DOT Shop, Colstrip	CF	Municipal	Colstrip	2730 MT 39	\$199,464	45.907917	-106.639116
Amish Parochial School	VP	School	County	41 Amish Lane	\$1,000,000	45.696190	-106.297107
Finch Substation	CF	Utility	County		\$195,000	46.290095	-107.006367
Howard Substation	CF	Utility	County		\$195,000	46.270375	-106.902498
Smith Creek Substation	CF	Utility	County		\$195,000	46.252137	-106.721974
BNSR Railroad Station	CF	Business	Forsyth	1025 Rosebud Lane	\$100,000	46.265685	-106.676458
KIKC Radio Station	CF	Communication	Forsyth	210 Front St.	\$99,525	46.258747	-106.689364
Range Telephone	CF	Communication	Forsyth	2325 Front St.	\$190,000	46.269813	-106.657490
Cell Tower	CF	Communications	Forsyth	117 S 12th Ave.	\$175,000	46.265900	-106.674000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	Forsyth	180 S 13th Ave	\$19,000	46.266200	-106.673000
Forsyth Post Office	CF	Federal	Forsyth	216 N. 10th Ave.	\$237,557	46.266960	-106.679117
USDA Service Center, Forsyth	CF	Federal	Forsyth	270 S. Prospect St.	\$189,652	46.259437	-106.684344
Forsyth Fire Station 1	CF	Fire	Forsyth	1310 Front St.	\$238,994	46.265770	-106.672311
Rosebud Co. Fire	CF	Fire	Forsyth	242 E. Front St.	\$133,245	46.268298	-106.662574
Forsyth IGA	CF	Food and Fuel	Forsyth	1026 Main St.	\$500,000	46.266001	-106.676993
Town Pump	CF	Food and Fuel	Forsyth	974 Front St.	\$199,630	46.263695	-106.676282

**APPENDIX C-4. CRITICAL FACILITIES IN DAM FAILURE HAZARD IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Watering Hole Gas	CF	Food and Fuel	Forsyth	1017 Front St.	\$183,910	46.264675	-106.676304
Rosebud Co. Sheriff Office, Forsyth	CF	Law Enforcement	Forsyth	180 S. 13th Ave.	\$2,196,609	46.266176	-106.673561
Rosebud Co. Public Health	CF	Medical	Forsyth	281 N 17th	\$513,140	46.271173	-106.669848
Rosebud Hospital/Nursing Home	CF	Medical	Forsyth	383 N. 17th Ave.	\$12,372,282	46.271498	-106.670156
Forsyth Sewage Plant	CF	Municipal	Forsyth	2800 Cedar St.	\$200,000	46.273654	-106.663945
Forsyth Transfer Station	CF	Municipal	Forsyth		\$313,950	46.259729	-106.695846
Forsyth Water Treatment Plant/Pump House	CF	Municipal	Forsyth	550 N. 3rd St.	\$2,251,693	46.274119	-106.664367
MT DOT Shop, Forsyth	CF	Municipal	Forsyth	2275 Front St.	\$299,265	46.270085	-106.658924
Public Works Shop	CF	Municipal	Forsyth	283 E. Front St.	\$713,430	46.269229	-106.662404
Rosebud Co. Courthouse	CF	Municipal	Forsyth	1200 Main St.	\$6,765,887	46.267773	-106.675034
Rosebud Co. Fairgrounds	CF	Municipal	Forsyth	513 N 16th Ave.	\$3,872,093	46.273884	-106.671423
Rosebud Co. Public Library/Shelter	CF	Municipal	Forsyth	201 N. 9th Ave.	\$1,177,200	46.266594	-106.679690
Rosebud Co. Search & Rescue	CF	Municipal	Forsyth	201 N 8th Ave.	\$207,730	46.266202	-106.680945
Forsyth City Hall/Fire Station 2	CF	Municipal/Fire	Forsyth	247 N. 9th Ave.	\$926,314	46.266710	-106.679962
Rosebud Co. DES Office/Ambulance	CF	Municipal/Medical	Forsyth	1200 Main St.	\$143,508	46.265048	-106.674964
Forsyth Daycare	VP	School	Forsyth	1845 Cedar St.	\$75,000	46.271796	-106.668248
Forsyth Elementary School	VP	School	Forsyth	1850 Cedar St.	\$1,690,000	46.270996	-106.667635
Forsyth High School	VP	School	Forsyth	917 Park St.	\$7,500,000	46.268821	-106.681354
Forsyth Middle School	VP	School	Forsyth	917 Park St.	\$4,595,000	46.268821	-106.681354
Fountain View Assisted Living	VP	Senior	Forsyth	21 Vine St.	\$500,000	46.261189	-106.677612
Haugo Community Center/Shelter	VP	Senior	Forsyth	483 Rosebud St.	\$1,507,282	46.272873	-106.648428
Rosebud Co. Senior Center	VP	Senior	Forsyth	1060 Cedar St.	\$649,203	46.267114	-106.677488
Lift Station	CF	Utilities	Forsyth	480 Rosebud St.	\$150,000	46.272694	-106.648588
Lift Station	CF	Utility	Forsyth		\$150,000	46.266462	-106.681194
Lift Station	CF	Utility	Forsyth		\$150,000	46.270776	-106.668909
Lift Station	CF	Utility	Forsyth	1850 Cedar St.	\$150,000	46.271069	-106.666617
Water Treatment Plant	CF	Utility	Forsyth	330 Oak St.	\$2,431,762	46.266058	-106.689535
Rosebud Post Office	CF	Federal	Rosebud	125 Main St.	\$40,000	46.274794	-106.445026
Rosebud Schools	VP	School	Rosebud	601 Main St.	\$4,595,000	46.275506	-106.441740

**APPENDIX C-4. BRIDGES IN FLOOD HAZARD IMPACT AREA  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	Value	Latitude	Longitude
2	L44109007+09001	305401000.BRG.2366	RATTLESNAKE CREEK 002	131.0	\$654,987	46.816960	-107.846347
4	L44118003+01001	305401000.BRG.2368	MUSSELSHELL RIVER 001	140.0	\$700,000	46.720012	-107.822246
5	L44105013+06001	305401000.BRG.2364	GREAT PORCUPINE CR 005	41.0	\$163,990	46.692306	-107.210954
6	P00018025+01631	305401000.BRG.3389	DRY HOUSE CREEK	96.0	\$383,990	46.686919	-106.174998
12	P00014209+04361	305401000.BRG.3337	HOME CREEK	225.0	\$1,125,000	46.636561	-107.780542
20	L44103010+04001	305401000.BRG.2362	GREAT PORCUPINE CR 008	42.0	\$167,992	46.584725	-107.095665
26	L44012005+06001	305401000.BRG.2360	W FK FROZE TO DEATH 006	64.0	\$255,997	46.504192	-107.377791
27	L44108008+02001	305401000.BRG.2365	BIG PORCUPINE CREEK 011	73.0	\$291,995	46.491525	-107.001004
31	L44126007+00001	305401000.BRG.2369	GREAT PORCUPINE CR 010	88.0	\$351,995	46.440911	-106.934607
32	L44202011+04001	305401000.BRG.2378	LITTLE PORCUPINE CR 014	90.0	\$360,000	46.45332	-106.634178
33	P00014250+05661	305401000.BRG.3355	HORSE CREEK	101.0	\$403,990	46.407599	-107.031890
38	P00014257+02111	305401000.BRG.3360	PORCUPINE CREEK	122.0	\$609,990	46.368700	-106.909653
39	P00014257+04721	305401000.BRG.3361	PORCUPINE OVERFLOW DR	78.0	\$312,000	46.366883	-106.904981
41	P00014258+05001	305401000.BRG.3363	STOCKPASS	15.0	\$60,000	46.356682	-106.8958237
45	P00014262+00001	305401000.BRG.3367	DRAINAGE	20.0	\$80,000	46.321697	-106.840709
49	L44219001+00001	305401000.BRG.2380	SAND CREEK 031	41.0	\$163,990	46.313031	-106.362495
50	L44219000+08001	305401000.BRG.2379	CARTERSVILLE CANAL 030	33.0	\$131,995	46.310190	-106.362736
51	L44200007+02001	305401000.BRG.2373	LITTLE PORCUPINE CR 027	74.0	\$295,997	46.304193	-106.574989
52	L44221000+03001	305401000.BRG.2381	SAND CREEK 029	39.0	\$155,997	46.303245	-106.702241
54	L44201004+07001	305401000.BRG.2376	SAND CREEK 042	70.0	\$280,000	46.298827	-106.375743
55	P00014264+08411	305401000.BRG.3371	MCGRAWS COULEE	41.0	\$164,000	46.297648	-106.793930
56	L44002001+00001	305401000.BRG.2358	GREASEWOOD CREEK 033	53.0	\$211,995	46.295932	-106.808759
57	L44002001+03001	305401000.BRG.2359	GREAT PORCUPINE CR 034	87.0	\$347,992	46.295914	-106.815392
61	L44020001+05001	305401000.BRG.2361	RESERVATION CREEK 036	67.0	\$267,992	46.275501	-106.930930
63	S00446001+02661	305401000.BRG.4469	YELLOWSTONE RIVER	694.0	\$4,858,000	46.274737	-106.464979
64	L44311012+01001	305401000.BRG.2391	RESERVATION CREEK 043	25.0	\$100,000	46.274353	-106.929809
65	S00446001+01391	305401000.BRG.4468	BN RAILROAD	203.0	\$1,014,993	46.273011	-106.464252
66	L44303001+05001	305401000.BRG.2383	BUTTE CREEK 041	86.0	\$344,000	46.272991	-106.440200
67	S00446000+03211	305401000.BRG.4467	ROSEBUD CREEK	123.0	\$614,993	46.268821	-106.477525
71	I00094111+05931	305401000.BRG.746	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267398	-106.323980
73	I00094104+02232	305401000.BRG.743	ROSEBUD CREEK	173.0	\$864,993	46.267282	-106.8156760
76	I00094104+02231	305401000.BRG.742	ROSEBUD CREEK	173.0	\$864,993	46.266966	-106.476711
81	L44303007+07001	305401000.BRG.2385	SWEENEY CREEK 064	108.0	\$432,000	46.265616	-106.326063
83	P00014270+03311	305401000.BRG.3372	YELLOWSTONE RIVER	834.0	\$5,838,000	46.264591	-106.696104
88	L44311005+07001	305401000.BRG.2389	ARMELLS CREEK 045	120.0	\$600,000	46.259707	-106.805212
95	I00094092+02621	305401000.BRG.736	SMITH CREEK, COUNTY ROAD	220.0	\$1,100,000	46.252646	-106.720921
101	S00447005+00131	305401000.BRG.4470	ROSEBUD CREEK	164.0	\$820,000	46.198012	-106.492790
102	S00447005+01041	305401000.BRG.4471	ROSEBUD CREEK OVERFLOW	138.0	\$689,993	46.197071	-106.491478
104	P00039043+08381	305401000.BRG.3628	ARMELLS CREEK	92.0	\$367,992	46.151863	-106.798342
105	P00039043+07941	305401000.BRG.3627	ARMELLS CREEK	213.0	\$1,064,993	46.150806	-106.795470
109	L44402000+02001	305401000.BRG.2392	ARMELLS CREEK 038	50.0	\$200,000	46.102080	-106.763666
111	P00039038+06861	305401000.BRG.3622	SHEEP CREEK	20.0	\$80,000	46.088385	-106.744468
116	L44402013+09001	305401000.BRG.2393	TRAIL CREEK 039	56.0	\$224,000	45.932746	-106.835272
118	S00332039+06161	305401000.BRG.4338	TONGUE RIVER	215.5	\$1,077,428	45.839713	-106.220301
119	L44200008+05001	305401000.BRG.2374	ROSEBUD CREEK 047	41.0	\$163,990	45.829773	-106.421353
120	L44200008+07001	305401000.BRG.2375	ROSEBUD CR OVRFLOW 046	40.0	\$160,000	45.829134	-106.423407
121	L44300002+02001	305401000.BRG.2382	ROSEBUD CREEK 048	60.0	\$240,000	45.784700	-106.540900
125	P00037061+04521	305401000.BRG.3611	TONGUE RIVER	203.9	\$1,019,521	45.593139	-106.286934
128	S00566024+00401	305401000.BRG.4579	HANGING WOMAN CREEK	66.0	\$263,990	45.319972	-106.518985
129	L44524001+00001	305401000.BRG.2394	HANGING WOMAN CREEK 074	60.0	\$240,000	45.295337	-106.503538
130	S00566031+03501	305401000.BRG.4580	TONGUE RIVER	179.0	\$894,997	45.268622	-106.625167
131	L44525000+02001	305401000.BRG.2395	HANGING WOMAN CREEK 075	42.7	\$170,604	45.258627	-106.489718
132	S00566034+05801	305401000.BRG.4581	CANYON CREEK	38.0	\$151,995	45.241114	-106.676067

**APPENDIX C-4. CRITICAL FACILITIES IN FLOOD HAZARD IMPACT AREA****ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
St. Labre Mission Airport	CF	Municipal	Ashland		\$79,607	45.606492	-106.276057
St. Labre Schools	VP	School	Ashland	1000 Tongue River Rd.	\$4,595,000	45.605177	-106.281006
Birney Post Office	CF	Federal	Birney	302 Commercial St.	\$25,600	45.321889	-106.515688
Birney Elementary School	VP	School	Birney	205 Commercial St.	\$1,690,000	45.321930	-106.514414
Rosebud Co. Fire	CF	Fire	Forsyth	242 E. Front St.	\$133,245	46.268298	-106.662574
Forsyth Water Treatment Plant/Pump House	CF	Municipal	Forsyth	550 N. 3rd St.	\$2,251,693	46.274119	-106.664367
Rosebud Post Office	CF	Federal	Rosebud	125 Main St.	\$40,000	46.274794	-106.445026
Rosebud Schools	VP	School	Rosebud	601 Main St.	\$4,595,000	46.275506	-106.441740

**APPENDIX C-4. BRIDGES IN HAZARDOUS MATERIAL INCIDENT IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	Value	Latitude	Longitude
1	P00018035+01041	305401000.BRG.3390	ROCK SPINGS CREEK	39.0	\$155,997	46.822112	-106.254537
6	P00018025+01631	305401000.BRG.3389	DRY HOUSE CREEK	96.0	\$383,990	46.686919	-106.174998
7	P00014217+00431	305401000.BRG.3342	HOME CREEK	40.0	\$160,000	46.637578	-107.621036
8	P00014216+08591	305401000.BRG.3341	HOME CREEK	286.0	\$1,716,000	46.637556	-107.624799
9	P00014216+05861	305401000.BRG.3340	HOME CREEK	35.0	\$140,000	46.637525	-107.630555
10	P00014216+00991	305401000.BRG.3339	HOME CREEK	57.0	\$227,992	46.637464	-107.640821
11	P00014216+00001	305401000.BRG.3338	STOCKPASS	15.0	\$60,000	46.637458	-107.642378
12	P00014209+04361	305401000.BRG.3337	HOME CREEK	225.0	\$1,125,000	46.636561	-107.780542
13	P00014207+09671	305401000.BRG.3336	DRAINAGE	39.0	\$155,997	46.627450	-107.807734
15	P00014219+09281	305401000.BRG.3343	MUGGINS CREEK	58.0	\$231,995	46.623422	-106.566014
16	P00014207+01501	305401000.BRG.3335	MUSSELSHELL RIVER	218.0	\$1,090,000	46.620474	-107.821623
17	P00014223+06841	305401000.BRG.3344	DRAINAGE	20.0	\$80,000	46.613456	-107.491714
18	P00014224+06031	305401000.BRG.3345	DRAINAGE	116.0	\$464,000	46.606902	-107.473632
19	P00014227+03151	305401000.BRG.3346	DRY WASH	58.0	\$231,995	46.587853	-107.836303
21	P00014229+03431	305401000.BRG.3347	DRAINAGE	26.0	\$103,990	46.582208	-107.386784
22	P00014235+08741	305401000.BRG.3348	DRAINAGE	58.0	\$231,995	46.539795	-107.270261
23	P00014238+01851	305401000.BRG.3349	DRAINAGE	20.0	\$80,000	46.522254	-107.229740
24	P00014238+09851	305401000.BRG.3350	DRAINAGE	58.0	\$231,995	46.514994	-107.216061
25	P00014239+08151	305401000.BRG.3351	DRAINAGE	57.0	\$227,992	46.507326	-107.202568
28	P00014243+07041	305401000.BRG.3352	DRAINAGE	58.0	\$231,995	46.466352	-107.146515
29	P00014245+03171	305401000.BRG.3353	DRAINAGE	58.0	\$231,995	46.451847	-107.119918
30	P00014246+03161	305401000.BRG.3354	DRAINAGE	58.0	\$231,995	46.445624	-107.101067
33	P00014250+05661	305401000.BRG.3355	HORSE CREEK	101.0	\$403,990	46.407599	-107.031890
34	P00014252+00981	305401000.BRG.3356	ANDERSON CREEK	58.0	\$231,995	46.392833	-107.008047
35	P00014253+00221	305401000.BRG.3357	DRAINAGE	39.0	\$155,997	46.384785	-106.992819
36	P00014254+05001	305401000.BRG.3358	STOCKPASS	21.0	\$83,990	46.379745	-106.959987
37	P00014257+00001	305401000.BRG.3359	STOCKPASS	21.0	\$83,990	46.369361	-106.913018
38	P00014257+02111	305401000.BRG.3360	PORCUPINE CREEK	122.0	\$609,990	46.368700	-106.909653
39	P00014257+04721	305401000.BRG.3361	PORCUPINE OVERFLOW DR	78.0	\$312,000	46.366883	-106.904981
40	P00014258+03001	305401000.BRG.3362	STOCKPASS	21.0	\$83,990	46.360079	-106.900604
41	P00014258+05001	305401000.BRG.3363	STOCKPASS	15.0	\$60,000	46.356682	-106.898237
42	P00014259+08241	305401000.BRG.3364	DRAINAGE	39.0	\$155,997	46.340349	-106.877109
43	P00014260+03001	305401000.BRG.3365	STOCKPASS	15.0	\$60,000	46.335798	-106.868775
44	P00014261+05001	305401000.BRG.3366	DRAINAGE	21.0	\$83,990	46.325559	-106.848662
45	P00014262+00001	305401000.BRG.3367	DRAINAGE	20.0	\$80,000	46.321697	-106.840709
46	P00014262+04641	305401000.BRG.3368	DRAINAGE	20.0	\$80,000	46.317532	-106.833624
47	P00014262+06001	305401000.BRG.3369	DRAINAGE	21.0	\$83,990	46.315977	-106.831161
48	P00014262+08001	305401000.BRG.3370	GREASEWOOD CREEK	21.0	\$83,990	46.313511	-106.827272
55	P00014264+08411	305401000.BRG.3371	MCGRAWS COULEE	41.0	\$164,000	46.297648	-106.793930
58	L44303014+09001	305401000.BRG.2386	GRAVEYARD CREEK 055	33.0	\$131,995	46.280335	-106.179623
59	I00094118+07362	305401000.BRG.752	GRAVEYARD CREEK	77.0	\$307,992	46.280135	-106.179564
60	I00094118+07361	305401000.BRG.751	GRAVEYARD CREEK	82.0	\$328,000	46.279960	-106.179452
61	L44020001+05001	305401000.BRG.2361	RESERVATION CREEK 036	67.0	\$267,992	46.275501	-106.930930
62	L44177000+01001	305401000.BRG.2372	INT HATHWAY-I 94	244.0	\$1,463,996	46.274794	-106.197968
63	S00446001+02661	305401000.BRG.4469	YELLOWSTONE RIVER	694.0	\$4,858,000	46.274737	-106.464979
64	L44311012+01001	305401000.BRG.2391	RESERVATION CREEK 043	25.0	\$100,000	46.274353	-106.929809
65	S00446001+01391	305401000.BRG.4468	BN RAILROAD	203.0	\$1,014,993	46.273011	-106.464252
66	L44303001+05001	305401000.BRG.2383	BUTTE CREEK 041	86.0	\$344,000	46.272991	-106.440200
67	S00446000+03211	305401000.BRG.4467	ROSEBUD CREEK	123.0	\$614,993	46.268821	-106.477525
68	I00094108+02112	305401000.BRG.745	SEP COUNTY ROAD	78.0	\$311,995	46.267711	-106.393576
69	I00094111+05932	305401000.BRG.747	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267710	-106.324105
70	L44303002+00201	305401000.BRG.2384	INT E ROSEBUD-I 94	331.0	\$1,985,984	46.267542	-106.423062
71	I00094111+05931	305401000.BRG.746	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267398	-106.323980
72	I00094108+02111	305401000.BRG.744	SEP COUNTY ROAD	78.0	\$311,995	46.267395	-106.393532
73	I00094104+02232	305401000.BRG.743	ROSEBUD CREEK	173.0	\$864,993	46.267282	-106.476760
74	I00094095+02362	305401000.BRG.739	INT EAST FORSYTH	190.0	\$950,000	46.267154	-106.665203
75	I00094103+09562	305401000.BRG.741	INT W ROSEBUD S 446/447	125.0	\$625,000	46.267081	-106.482324
76	I00094104+02231	305401000.BRG.742	ROSEBUD CREEK	173.0	\$864,993	46.266966	-106.476711
77	I00094095+02361	305401000.BRG.738	INT EAST FORSYTH	195.0	\$975,000	46.266910	-106.665006
78	I00094103+09561	305401000.BRG.740	INT W ROSEBUD S 446/447	162.0	\$810,000	46.266763	-106.482269
79	L44129000+03001	305401000.BRG.2370	SEP I 94 SO FRONT RD	305.0	\$1,830,000	46.266506	-106.628159
80	L44148000+02501	305401000.BRG.2371	SEP I 94	307.0	\$1,841,988	46.265852	-106.549770
81	L44303007+07001	305401000.BRG.2385	SWEENEY CREEK 064	108.0	\$432,000	46.265616	-106.326063
82	I00094115+04991	305401000.BRG.750	JR GRADE SEP	17.3	\$69,029	46.264705	-106.243166
83	P00014270+03311	305401000.BRG.3372	YELLOWSTONE RIVER	834.0	\$5,838,000	46.264591	-106.696104
84	I00094114+02372	305401000.BRG.749	SEP COUNTY ROAD	124.0	\$619,997	46.261230	-106.270027
85	I00094081+09692	305401000.BRG.733	INT RESERVATION CREEK RD	180.0	\$900,000	46.260958	-106.931810
86	I00094114+02371	305401000.BRG.748	SEP COUNTY ROAD	124.0	\$619,997	46.260923	-106.270038
87	I00094081+09691	305401000.BRG.732	INT RESERVATION CREEK RD	180.0	\$900,000	46.260660	-106.931966

**APPENDIX C-4. BRIDGES IN HAZARDOUS MATERIAL INCIDENT IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	Value	Latitude	Longitude
88	L44311005+07001	305401000.BRG.2389	ARMELLS CREEK 045	120.0	\$600,000	46.259707	-106.805212
89	L44311007+07001	305401000.BRG.2390	WYANT COULEE 044	64.0	\$256,000	46.259698	-106.845791
90	L44311002+06001	305401000.BRG.2388	DRAINAGE 052	58.0	\$232,000	46.258487	-106.745102
91	P00014270+05031	305401000.BRG.3373	BN RAILROAD	234.5	\$1,172,736	46.258331	-106.694319
92	P00014270+08881	305401000.BRG.3374	INT WEST FORSYTH I 94	246.0	\$1,476,000	46.256875	-106.693669
93	L44311001+01001	305401000.BRG.2387	SMITH CREEK 053	89.0	\$355,997	46.253729	-106.720951
94	I00094092+02622	305401000.BRG.737	SMITH CREEK, COUNTY ROAD	221.0	\$1,104,987	46.252921	-106.720912
95	I00094092+02621	305401000.BRG.736	SMITH CREEK, COUNTY ROAD	220.0	\$1,100,000	46.252646	-106.720921
96	I00094088+00982	305401000.BRG.735	ARMELLS CR, BN RAILROAD	422.0	\$2,953,986	46.250701	-106.806332
97	I00094088+00981	305401000.BRG.734	ARMELLS CR, BN RAILROAD	394.0	\$2,757,995	46.250387	-106.806290
98	P00039051+02161	305401000.BRG.3632	INT COLSTRIP I 94	245.0	\$1,470,000	46.249965	-106.816141
99	P00039050+05681	305401000.BRG.3631	STOCKPASS	15.0	\$60,000	46.237907	-106.816186
100	P00039049+05081	305401000.BRG.3630	STOCKPASS	15.0	\$60,000	46.224403	-106.818126
101	S00447005+00131	305401000.BRG.4470	ROSEBUD CREEK	164.0	\$820,000	46.198012	-106.492790
102	S00447005+01041	305401000.BRG.4471	ROSEBUD CREEK OVERFLOW	138.0	\$689,993	46.197071	-106.491478
103	P00039046+00581	305401000.BRG.3629	STOCKPASS	15.0	\$60,000	46.175786	-106.821194
104	P00039043+08381	305401000.BRG.3628	ARMELLS CREEK	92.0	\$367,992	46.151863	-106.798342
105	P00039043+07941	305401000.BRG.3627	ARMELLS CREEK	213.0	\$1,064,993	46.150806	-106.795470
106	P00039043+06251	305401000.BRG.3626	BN RAILROAD	214.0	\$1,069,997	46.149696	-106.792455
107	P00039043+04701	305401000.BRG.3625	STOCKPASS	12.0	\$47,992	46.148601	-106.789486
108	P00039039+09401	305401000.BRG.3624	STOCKPASS	12.0	\$47,992	46.102974	-106.760626
109	L44402000+02001	305401000.BRG.2392	ARMELLS CREEK 038	50.0	\$200,000	46.102080	-106.763666
110	P00039038+07711	305401000.BRG.3623	BN RAILROAD	394.0	\$2,758,000	46.089610	-106.745965
111	P00039038+06861	305401000.BRG.3622	SHEEP CREEK	20.0	\$80,000	46.088385	-106.744468
112	P00039038+03951	305401000.BRG.3621	EAST FORK ARMELLS CREEK	109.0	\$435,997	46.085481	-106.740922
113	P00039037+02171	305401000.BRG.3620	STOCKPASS	15.0	\$60,000	46.072833	-106.724458
114	P00039036+04791	305401000.BRG.3619	STOCKPASS	12.0	\$47,992	46.066701	-106.711579
115	P00039030+06201	305401000.BRG.3618	STOCKPASS, MCGILVREY CR	12.0	\$47,992	45.993164	-106.655588
117	P00039022+01521	305401000.BRG.3617	BN RAILROAD (CONVEYOR)	260.0	\$1,560,000	45.874747	-106.626549
118	S00332039+06161	305401000.BRG.4338	TONGUE RIVER	215.5	\$1,077,428	45.839713	-106.220301
119	L44200008+05001	305401000.BRG.2374	ROSEBUD CREEK 047	41.0	\$163,990	45.829773	-106.421353
120	L44200008+07001	305401000.BRG.2375	ROSEBUD CR OVRFLOW 046	40.0	\$160,000	45.829134	-106.423407
122	P00039013+04521	305401000.BRG.3615	ROSEBUD CREEK	142.0	\$710,000	45.767318	-106.570117
123	P00039014+05001	305401000.BRG.3616	STOCKPASS, DRAINAGE	20.0	\$80,000	45.760429	-106.590817
124	S00332047+08001	305401000.BRG.4339	DRAINAGE	30.0	\$120,000	45.753888	-106.302316
125	P00037061+04521	305401000.BRG.3611	TONGUE RIVER	203.9	\$1,019,521	45.593139	-106.286934
126	P00037063+01241	305401000.BRG.3612	OTTER CREEK	112.0	\$447,992	45.588055	-106.254885
127	S00566004+00001	305401000.BRG.4578	BRIDGE CREEK	33.0	\$131,995	45.546541	-106.296053
128	S00566024+00401	305401000.BRG.4579	HANGING WOMAN CREEK	66.0	\$263,990	45.319972	-106.518985
130	S00566031+03501	305401000.BRG.4580	TONGUE RIVER	179.0	\$894,997	45.268622	-106.625167
132	S00566034+05801	305401000.BRG.4581	CANYON CREEK	38.0	\$151,995	45.241114	-106.676067

**APPENDIX C-4. CRITICAL FACILITIES IN HAZARDOUS MATERIAL INCIDENT IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Angela Post Office	CF	Federal	Angela	1 Anglea Rd. S	\$242,160	46.729156	-106.200183
Rosebud Co. Shop	CF	Municipal	Angela		\$66,801	46.728818	-106.199978
Cell Tower	CF	Communications	Ashland	5992 Tongue River Rd.	\$175,000	45.586500	-106.263000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	Ashland	5992 Tongue River Rd.	\$19,000	45.586500	-106.263000
Ashland Post Office	CF	Federal	Ashland	304 Main St.	\$140,917	45.591150	-106.264844
USFS Ashland Ranger Station	CF	Federal	Ashland	2378 US Highway 212	\$300,000	45.593992	-106.271764
Ashland Volunteer Fire Dept.	CF	Fire	Ashland	5951 Tongue River Rd.	\$133,245	45.596823	-106.274093
St. Labre Volunteer Fire Dept.	CF	Fire	Ashland	1000 Tongue River Rd.	\$133,245	45.607014	-106.282099
Ashland Sheriff Dept., Ambulance & Public Health	CF	Law Enforcement/Medical	Ashland	Hwy 212 MM 62	\$149,121	45.590971	-106.265694
Bighorn Valley Health Center	CF	Medical	Ashland	501 Main St.	\$459,950	45.591711	-106.267397
Ashland Elementary School and 7-8	VP	School	Ashland	8 Old Mission Rd.	\$4,595,000	45.594938	-106.271149
St. Labre Schools	VP	School	Ashland	1000 Tongue River Rd.	\$4,595,000	45.605177	-106.281006
Heritage Center Assisted Living	VP	Senior	Ashland	2232 Tongue River Rd.	\$4,771,030	45.588456	-106.265958
Tongue River Electric Co-op	CF	Utility	Ashland	2435 US Highway 212	\$195,000	45.589715	-106.261575
Birney Post Office	CF	Federal	Birney	302 Commercial St.	\$25,600	45.321889	-106.515688
Rosebud Co. Shop, Birney	CF	Municipal	Birney	120 Commercial St.	\$215,474	45.324520	-106.511834
Birney Elementary School	VP	School	Birney	205 Commercial St.	\$1,690,000	45.321930	-106.514414
Dispatch Repeater	CF	Communications	Colstrip	303 Willow Ave.	\$19,000	45.882071	-106.625477
Colstrip Post Office	CF	Federal	Colstrip	6 Locust St.	\$97,220	45.882254	-106.628573
Rosebud Food	CF	Food and Fuel	Colstrip	3 Cherry St.	\$406,660	45.882885	-106.629063
Colstrip Police Dept., Fire Station 1, & Ambulance	CF	Law Enforcement/Fire/Medical	Colstrip	303 Willow Ave.	\$1,277,970	45.882021	-106.625625
Colstrip Medical Center	CF	Medical	Colstrip	6230 Main St.	\$662,000	45.884742	-106.634996
Colstrip City Hall	CF	Municipal	Colstrip	12 Cherry St.	\$1,103,814	45.881849	-106.629447
Colstrip City Shop	CF	Municipal	Colstrip	519 Willow Ave.	\$93,100	45.883611	-106.621482
Colstrip Parks & Recreation Shelter	CF	Municipal	Colstrip	110 Park Ave.	\$581,240	45.883932	-106.624179
Colstrip Waste Water Treatment Plant	CF	Municipal	Colstrip		\$200,000	45.890592	-106.624740
Colstrip Water Treatment Plant	CF	Municipal	Colstrip		\$90,000	45.894278	-106.634283
MT DOT Shop, Colstrip	CF	Municipal	Colstrip	2730 MT 39	\$199,464	45.907917	-106.639116
Rosebud Co. Human Services & Senior Center	CF	Municipal/Senior	Colstrip	417 Willow Ave.	\$1,582,878	45.882477	-106.624245
Frank Brattin Middle School	VP	School	Colstrip	216 Olive Dr.	\$4,595,000	45.883988	-106.629449
Colstrip Water Tower	CF	Utility	Colstrip		\$100,000	45.885003	-106.637517
Talon Energy Plant	CF	Utility	Colstrip	580 Willow Ave.	\$45,500,000	45.884056	-106.614397
Cell Tower	CF	Communications	County	1261 Highway 39	\$175,000	46.095100	-106.753000
Cell Tower	CF	Communications	County	19 Wright Ln.	\$175,000	46.268000	-106.391000
Rosebud Co. Landfill	CF	Municipal	County	Highway 39	\$302,243	46.246714	-106.819426
Tillet Field Airport	CF	Municipal	County	2977 Old Hwy 10	\$79,607	46.269417	-106.622387
Colstrip Substation	CF	Utilities	County	MT Hwy 39	\$195,000	45.844970	-106.577055
Finch Substation	CF	Utility	County		\$195,000	46.290095	-107.006367
Howard Substation	CF	Utility	County		\$195,000	46.270375	-106.902498
Rosebud Substation	CF	Utility	County		\$195,000	46.266875	-106.462434
Smith Creek Substation	CF	Utility	County		\$195,000	46.252137	-106.721974

**APPENDIX C-4. CRITICAL FACILITIES IN HAZARDOUS MATERIAL INCIDENT IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
BNSR Railroad Station	CF	Business	Forsyth	1025 Rosebud Lane	\$100,000	46.265685	-106.676458
KIKC Radio Station	CF	Communication	Forsyth	210 Front St.	\$99,525	46.258747	-106.689364
Range Telephone	CF	Communication	Forsyth	2325 Front St.	\$190,000	46.269813	-106.657490
Cell Tower	CF	Communications	Forsyth	205 Radio Tower Ln.	\$175,000	46.262800	-106.670000
Cell Tower	CF	Communications	Forsyth	117 S 12th Ave.	\$175,000	46.265900	-106.674000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	Forsyth	180 S 13th Ave	\$19,000	46.266200	-106.673000
Forsyth Translator	CF	Communications	Forsyth	F. Hill, 46 15' 39	\$10,000	46.263015	-106.669859
Forsyth Post Office	CF	Federal	Forsyth	216 N. 10th Ave.	\$237,557	46.266960	-106.679117
USDA Service Center, Forsyth	CF	Federal	Forsyth	270 S. Prospect St.	\$189,652	46.259437	-106.684344
Forsyth Fire Station 1	CF	Fire	Forsyth	1310 Front St.	\$238,994	46.265770	-106.672311
Rosebud Co. Fire	CF	Fire	Forsyth	242 E. Front St.	\$133,245	46.268298	-106.662574
Forsyth IGA	CF	Food and Fuel	Forsyth	1026 Main St.	\$500,000	46.266001	-106.676993
Town Pump	CF	Food and Fuel	Forsyth	974 Front St.	\$199,630	46.263695	-106.676282
Watering Hole Gas	CF	Food and Fuel	Forsyth	1017 Front St.	\$183,910	46.264675	-106.676304
Rosebud Co. Sheriff Office, Forsyth	CF	Law Enforcement	Forsyth	180 S. 13th Ave.	\$2,196,609	46.266176	-106.673561
Rosebud Co. Public Health	CF	Medical	Forsyth	281 N 17th	\$513,140	46.271173	-106.669848
Rosebud Hospital/Nursing Home	CF	Medical	Forsyth	383 N. 17th Ave.	\$12,372,282	46.271498	-106.670156
Forsyth Sewage Plant	CF	Municipal	Forsyth	2800 Cedar St.	\$200,000	46.273654	-106.663945
Forsyth Transfer Station	CF	Municipal	Forsyth		\$313,950	46.259729	-106.695846
MT DOT Shop, Forsyth	CF	Municipal	Forsyth	2275 Front St.	\$299,265	46.270085	-106.658924
Public Works Shop	CF	Municipal	Forsyth	283 E. Front St.	\$713,430	46.269229	-106.662404
Rosebud Co. Courthouse	CF	Municipal	Forsyth	1200 Main St.	\$6,765,887	46.267773	-106.675034
Rosebud Co. Public Library/Shelter	CF	Municipal	Forsyth	201 N. 9th Ave.	\$1,177,200	46.266594	-106.679690
Rosebud Co. Search & Rescue	CF	Municipal	Forsyth	201 N 8th Ave.	\$207,730	46.266202	-106.680945
Forsyth City Hall/Fire Station 2	CF	Municipal/Fire	Forsyth	247 N. 9th Ave.	\$926,314	46.266710	-106.679962
Rosebud Co. DES Office/Ambulance	CF	Municipal/Medical	Forsyth	1200 Main St.	\$143,508	46.265048	-106.674964
Forsyth Daycare	VP	School	Forsyth	1845 Cedar St.	\$75,000	46.271796	-106.668248
Forsyth Elementary School	VP	School	Forsyth	1850 Cedar St.	\$1,690,000	46.270996	-106.667635
Fountain View Assisted Living	VP	Senior	Forsyth	21 Vine St.	\$500,000	46.261189	-106.677612
Haugo Community Center/Shelter	VP	Senior	Forsyth	483 Rosebud St.	\$1,507,282	46.272873	-106.648428
Rosebud Co. Senior Center	VP	Senior	Forsyth	1060 Cedar St.	\$649,203	46.267114	-106.677488
Lift Station	CF	Utilities	Forsyth	480 Rosebud St.	\$150,000	46.272694	-106.648588
Forsyth Water Tower	CF	Utility	Forsyth		\$897,000	46.259130	-106.677607
Lift Station	CF	Utility	Forsyth		\$150,000	46.266462	-106.681194
Lift Station	CF	Utility	Forsyth		\$150,000	46.270776	-106.668909
Lift Station	CF	Utility	Forsyth	1850 Cedar St.	\$150,000	46.271069	-106.666617
Rosebud Post Office	CF	Federal	Rosebud	125 Main St.	\$40,000	46.274794	-106.445026
Rosebud Schools	VP	School	Rosebud	601 Main St.	\$4,595,000	46.275506	-106.441740
Sumatra Post Office	CF	Federal	Sumatra	Sumatra Rd.	\$40,000	46.617853	-107.551533

**APPENDIX C-4. BRIDGES IN WILDFIRE HAZARD IMPACT AREA  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	Value	Latitude	Longitude
1	P00018035+01041	305401000.BRG.3390	ROCK SPINGS CREEK	39.0	\$155,997	46.822112	-106.254537
4	L44118003+01001	305401000.BRG.2368	MUSSELSHELL RIVER 001	140.0	\$700,000	46.720012	-107.822246
6	P00018025+01631	305401000.BRG.3389	DRY HOUSE CREEK	96.0	\$383,990	46.686919	-106.174998
7	P00014217+00431	305401000.BRG.3342	HOME CREEK	40.0	\$160,000	46.637578	-107.621036
8	P00014216+08591	305401000.BRG.3341	HOME CREEK	286.0	\$1,716,000	46.637556	-107.624799
9	P00014216+05861	305401000.BRG.3340	HOME CREEK	35.0	\$140,000	46.637525	-107.630555
10	P00014216+00991	305401000.BRG.3339	HOME CREEK	57.0	\$227,992	46.637464	-107.640821
11	P00014216+00001	305401000.BRG.3338	STOCKPASS	15.0	\$60,000	46.637458	-107.642378
12	P00014209+04361	305401000.BRG.3337	HOME CREEK	225.0	\$1,125,000	46.636561	-107.780542
13	P00014207+09671	305401000.BRG.3336	DRAINAGE	39.0	\$155,997	46.627450	-107.807734
15	P00014219+09281	305401000.BRG.3343	MUGGINS CREEK	58.0	\$231,995	46.623422	-107.566014
17	P00014223+06841	305401000.BRG.3344	DRAINAGE	20.0	\$80,000	46.613456	-107.491714
18	P00014224+06031	305401000.BRG.3345	DRAINAGE	116.0	\$464,000	46.606902	-107.473632
19	P00014227+03151	305401000.BRG.3346	DRY WASH	58.0	\$231,995	46.587853	-107.630630
21	P00014229+03431	305401000.BRG.3347	DRAINAGE	26.0	\$103,990	46.582208	-107.386784
22	P00014235+08741	305401000.BRG.3348	DRAINAGE	58.0	\$231,995	46.539795	-107.270261
23	P00014238+01851	305401000.BRG.3349	DRAINAGE	20.0	\$80,000	46.522254	-107.229740
24	P00014238+09851	305401000.BRG.3350	DRAINAGE	58.0	\$231,995	46.514994	-107.216061
25	P00014239+08151	305401000.BRG.3351	DRAINAGE	57.0	\$227,992	46.507326	-107.202568
28	P00014243+07041	305401000.BRG.3352	DRAINAGE	58.0	\$231,995	46.466352	-107.146515
29	P00014245+03171	305401000.BRG.3353	DRAINAGE	58.0	\$231,995	46.451847	-107.119918
30	P00014246+03161	305401000.BRG.3354	DRAINAGE	58.0	\$231,995	46.445624	-107.101067
32	L44202011+04001	305401000.BRG.2378	LITTLE PORCUPINE CR 014	90.0	\$360,000	46.415332	-106.634178
33	P00014250+05661	305401000.BRG.3355	HORSE CREEK	101.0	\$403,990	46.407599	-107.031890
34	P00014252+00981	305401000.BRG.3356	ANDERSON CREEK	58.0	\$231,995	46.392833	-107.008047
35	P00014253+00221	305401000.BRG.3357	DRAINAGE	39.0	\$155,997	46.384785	-106.992819
36	P00014254+05001	305401000.BRG.3358	STOCKPASS	21.0	\$83,990	46.379745	-106.959987
37	P00014257+00001	305401000.BRG.3359	STOCKPASS	21.0	\$83,990	46.369361	-106.913018
38	P00014257+02111	305401000.BRG.3360	PORCUPINE CREEK	122.0	\$609,990	46.368700	-106.909653
39	P00014257+04721	305401000.BRG.3361	PORCUPINE OVERFLOW DR	78.0	\$312,000	46.366883	-106.904981
40	P00014258+03001	305401000.BRG.3362	STOCKPASS	21.0	\$83,990	46.360079	-106.900604
41	P00014258+05001	305401000.BRG.3363	STOCKPASS	15.0	\$60,000	46.356682	-106.898237
42	P00014259+08241	305401000.BRG.3364	DRAINAGE	39.0	\$155,997	46.340349	-106.877109
43	P00014260+03001	305401000.BRG.3365	STOCKPASS	15.0	\$60,000	46.335798	-106.868775
44	P00014261+05001	305401000.BRG.3366	DRAINAGE	21.0	\$83,990	46.325559	-106.848662
45	P00014262+00001	305401000.BRG.3367	DRAINAGE	20.0	\$80,000	46.321697	-106.840709
46	P00014262+04641	305401000.BRG.3368	DRAINAGE	20.0	\$80,000	46.317532	-106.833624
47	P00014262+06001	305401000.BRG.3369	DRAINAGE	21.0	\$83,990	46.315977	-106.831161
48	P00014262+08001	305401000.BRG.3370	GREASEWOOD CREEK	21.0	\$83,990	46.313511	-106.827272
51	L44200007+02001	305401000.BRG.2373	LITTLE PORCUPINE CR 027	74.0	\$295,997	46.304193	-106.574989
52	L44221000+03001	305401000.BRG.2381	SAND CREEK 029	39.0	\$155,997	46.303245	-106.370241
54	L44201004+07001	305401000.BRG.2376	SAND CREEK 042	70.0	\$280,000	46.298827	-106.375743
55	P00014264+08411	305401000.BRG.3371	MCGRAWS COULEE	41.0	\$164,000	46.297648	-106.793930
56	L44002001+00001	305401000.BRG.2358	GREASEWOOD CREEK 033	53.0	\$211,995	46.295932	-106.808759
58	L44303014+09001	305401000.BRG.2386	GRAVEYARD CREEK 055	33.0	\$131,995	46.280335	-106.179623
59	I00094118+07362	305401000.BRG.752	GRAVEYARD CREEK	77.0	\$307,992	46.280135	-106.179564
60	I00094118+07361	305401000.BRG.751	GRAVEYARD CREEK	82.0	\$328,000	46.279960	-106.179452
61	L44020001+05001	305401000.BRG.2361	RESERVATION CREEK 036	67.0	\$267,992	46.275501	-106.930930
62	L44177000+01001	305401000.BRG.2372	INT HATHWAY-I 94	244.0	\$1,463,996	46.274794	-106.197968
63	S00446001+02661	305401000.BRG.4469	YELLOWSTONE RIVER	694.0	\$4,858,000	46.274737	-106.464979
64	L44311012+01001	305401000.BRG.2391	RESERVATION CREEK 043	25.0	\$100,000	46.274353	-106.929809
65	S00446001+01391	305401000.BRG.4468	BN RAILROAD	203.0	\$1,014,993	46.273011	-106.464252
66	L44303001+05001	305401000.BRG.2383	BUTTE CREEK 041	86.0	\$344,000	46.272991	-106.440200
67	S00446000+03211	305401000.BRG.4467	ROSEBUD CREEK	123.0	\$614,993	46.268821	-106.477525
68	I00094108+02112	305401000.BRG.745	SEP COUNTY ROAD	78.0	\$311,995	46.267711	-106.393576
69	I00094111+05932	305401000.BRG.747	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267710	-106.324105
70	L44303002+00201	305401000.BRG.2384	INT E ROSEBUD-I 94	331.0	\$1,985,984	46.267542	-106.423062
71	I00094111+05931	305401000.BRG.746	SWEENEY CREEK, COUNTY RD	221.0	\$1,104,987	46.267398	-106.323980
72	I00094108+02111	305401000.BRG.744	SEP COUNTY ROAD	78.0	\$311,995	46.267395	-106.393532
73	I00094104+02232	305401000.BRG.743	ROSEBUD CREEK	173.0	\$864,993	46.267282	-106.476760
74	I00094095+02362	305401000.BRG.739	INT EAST FORSYTH	190.0	\$950,000	46.267154	-106.665203
75	I00094103+09562	305401000.BRG.741	INT W ROSEBUD S 446/447	125.0	\$625,000	46.267081	-106.482324
76	I00094104+02231	305401000.BRG.742	ROSEBUD CREEK	173.0	\$864,993	46.266966	-106.476711
77	I00094095+02361	305401000.BRG.738	INT EAST FORSYTH	195.0	\$975,000	46.266910	-106.665006
78	I00094103+09561	305401000.BRG.740	INT W ROSEBUD S 446/447	162.0	\$810,000	46.266763	-106.482269
79	L44129000+03001	305401000.BRG.2370	SEP I 94 SO FRONT RD	305.0	\$1,830,000	46.266506	-106.628159
80	L44148000+02501	305401000.BRG.2371	SEP I 94	307.0	\$1,841,988	46.265852	-106.549770
81	L44303007+07001	305401000.BRG.2385	SWEENEY CREEK 064	108.0	\$432,000	46.265616	-106.326063
82	I00094115+04991	305401000.BRG.750	JR GRADE SEP	17.3	\$69,029	46.264705	-106.243166

**APPENDIX C-4. BRIDGES IN WILDFIRE HAZARD IMPACT AREA  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Map Key	Bridge No.	Unique ID	Feature Crossing	Bridge Length (ft.)	Value	Latitude	Longitude
83	P00014270+03311	305401000.BRG.3372	YELLOWSTONE RIVER	834.0	\$5,838,000	46.264591	-106.696104
84	I00094114+02372	305401000.BRG.749	SEP COUNTY ROAD	124.0	\$619,997	46.261230	-106.270027
85	I00094081+09692	305401000.BRG.733	INT RESERVATION CREEK RD	180.0	\$900,000	46.260958	-106.931810
86	I00094114+02371	305401000.BRG.748	SEP COUNTY ROAD	124.0	\$619,997	46.260923	-106.270038
87	I00094081+09691	305401000.BRG.732	INT RESERVATION CREEK RD	180.0	\$900,000	46.260660	-106.931966
88	L44311005+07001	305401000.BRG.2389	ARMELLS CREEK 045	120.0	\$600,000	46.259707	-106.805212
89	L44311007+07001	305401000.BRG.2390	WYANT COULEE 044	64.0	\$256,000	46.259698	-106.845791
90	L44311002+06001	305401000.BRG.2388	DRAINAGE 052	58.0	\$232,000	46.258487	-106.745102
92	P00014270+08881	305401000.BRG.3374	INT WEST FORSYTH I 94	246.0	\$1,476,000	46.256875	-106.693669
93	L44311001+01001	305401000.BRG.2387	SMITH CREEK 053	89.0	\$355,997	46.253729	-106.720951
94	I00094092+02622	305401000.BRG.737	SMITH CREEK, COUNTY ROAD	221.0	\$1,104,987	46.252921	-106.720912
95	I00094092+02621	305401000.BRG.736	SMITH CREEK, COUNTY ROAD	220.0	\$1,100,000	46.252646	-106.720921
96	I00094088+00982	305401000.BRG.735	ARMELLS CR, BN RAILROAD	422.0	\$2,953,986	46.250701	-106.806332
97	I00094088+00981	305401000.BRG.734	ARMELLS CR, BN RAILROAD	394.0	\$2,757,995	46.250387	-106.806290
98	P00039051+02161	305401000.BRG.3632	INT COLSTRIP I 94	245.0	\$1,470,000	46.249965	-106.816141
99	P00039050+05681	305401000.BRG.3631	STOCKPASS	15.0	\$60,000	46.237907	-106.816186
100	P00039049+05081	305401000.BRG.3630	STOCKPASS	15.0	\$60,000	46.224403	-106.818126
101	S00447005+00131	305401000.BRG.4470	ROSEBUD CREEK	164.0	\$820,000	46.198012	-106.492790
102	S00447005+01041	305401000.BRG.4471	ROSEBUD CREEK OVERFLOW	138.0	\$689,993	46.197071	-106.491478
103	P00039046+00581	305401000.BRG.3629	STOCKPASS	15.0	\$60,000	46.175786	-106.821194
104	P00039043+08381	305401000.BRG.3628	ARMELLS CREEK	92.0	\$367,992	46.151863	-106.798342
105	P00039043+07941	305401000.BRG.3627	ARMELLS CREEK	213.0	\$1,064,993	46.150806	-106.795470
106	P00039043+06251	305401000.BRG.3626	BN RAILROAD	214.0	\$1,069,997	46.149696	-106.792455
107	P00039043+04701	305401000.BRG.3625	STOCKPASS	12.0	\$47,992	46.148601	-106.789486
108	P00039039+09401	305401000.BRG.3624	STOCKPASS	12.0	\$47,992	46.102974	-106.760626
109	L44402000+02001	305401000.BRG.2392	ARMELLS CREEK 038	50.0	\$200,000	46.102080	-106.763666
110	P00039038+07711	305401000.BRG.3623	BN RAILROAD	394.0	\$2,758,000	46.089610	-106.745965
111	P00039038+06861	305401000.BRG.3622	SHEEP CREEK	20.0	\$80,000	46.088385	-106.744468
112	P00039038+03951	305401000.BRG.3621	EAST FORK ARMELLS CREEK	109.0	\$435,997	46.085481	-106.740922
113	P00039037+02171	305401000.BRG.3620	STOCKPASS	15.0	\$60,000	46.072833	-106.724458
114	P00039036+04791	305401000.BRG.3619	STOCKPASS	12.0	\$47,992	46.066701	-106.711579
115	P00039030+06201	305401000.BRG.3618	STOCKPASS, MCGILVREY CR	12.0	\$47,992	45.993164	-106.655588
117	P00039022+01521	305401000.BRG.3617	BN RAILROAD (CONVEYOR)	260.0	\$1,560,000	45.874747	-106.626549
118	S00332039+06161	305401000.BRG.4338	TONGUE RIVER	215.5	\$1,077,428	45.839713	-106.220301
119	L44200008+05001	305401000.BRG.2374	ROSEBUD CREEK 047	41.0	\$163,990	45.829773	-106.421353
120	L44200008+07001	305401000.BRG.2375	ROSEBUD CR OVRFLOW 046	40.0	\$160,000	45.829134	-106.423407
121	L44300002+02001	305401000.BRG.2382	ROSEBUD CREEK 048	60.0	\$240,000	45.784700	-106.540900
122	P00039013+04521	305401000.BRG.3615	ROSEBUD CREEK	142.0	\$710,000	45.767318	-106.570117
123	P00039014+05001	305401000.BRG.3616	STOCKPASS, DRAINAGE	20.0	\$80,000	45.760429	-106.590817
124	S00332047+08001	305401000.BRG.4339	DRAINAGE	30.0	\$120,000	45.753888	-106.302316
125	P00037061+04521	305401000.BRG.3611	TONGUE RIVER	203.9	\$1,019,521	45.593139	-106.286934
126	P00037063+01241	305401000.BRG.3612	OTTER CREEK	112.0	\$447,992	45.588055	-106.254885
127	S00566004+00001	305401000.BRG.4578	BRIDGE CREEK	33.0	\$131,995	45.546541	-106.296053
128	S00566024+00401	305401000.BRG.4579	HANGING WOMAN CREEK	66.0	\$263,990	45.319972	-106.518985
129	L44524001+00001	305401000.BRG.2394	HANGING WOMAN CREEK 074	60.0	\$240,000	45.295337	-106.503538

**CRITICAL FACILITEIS IN WILDFIRE HAZARD IMPACT AREA**

**ROSEBUD COUNTY MHMP - 2021 UPDATE**

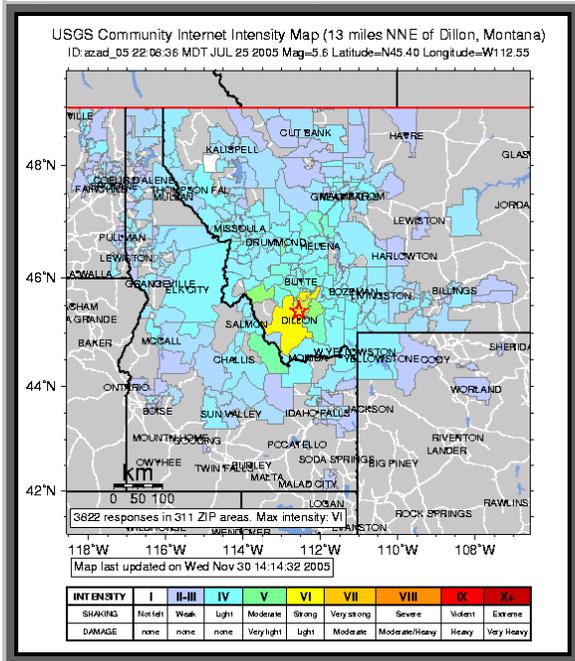
<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Angela Post Office	CF	Federal	Angela	1 Anglea Rd. S	\$242,160	46.729156	-106.200183
Rosebud Co. Shop	CF	Municipal	Angela		\$66,801	46.728818	-106.199978
Cell Tower	CF	Communications	Ashland	5992 Tongue River Rd.	\$175,000	45.586500	-106.263000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	Ashland	5992 Tongue River Rd.	\$19,000	45.586500	-106.263000
Ashland Post Office	CF	Federal	Ashland	304 Main St.	\$140,917	45.591150	-106.264844
USFS Ashland Ranger Station	CF	Federal	Ashland	2378 US Highway 212	\$300,000	45.593992	-106.271764
Ashland Volunteer Fire Dept.	CF	Fire	Ashland	5951 Tongue River Rd.	\$133,245	45.596823	-106.274093
St. Labre Volunteer Fire Dept.	CF	Fire	Ashland	1000 Tongue River Rd.	\$133,245	45.607014	-106.282099
Ashland Sheriff Dept., Ambulance & Public Health	CF	Law Enforcement/Medical	Ashland	Hwy 212 MM 62	\$149,121	45.590971	-106.265694
Bighorn Valley Health Center	CF	Medical	Ashland	501 Main St.	\$459,950	45.591711	-106.267397
Ashland Water & Sewer Facility	CF	Municipal	Ashland		\$200,000	45.611465	-106.272280
St. Labre Mission Airport	CF	Municipal	Ashland		\$79,607	45.606492	-106.276057
Ashland Elementary School and 7-8	VP	School	Ashland	8 Old Mission Rd.	\$4,595,000	45.594938	-106.271149
St. Labre Schools	VP	School	Ashland	1000 Tongue River Rd.	\$4,595,000	45.605177	-106.281006
Heritage Center Assisted Living	VP	Senior	Ashland	2232 Tongue River Rd.	\$4,771,030	45.588456	-106.265958
Tongue River Electric Co-op	CF	Utility	Ashland	2435 US Highway 212	\$195,000	45.589715	-106.261575
Birney Post Office	CF	Federal	Birney	302 Commercial St.	\$25,600	45.321889	-106.515688
Rosebud Co. Shop, Birney	CF	Municipal	Birney	120 Commercial St.	\$215,474	45.324520	-106.511834
Birney Elementary School	VP	School	Birney	205 Commercial St.	\$1,690,000	45.321930	-106.514414
MT DOT Shop, Colstrip	CF	Municipal	Colstrip	2730 MT 39	\$199,464	45.907917	-106.639116
Cell Tower	CF	Communications	County	258 Hanging Woman Creek Rd.	\$175,000	45.291800	-106.500000
Cell Tower	CF	Communications	County	1261 Highway 39	\$175,000	46.095100	-106.753000
Cell Tower	CF	Communications	County	18 Howard Cannister Rd.	\$175,000	46.264700	-106.923000
Cell Tower	CF	Communications	County	19 Wright Ln.	\$175,000	46.268000	-106.391000
Cell Tower	CF	Communications	County	480 Little Porcupine Creek Rd.	\$175,000	46.335300	-106.700000
Cell Tower	CF	Communications	County	2 Nielsen Ln.	\$175,000	46.342200	-106.698000
Cell Tower	CF	Communications	County	6 Nielsen Ln.	\$175,000	46.343500	-106.698000
Cell Tower	CF	Communications	County	2423 Little Porcupine Creek Rd.	\$175,000	46.593500	-106.644000
Dispatch Repeater-Rosebud Co. 911	CF	Communications	County	506 Little Porcupine Creek Rd.	\$19,000	46.338900	-106.698000
Forsyth Radio Tower	CF	Communications	County	Little Porcupine Cr. Rd.	\$88,501	46.335213	-106.698314
North Radio Tower	CF	Communications	County		\$19,000	46.338044	-106.697314
Colstrip Airport	CF	Municipal	County		\$79,607	45.853083	-106.700458
Rosebud Co. Landfill	CF	Municipal	County	2382 Hwy 39	\$302,243	45.957693	-106.666649
Rosebud Co. Landfill	CF	Municipal	County	Highway 39	\$302,243	46.246714	-106.819426
Tillet Field Airport	CF	Municipal	County	2977 Old Hwy 10	\$79,607	46.269417	-106.622387
Amish Parochial School	VP	School	County	41 Amish Lane	\$1,000,000	45.696190	-106.297107
Colstrip Substation	CF	Utilities	County	MT Hwy 39	\$195,000	45.844970	-106.577055
Finch Substation	CF	Utility	County		\$195,000	46.290095	-107.006367
Howard Substation	CF	Utility	County		\$195,000	46.270375	-106.902498
Nichols Substation	CF	Utility	County		\$195,000	46.256087	-106.798479
Rosebud Substation	CF	Utility	County		\$195,000	46.266875	-106.462434

**CRITICAL FACILITEIS IN WILDFIRE HAZARD IMPACT AREA****ROSEBUD COUNTY MHMP - 2021 UPDATE**

<b>Critical Facility Name</b>	<b>CF / VP</b>	<b>CF Type</b>	<b>Jurisdiction</b>	<b>Address</b>	<b>Value</b>	<b>Latitude</b>	<b>Longitude</b>
Smith Creek Substation	CF	Utility	County		\$195,000	46.252137	-106.721974
Western Energy Mine	CF	Utility	County	138 Rosebud Lane	\$10,000,000	45.855759	-106.624816
KIKC Radio Station	CF	Communication	Forsyth	210 Front St.	\$99,525	46.258747	-106.689364
Cell Tower	CF	Communications	Forsyth	205 Radio Tower Ln.	\$175,000	46.262800	-106.670000
Forsyth Translator	CF	Communications	Forsyth	F. Hill, 46 15' 39	\$10,000	46.263015	-106.669859
Rosebud Co. Fairgrounds	CF	Municipal	Forsyth	513 N 16th Ave.	\$3,872,093	46.273884	-106.671423
Ingomar Post Office	CF	Federal	Ingomar	403 1st Ave.	\$40,000	46.577536	-107.373961
Rosebud Post Office	CF	Federal	Rosebud	125 Main St.	\$40,000	46.274794	-106.445026
Rosebud Schools	VP	School	Rosebud	601 Main St.	\$4,595,000	46.275506	-106.441740
Sumatra Post Office	CF	Federal	Sumatra	Sumatra Rd.	\$40,000	46.617853	-107.551533

Figure 4.2.2 shows an example from southwest Montana in 2005. This scale does not measure the characteristics of the earthquakes.

**Figure 4.2.2 Example of a Modified Mercalli Intensity Scale Map**

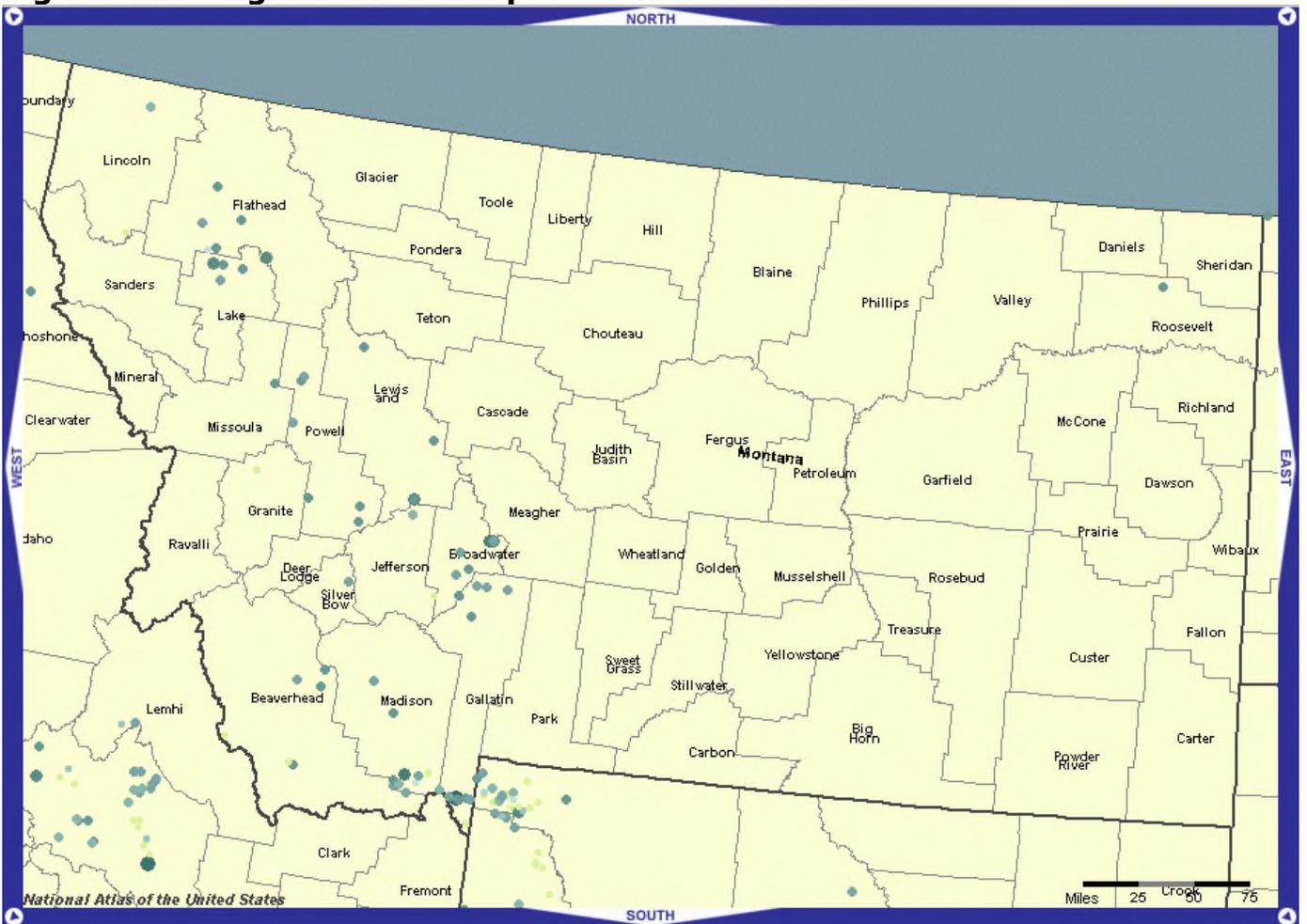


Source: US Geological Survey, 2005a.

## History

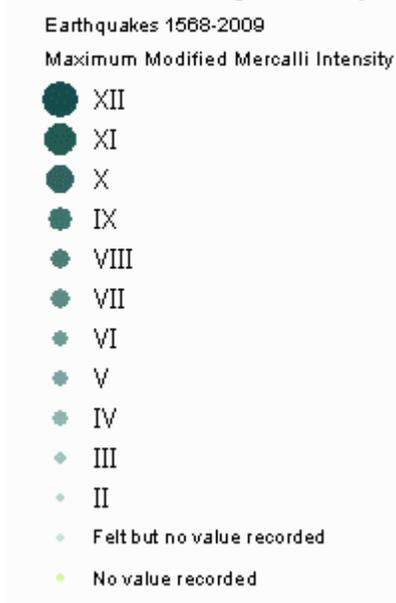
According to the U.S. Geological Survey, Montana is one of the most seismically active states in the country. However, relatively few earthquake epicenters have occurred in eastern Montana over the past 100 years; most seismic activity occurs in the western part of the State. Figure 4.2.3 shows the significant earthquakes as noted by the US Geological Survey from 1568-2009. No significant earthquakes have occurred in Rosebud County.

**Figure 4.2.3 Significant Earthquakes in Montana: 1568-2009**



**Earthquakes 1568 - 2009**

Source: U.S. Geological Survey



The closest 5.5 magnitude or greater earthquakes occurred over 200 miles away in Yellowstone National Park and near Williston, ND. These earthquakes were felt hundreds of miles away. Residents of Rosebud County may have felt these earthquakes but did not experience any damage.

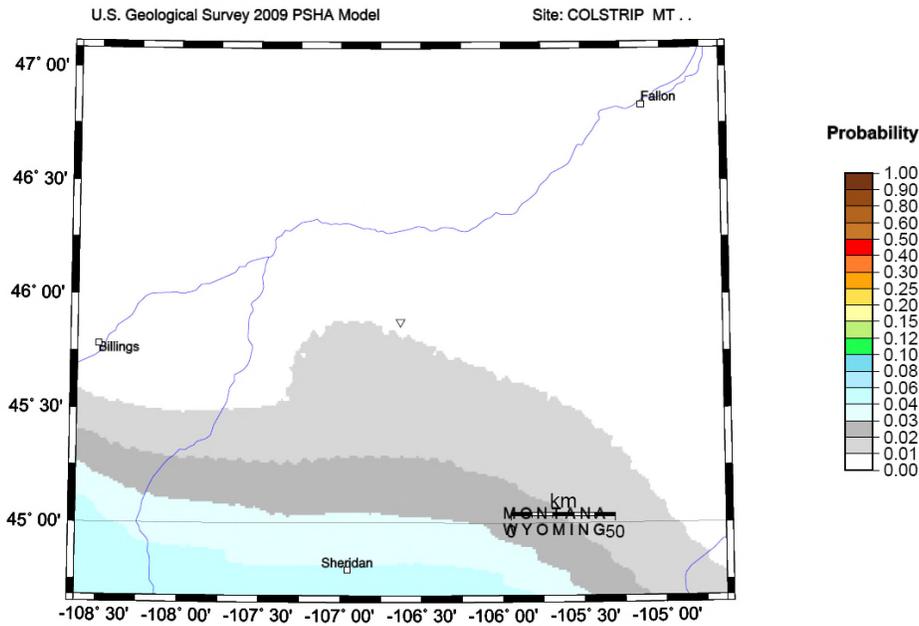
Suspected earthquakes in the Colstrip area from 2000 were determined to be due to mining activities in Decker, MT. (US Geological Survey, 2006a)

## **Probability**

Strong, damaging earthquakes are infrequent events, particularly in Rosebud County. Moderate earthquakes, however, have occurred in areas with no known faults and little seismicity. Although small, the potential for a damaging earthquake in Rosebud County exists. Earthquake experts use probabilities when determining the seismicity of an area. Figure 4.5.2.3A shows the probability of a magnitude 5.0 or greater earthquake within 100 years and 31 miles (50 kilometers). Rosebud County has an approximate probability ranging from less than 1% to 6% with the hazard increasing to the south. The City of Colstrip and City of Forsyth both have an approximate probability of less than 1%. Figure 4.5.2.3B shows the probability of a magnitude 6.0 or greater earthquake within 500 years and 31 miles (50 kilometers). Rosebud County has an approximate probability ranging from less than 1% to 6%.

### Figure 4.2.4 Probability of a 5.0 or greater earthquake within 100 years and 31 miles

Probability of earthquake with M > 5.0 within 100 years & 50 km

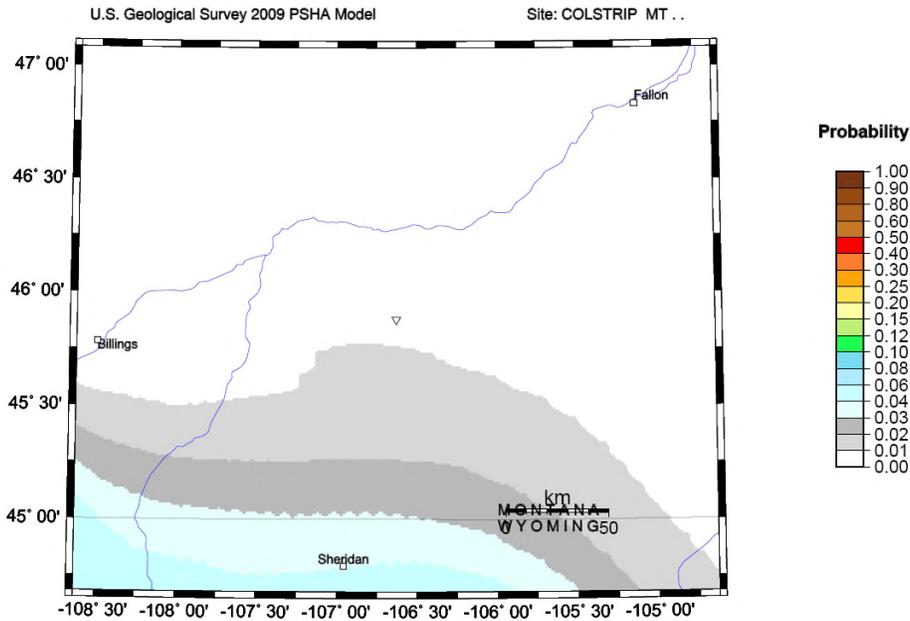


GMT 2013 May 10 18:15:51 EQ probabilities from USGS OFR 08-1128 PSHA. 50 km maximum horizontal distance. Site of interest: triangle. Fault traces are brown; rivers blue. Epicenters M>=5.0 circles.

Source: US Geological Survey, 2009 Probability Mapping.

### Figure 4.2.5 Probability of a 6.0 or greater earthquake within 500 years and 31 miles

Probability of earthquake with M > 6.0 within 500 years & 50 km



GMT 2013 May 10 18:33:10 EQ probabilities from USGS OFR 08-1128 PSHA. 50 km maximum horizontal distance. Site of interest: triangle. Fault traces are brown; rivers blue. Epicenters M>=5.0 circles.

Source: US Geological Survey, 2009 Probability Mapping.

Engineers and building officials typically use a slightly more complex probability scheme. Peak ground acceleration (PGA) is the maximum horizontal acceleration experienced by a particle during the course of the earthquake motion. When acceleration acts on a physical body, the body experiences the acceleration as a force. Gravity is a commonly known force of nature, and therefore, the units of acceleration are measured in terms of g, the acceleration due to gravity. At 10%g, pre-1940 dwellings are likely to perform poorly and pre-1975 dwellings are likely to have some vulnerability to earthquake shaking. (US Geological Survey, 1996)

Figure 4.2.6 shows PGA mapping for Rosebud County. The earthquake peak ground acceleration that has a 10% probability of exceedance in 50 years across Rosebud County ranges from 1 to 3%g. Colstrip and Forsyth have an approximate value between 1 and 2%g. For the entire county, the earthquake peak ground acceleration that has a 2% probability of exceedance in 50 years has a value between 4 and 10%g. To make sense of these values, at 0.7%g, the ground shaking is felt indoors by many and outdoors by a few during the day. At night, some people are awakened, and dishes, windows, and doors are disturbed. Walls make a cracking sound. The sensation is described as like a heavy truck striking the building. At 1.5%g, the ground motion is felt by nearly everyone with many awakened. Some dishes and windows may be broken. Unstable objects are overturned. At 3%g, the earthquake is felt by all with many frightened. Some heavy furniture is moved with a few instances of fallen plaster. Damage is considered slight. At 7%g, damage is negligible in buildings of good design and construction, slight to moderate in well-built ordinary structures, and considerable in poorly-built or badly designed structures. Some chimneys may be broken, and the shaking is noticed by people driving cars. (Qamar, 2005)

## **Magnitude**

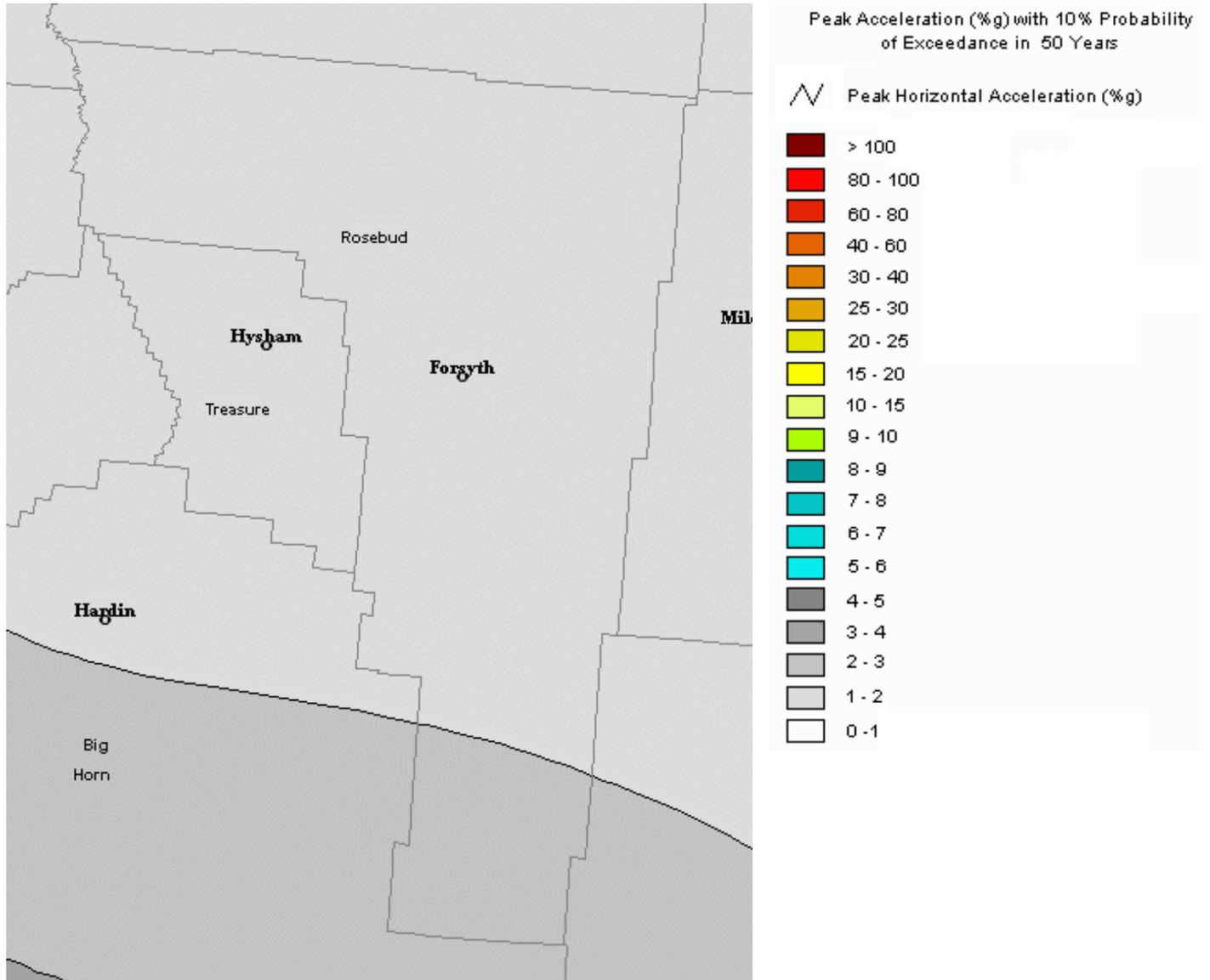
Even a 500-year earthquake event for this region is a relatively weak earthquake. Therefore, for the purposes of this plan, the greatest magnitude earthquake is assumed to be magnitude 5.0-5.5 on the Richter scale. Generally, near the epicenter, the intensity of such an earthquake is likely VI on the modified Mercalli scale. A modified Mercalli intensity of VI estimates that everyone feels the ground shaking, people have trouble walking, and unsecured objects fall. Damage is typically slight in poorly constructed buildings with little structural damage. A more significant earthquake is always possible, but is not probable.

## **Mapping**

As discussed in the probability section, structural engineers often use peak ground acceleration as a guide for seismically designing structures. Figure 4.2.6 shows the earthquake peak ground acceleration that has a 10% probability of exceedance in 50

years. The peak ground accelerations shown on Map 4.5.2.5A are very low and demonstrate the entire county is at low relative risk for earthquake shaking.

**Map 4.2.6 Peak Ground Acceleration with a 10% Probability of Exceedance in 50 Years**



**Associated Hazards and Other Factors**

The seismic action of earthquakes often triggers other events. Strong earthquakes can damage infrastructure resulting in utility failures, communications failures, dam failures, hazardous materials releases, and transportation accidents. Almost any other hazard, such as extreme cold, can exacerbate the effects of and response to a strong earthquake.

## **Vulnerabilities**

### *Critical and Special Needs Facilities*

Earthquake damages are difficult to predict, particularly in areas with low earthquake frequency and severity, such as eastern Montana. A structural engineer can make specific determinations on individual structures. More generally, losses from earthquakes can be estimated using HAZUS-MH, a loss estimation model developed by the Federal Emergency Management Agency. This model uses national datasets and hazard information to estimate the earthquake losses from a particular event at the census tract or county level. Although the default data and methods provided with the model contains many generalizations that could lead to inaccuracies, the model provides a ballpark estimate of what earthquake losses may occur and the magnitude of such.

One scenario was run through the model. The model used a 500-year probabilistic hazard with a 5.5 moment magnitude. The results show the critical and special needs facilities listed in the HAZUS-MH default databases have a 99% probability of no damage and a 1.0% probability of slight or moderate damage. Given these probabilities, the threat to critical and special needs facilities from earthquakes is low to moderate.

### *Structures*

Using the same HAZUS-MH methodology as the critical and special needs facilities, the building stock in Rosebud County was tested through the 500-year probabilistic model. The results estimated that eighteen residential structures would have moderate damage, 68 would have slight damage, and 3,365 would have no damage. HAZUS-MH estimates the direct economic losses for buildings countywide would be \$390,000. As with any loss estimate, large errors may be present and estimations should only be used for planning purposes.

### *Infrastructure*

Infrastructure, as quantified in the default HAZUS-MH database, suffers relatively few damages. The transportation network shows very little damage, with the exception of slight damages (\$130,000) to airport facilities. The potable water, waste water, electrical, and natural gas systems remain functional, however, several leaks or breaks result in about \$240,000 in damages. Overall, infrastructure remains relatively intact following the 500-year probabilistic earthquake based on HAZUS-MH estimates. Should a strong earthquake damage or disable a power plant facility, the effects on electricity could be seen throughout the northwestern United States.

### *Population*

The effect of earthquakes on the population of Rosebud County appears to be negligible. The HAZUS-MH 500-year probabilistic earthquake scenario indicates no casualties. Isolated casualties in any hazard event cannot be ruled out, though.

### *Economic, Ecologic, Historic, and Social Values*

Given that most structures and infrastructure remains unscathed in all but the most extreme earthquake scenarios, the effect on the economy from earthquakes is assumed to be low. Earthquakes usually have the greatest impact on historic structures. Older buildings, particularly unreinforced masonry, usually cannot withstand strong seismic shaking. Therefore, historic structures could crumble in a strong earthquake. Ecological and social values would likely suffer little damage based on the estimated preservation of the road network and relatively light ground shaking.

### *Future Development*

Given the relatively low seismic risk in Rosebud County, new structures and infrastructure would likely be able to withstand the probable shaking. Rosebud County does not have residential building codes, except for electric and plumbing codes required by the state, however, most new construction is generally of decent quality. Forsyth has building codes for all structures and Colstrip does for residential structures.

### **Data Limitations**

Since earthquakes are relatively rare events, perhaps the greatest challenges are understanding the true probability and damages possible. Greater development of digital data for use in the HAZUS modules would improve the modeling. Improving the modeling and an assessment of individual facilities by a structural engineer would allow for a more accurate vulnerability assessment.

### **Overall Summary**

All of Rosebud County is susceptible to earthquakes with the probability of an event increasing in the southern part of the County, but the potential for damaging earthquakes is unlikely.



Rosebud County  
Multi-Hazard  
Mitigation Plan  
2021 Update

**APPENDIX D**  
Mitigation  
Documentation



APPENDIX D-1

EXAMPLE  
MITIGATION  
PROJECTS

## ALL HAZARD - EXAMPLE MITIGATION PROJECTS

<b>ALL HAZARD - EXAMPLE MITIGATION PROJECTS</b>		
	<b>Prevention</b>	
1		Update Growth Policies to require stricter consideration of high hazard areas during subdivision reviews.
2		Consider updating Growth Policies to encourage growth in low hazard areas.
3		Consider updating subdivision regulations to adopt higher minimum standards that improve disaster resistance.
	<b>Emergency Services</b>	
4		Continue to recruit and provide training to first responders and EMS volunteers.
5		Update communication equipment, as appropriate.
6		Obtain mass notification capabilities throughout the jurisdiction.
7		Provide NOAA weather radios to all schools and critical facilities.
8		Look for corporate sponsorships to provide NOAA weather radios to the public.
9		Negotiate with cell phone companies to get a tower in towns and rural areas, as needed.
10		Identify and secure a back-up location for dispatch center.
11		Obtain generators and install generator hookups at critical facilities and shelters, as needed.
12		Provide emergency back-up power to critical facilities; including emergency generators, secondary feeds, and portable generators with standard camlock connections.
13		Develop templates for messaging that could be used for transmission on radio stations or posts on social media (road reports, weather forecasts and conditions, emergency conditions and events, and public services).
14		Obtain a self-start generator for FM radio antennas.
15		Obtain additional repeaters or relocate existing repeaters to enhance radio communications.
16		Obtain mobile repeaters for patrol cars.
17		Consider a mandatory signage program consisting of reflective, non-flammable address numbers at a standard height.
18		Enhance general public alert, notification and warning capabilities.
19		Continue to rebroadcast Early Alert System notifications.
20		Obtain stationary and/or mobile generators for critical facilities and emergency shelters and install hookups.
21		Identify facilities that meet national standards to serve as emergency shelters and create Memorandums of Understanding.
22		Continue to partner with response agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.
23		Identify emergency fuel supply and equip with generator.
24		Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.
	<b>Public Outreach and Education</b>	
25		Interact with public safety officials and schools on planning for emergencies.
26		Provide awareness on developing a family disaster plan and disaster supply kit.
27		Promote registration of cell phones for jurisdiction's Emergency Notification System.
28		Educate local government officials in mitigation and readiness for all hazards.
29		Provide special needs facilities with guidelines for disaster preparedness measures, including pet needs.
30		Develop an ad campaign on readiness for evacuation or other emergencies.

<b>ALL HAZARD - EXAMPLE MITIGATION PROJECTS</b>		
31		Obtain electric signs that can be used for various emergency related situations.
<b><i>Mapping, Analysis and Planning Projects</i></b>		
32		Enhance GIS data to better to assist with mitigation.
33		Develop local hazard communication plan that establishes protocol for providing information to residents
34		Improve and develop emergency preparedness and response plans.
35		Coordinate with Red Cross for mass care and sheltering plan.
36		Promote the need for emergency action plans for special needs populations.

## COMMUNICABLE DISEASE - EXAMPLE MITIGATION PROJECTS

<b>COMMUNICABLE DISEASE - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Prevention</i></b>	
1		Control mosquito populations in wet areas.
2		Increase immunization rates for vaccine preventable communicable diseases in all populations.
3		Prevent and control communicable disease by surveillance.
4		Prevent and control communicable disease by activities to raise and sustain vaccine coverage in all populations.
5		Conduct risk-based inspections of all food service establishments.
6		Enforce sewage and solid waste disposal local and state regulations.
	<b><i>Public Outreach and Education</i></b>	
		Provide public outreach on communicable disease prevention.
7		Promote mass vaccination clinics.
8		Promote public education on preventing communicable disease.
9		Promote active surveillance between Public Health and healthcare providers.
10		Provide education and/or training for Public Health Dept. staff and key partners in medical community.
	<b><i>Emergency Services</i></b>	
11		Conduct exercise on distribution of vaccinations and/or antibiotics.
12		Complete exercise and update Chempack Plan on annual basis.
13		Procure, train, and supply all emergency responders for potential threats annually.
14		Expand listserv for Health Alert Network.
15		Collaborate with community partners to train and exercise public health emergency response plans.
	<b><i>Mapping, Analysis, and Planning Projects</i></b>	
16		Collaborate and coordinate with community partners to review and update public health emergency response plans annually.

## CYBER SECURITY - EXAMPLE MITIGATION PROJECTS

<b>CYBER SECURITY - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Mapping/Analysis/Planning Projects</i></b>	
1		Conduct vulnerability assessment of critical cyber infrastructure (SCADA) systems.
2		Conduct audit of local jurisdiction operations security.
3		Conduct external security audit of fire walls on networks.
4		Perform cyber mapping for planning and vulnerability mitigation.
5		Develop cloud-based backup system for government network systems.
	<b><i>Emergency Services</i></b>	
6		Implement recommendations from vulnerability assessment.
	<b><i>Property Protection</i></b>	
7		Expand access to controls that check computers to enhance security.
	<b><i>Public Education and Awareness</i></b>	
8		Require training for employees and local organizations on cyber security.
9		Encourage/make available end-user training on email-related threats.
10		Continue to raise level of awareness on what public can do to prevent and /or mitigate threat of lone gunman/active shooter incident (report suspicious or unusual behavior, stop-the-bleed training, etc.)
11		Provide outreach to senior citizens on cyber security.

## DAM FAILURE - EXAMPLE MITIGATION PROJECTS

<b>DAM FAILURE - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Prevention</i></b>	
1		Develop planning and zoning guidelines for open space preservation within the floodway.
2		Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.
3		Conduct dam safety inspections.
4		Drain reservoir when conditions appear unsafe.
5		Implement zoning below and around dams.
	<b><i>Structural Projects</i></b>	
6		Install movement sensors on faces of dams to detect pending failure.
7		Obtain and install real time monitoring and/or telemetry equipment on dams.
8		Construct dam improvements including spillway enlargements.
9		Remove unsafe dams.
10		Reconstruct rip rap on earthen dams.
11		Decommission or modify non-essential dams that present unacceptable risk of failure.
	<b><i>Emergency Services</i></b>	
12		Promote installation of early warning systems on high hazard dams to interface with dispatch.
13		Continue to participate in dam exercises with emergency response partners.
14		Investigate early warning systems for residents below dams.
	<b><i>Public Outreach and Education</i></b>	
15		Conduct public outreach / education with residents living in inundation areas.
16		Promote the benefit of using mass notification to alert downstream residents of dam failure hazards.
17		Target potentially affected citizens with information about the dam failure risk in their area and include information on exercises.
18		Provide outreach to residents on siren warning system for dam failure.
	<b><i>Mapping/Analysis/Planning</i></b>	
19		Develop evacuation plans, including means of transporting people and evacuation routes.
20		Revise breach flow projections for dams based on enhanced digital elevation models and improved flood modeling software.
21		Ensure owners of high hazard dams update EAPs and provide copies to DES.

## DROUGHT - EXAMPLE MITIGATION PROJECTS

<b>DROUGHT - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Structural Projects</i></b>	
1		Consider feasible water storage where it will increase water supply security such as development of catchment basins and/or percolation ponds.
2		Improve water conveyance efficiencies in agricultural, municipal, and industrial uses.
3		Create infiltration basins to capture early spring runoff.
	<b><i>Public Outreach and Education</i></b>	
4		Increase the educational emphasis given to forest and range management practices for the minimizing of drought impacts.
5		Develop and distribute range and agriculture management tools for local producers using weather and soil monitoring, planning, and education.
6		Support MSU Extension's efforts to develop and distribute range and agriculture management tools to mitigate affects from drought.
	<b><i>Natural Resource Protection</i></b>	
7		Promote and improve floodplain restoration and reconnection including restoration of hydrologic functions.
8		Support initiative of prescribed burning program to reduce conifer encroachment which impacts water availability.
	<b><i>Prevention</i></b>	
9		Encourage water conservation by domestic, municipal, and industrial users.
10		Establish stronger economic and other incentives for private investments in water conservation.
11		Support the State's efforts to establish a drought emergency fund for temporary water leases.
12		Support water storage projects to enhance late summer flows.
13		Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU extension.
14		Support improving water conveyance efficiencies in agricultural uses.
	<b><i>Mapping, Analysis and Planning Projects</i></b>	
15		Pursue Drought Resiliency Planning Committee and Drought Coordinator position.

## FLOODING - EXAMPLE MITIGATION PROJECTS

<b>FLOODING - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Prevention</i></b>	
1		Create planning and zoning guidelines to preserve open space within the floodplain.
2		Develop storm water management guidelines.
3		Update floodplain ordinances with new DFIRM to protect future development.
4		Implement a policy for residential and non-residential approach permits which includes installation standards and enforcement.
5		Use conservation easements in high hazard areas such as flood prone areas to prevent future development.
6		Determine feasibility of regulating development within unmapped flood prone and channel migration zones.
7		Use State model floodplain ordinance to revise local flood ordinances.
8		Continue compliance with the National Flood Insurance Program and the Local Flood Ordinance.
	<b><i>Property Protection</i></b>	
9		Create structural openings in foundation walls allowing floodwaters in and out, thus avoiding collapse.
10		Protect sewers from backing up by installing back-flow valves.
11		Install backflow valves or plugs in drains and toilets to prevent floodwaters from entering buildings.
12		Purchase and instal sump pumps with back-up power.
13		Remove woody vegetation from the edge of levees and dikes.
14		Relocate, elevate and/or floodproof structures which have been repeatedly flooded.
15		Install security fencing and signage on levees and dikes.
16		Consider forming a flood control district to address concerns with dikes and levees.
17		Perform maintenance on drainage systems.
18		Identify and secure use of emergency retention ponds.
19		Relocate furnaces, hot water heaters, and electrical panels from flood-prone areas.
	<b><i>Natural Resource Protection</i></b>	
20		Protect wetlands that can be used for flood control.
21		Restore connectivity of floodplain and function around former facilities.
22		Work with partner agencies to identify erosion and sediment control issues.
	<b><i>Structural Projects</i></b>	
23		Install culverts in areas where water runoff is problematic.
24		Construct levees/floodwalls/dikes.
25		Continue to resize and upgrade culverts, resize bridges, and elevates roads in various locations to improve conveyance of flood waters.
26		Replace culverts with bridges to mitigate impacts of runoff.
27		Reduce flooding by installing drainage ditches.
28		Resize and upgrade culverts in various locations throughout the jurisdiction.
29		Identify locations throughout the jurisdiction where culverts are needed.
30		Increase stormwater systems in poor drainage areas.
32		Install and/or expand stormwater systems in municipalities where needed.
33		Determine mitigation for waste-water lagoons which are in mapped flood hazard area.
34		Encourage MDT to implement appropriate mitigation for highways that flood.

<b>FLOODING - EXAMPLE MITIGATION PROJECTS</b>		
35		Replace rip-rap to preserve integrity of bridges where compromised.
36		Encourage responsible agency to remove debris in creeks to maintain integrity of culverts and bridges.
37		Consider ice jam mitigation for vulnerable segments of rivers.
38		Elevate community water supply wells where vulnerable to flooding.
39		Maintain the existing stormwater infrastructure to mitigate impacts from flash flooding.
40		Evaluate feasibility of creating a flood channel to redirect a portion of high water flow.
41		Review use of detention ponds to mitigate flooding at problem areas within the jurisdiction.
<b><i>Emergency Services</i></b>		
42		Obtain river gauges where needed for modeling and flood prediction.
43		Develop flood warning system.
44		Establish flood response activities.
45		Conduct exercises on levee failure/breach.
<b><i>Public Outreach and Education</i></b>		
46		Provide flood maps for real estate disclosure.
47		Educate homeowners on the advantages of purchasing flood insurance through the National Flood Insurance Program.
48		Consider joining the Community Rating System volunteer incentive program.
49		Work towards achieving a lower rating through the National Flood Insurance Program Community Rating System.
50		Provide outreach on flood awareness and ways to prevent losses.
51		Provide outreach to repetitive loss property owners (and others) on mitigation programs to relocate, elevate, and floodproof structures in the floodplain.
52		Provide bulletins as needed in agricultural areas that livestock grazing in floodplains should include a high spot where animals can evacuate to.
53		Educate residents on what must be done to manage storm water in the community.
54		Educate development community (including surveyors, builders, realtors, and developers) on floodplain building requirements.
55		Promote personal responsibility to protect individual private property from flooding.
56		Coordinate with the National Weather Service on flood preparedness and disseminate information to public.
<b><i>Mapping/Analysis/Planning</i></b>		
57		Complete an engineering study of what needs to be done to mitigate flooding in flood-prone areas.
58		Assess vulnerability of wastewater treatment plants to flooding or levee damage.
59		Complete floodplain mapping.
60		Complete elevation survey of structures in floodplain.
61		Develop a stormwater management plan.

## HAZARDOUS MATERIAL INCIDENTS - EXAMPLE MITIGATION PROJECTS

<b>HAZARDOUS MATERIAL INCIDENTS - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Prevention</i></b>	
1		Explore the possibility of an alternate route for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population centers.
	<b><i>Property Protection</i></b>	
2		Encourage owners to install perimeter security fencing at bulk chemical and petroleum facilities.
	<b><i>Emergency Services</i></b>	
3		Ensure local emergency responders have adequate training to respond to hazardous material events consistent with local capabilities.
4		Provide basic and refresher haz-mat response training with first responders and exercise regularly.
5		Pursue funding for supplies and equipment trailer.
6		Update and maintain resource list of emergency response supplies/vendors.
7		Obtain regional containment equipment trailers and supplies to strategically position for response in the jurisdiction.
8		Continue to report hazardous material spills to MT DES.
9		Encourage schools to exercise their disaster plans with regard to haz-mat incidents and shelter in place.
10		Obtain personal protective kits for first responders and patrol cars so they can secure scene before haz-mat team arrive.
11		Identify railroad point of contact and establish protocol to shut down rail traffic when needed.
	<b><i>Public Outreach and Education</i></b>	
12		Increase first responder awareness and medical community of common hazardous materials either stored, used or transported through the area.
13		Educate teachers and school staff in schools near hazardous materials facilities and transportation routes in how to limit exposure to hazardous materials to students during an incident.
14		Conduct ongoing awareness training to schools on haz-mat exposure and shelter in place.
15		Evaluate opportunities to inform private property owners who live along state highways on hazardous-material traffic.
	<b><i>Mapping, Analysis and Planning Projects</i></b>	
16		Develop evacuation procedures for homes near transportation networks that commonly carry hazardous materials and near storage facilities and pipelines the house hazardous materials.
17		Explore creating a safe haven for haz-mat loads that may be in trouble.
18		Determine whether a regional haz-mat team could be located in the jurisdiction.
19		Identify and prioritize intersections that could be improved to enhance safety.

### LANDSLIDE - EXAMPLE MITIGATION PROJECTS

LANDSLIDE - EXAMPLE MITIGATION PROJECTS		
	<b><i>Property Protection</i></b>	
1		Conduct study of landslide-prone areas.
2		Implement preservation/stabilization measures of slide-prone areas.
3		Encourage state and federal agencies to implement preservation and stabilization measures at slide-prone areas, as needed.
	<b><i>Prevention</i></b>	
4		Implement Burned Area Emergency Response (BAER) to prevent debris flows associated with past wildfires.

**SEVERE WEATHER - EXAMPLE MITIGATION PROJECTS**

	<b>Prevention</b>	
1		Encourage adoption of State's building construction codes for wind resistance.
2		Implement the tree maintenance ordinance and address problem trees.
3		Promote the use of hurricane clips for buildings vulnerable to high winds.
	<b>Property Protection</b>	
4		Encourage utility companies to bury electric and communication lines in hazard prone areas.
5		Negotiate with utility companies for replacement of weak or rotten power poles.
6		Encourage utility companies to ensure right-of-way around power lines are free of trees or limbs that could cause damage.
7		Protect traffic lights from high winds.
8		Install shutters on windows and doors or otherwise protect building openings from wind damage.
9		Ensure that roof-mounted equipment is securely mounted.
10		Thin trees to reduce wind damage and utilize plant species more resistant to wind.
11		Make sure right-of-way around powerlines are free of trees or limbs that may cause damage.
12		Install 3-mil window film on windows of older schools and critical facilities, as needed, to prevent shattering.
13		Install windows with shatterproof glass at new schools and critical facilities and upgrade windows at existing facilities during regular maintenance.
	<b>Structural</b>	
14		Perform retrofits on public buildings and shelters that could become compromised by snow loads.
	<b>Public Outreach and Education</b>	
15		Promote the National Weather Service's messaging on severe weather preparedness.
16		Continue community outreach on preparation and safety during severe storms and tornadoes.
17		Become and/or maintain status as a NWS Storm Ready Community.
18		Host weather spotter training sessions within communities.
19		Partner with the National Weather Service on the Weather Ready Nation Ambassador Program and increase participation in program.
20		Provide outreach on securing loose objects and pruning large trees that could break during wind events and cause property damage.
21		Provide outreach on the risks of lightning and other severe summer weather hazards.
22		Conduct workshops and educational programs focused on severe weather for public and school children.
23		Promote the use of hurricane clips for buildings vulnerable to high winds.
24		Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.
25		Continue to distribute educational material on how to prepare for winter.
26		Perform public outreach/education of location of emergency shelters.
27		Conduct public outreach campaign where special needs residents would provide information on where they live and what they need.
28		Distribute winter weather information in welcome packets to new residents.
29		Prepare a guide book for special needs populations on winter weather survival.
30		Distribute educational materials to organizations and residents regarding preparedness for loss of power.

**SEVERE WEATHER - EXAMPLE MITIGATION PROJECTS**

<b>SEVERE WEATHER - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Emergency Services</i></b>	
31		Continue coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.
32		Develop a resource list of people who shovel snow from roofs.
33		Continue to aggressively address rural locations so people’s residences can be found for rescue purposes.
34		Obtain generators for emergency shelters.
35		Identify or update list of emergency shelters in each community.
36		Obtain generators for schools to maintain power supply during winter.
37		Consider enhanced snow removal services to support public safety and infrastructure protection.
38		Encourage homeowners to install address plaques at proper height for rescue purposes.
39		Continue to ensure dispatch is aware of special needs residents, where they live and what they need, in order to provide emergency notification and followup, if needed.
	<b><i>Mapping, Analysis, and Planning Projects</i></b>	
40		Structurally analyze all buildings or rooms identified as shelters and strengthen these as necessary.
41		Develop partnerships between utility providers and county & local agencies to identify potentially hazardous trees.
42		Develop and implement programs to keep trees from threatening lives, property, and public infrastructure during wind events.
43		Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property.

## TERRORISM - EXAMPLE MITIGATION PROJECTS

TERRORISM - EXAMPLE MITIGATION PROJECTS		
	<b>Emergency Services</b>	
1		Coordinate state/federal agencies and private industry on potential threats that may target critical facilities or large events.
2		Continue awareness and training on active shooters (i.e. armed intruder training) in schools and critical facilities.
3		Continue to train with DPHHS on strategic national stockpile.
4		Integrate training with emergency services and real scenarios.
5		Prioritize active shooter/armed intruder response training for employees of critical facilities.
	<b>Public Outreach and Education</b>	
6		Pursue funding for development and implementation of a campaign to educate the public on active shooter response.
7		Promote See Something-Say Something Campaign to report unusual behavior.
	<b>Property Protection</b>	
8		Consider installing video surveillance or alarms in critical facilities, especially in unattended locations (i.e. – water towers/communication sites/power or water sub-stations).
9		Consider physical hardening of critical facilities (i.e. anti-vehicle barricades / interior barricades for locking doors [door kicks, door stops] / perimeter fencing / controlled access gates).
10		Install security around municipal water tanks.
	<b>Mapping, Analysis, and Planning Projects</b>	
11		Review Crisis Action Plans in all schools and hospitals to ensure they include adequate security measures.
12		Conduct comprehensive vulnerability assessment of critical facilities and schools and provides priorities.
13		Continue to conduct vulnerability assessment of critical cyber infrastructure with priorities for enhanced security.

## TRANSPORTATION ACCIDENT - EXAMPLE MITIGATION PROJECTS

<b>TRANSPORTATION ACCIDENT - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Emergency Services</i></b>	
1		Implement training program for use of 2-way radio for all school bus drivers.
2		Continue exercises to prepare for mass casualty incidents.
3		Encourage railroad to upgrade condition of railroad crossings throughout the local jurisdiction and improve signage where needed.
4		Recruit and train EMS volunteers to staff Quick Response Units.
5		Obtain equipment and provide training for responding agencies.
6		Acquire appropriate equipment to enhance aviation safety.
7		Invite railroad companies be part of LEPC and do exercises once every two or three years.
	<b><i>Public Outreach and Education</i></b>	
8		Support MDT's Transportation Safety Program.
	<b><i>Structural</i></b>	
9		Encourage railroads to enhance safety at crossings.
10		Work with railroad to reconstruct underpass to create a wider and straighter alignment.
	<b><i>Prevention</i></b>	
11		Encourage MDT to obtain electronic signs for dangerous sections of highway.
12		Encourage MDT to look at game fences or underpass to avoid vehicle/game collisions.
13		Encourage railroad to implement slower train speeds through towns and vulnerable areas to prevent derailments and protect water resources.
	<b><i>Mapping, Analysis, and Planning Projects</i></b>	
14		Continue partnering with MDT to identify and rectify areas of concern on highway systems throughout the jurisdiction.
15		Develop population protection plans for residents along railroad or near chemical facilities.
16		Examine unprotected railroad crossings and recommend if gates/signage are needed.

## WILDFIRE - EXAMPLE MITIGATION PROJECTS

<b>WILDFIRE - EXAMPLE MITIGATION PROJECTS</b>		
	<b><i>Prevention</i></b>	
1		Create zoning districts to reflect fire risk that require fuel reduction and fire-resistant building materials.
2		Encourage adoption of subdivision regulations that require vegetation management plans to create and maintain survivable and defensible space, roof covering requirements, and fire protection covenants.
3		Review subdivision regulations to ensure they address: on-site water storage, wide roads, multiple access, restrict building on steep slopes, require defensible space and inspection of new development in the WUI.
4		Adopt building code standards for fire resistant roof materials.
5		Review implementation process for rural impact fees for fire protection in the WUI.
6		Consider strategies for regulations (subdivision and others) that would require maintenance of fuel reduction projects in the WUI and enforcement.
7		Investigate developing a regulatory mechanism to ensure that subdivisions are built as approved and fire protection systems are initially and periodically certified.
8		Expand Growth Policy to address wildfire hazard in rural planning areas.
9		Adopt rural fire protection standards for low-density development.
10		Adopt an overlay zone for the WUI and other rural areas that applies to all development and includes enforceable measures to protect life and property.
11		During development review, consider public safety in the WUI and promote defensible space, firefighting equipment access and water supplies.
	<b><i>Property Protection</i></b>	
12		Continue to be proactive in fuel management county- and reservation- wide to reduce wildfire risk and enhance firefighter safety.
13		Support interagency collaboration on fuel management projects to restore and maintain healthy forests and reduce wildfire risks.
14		Implement FireWise principles and upgrade community facilities with non-combustible materials.
15		Remove vegetation and combustible materials around critical facilities, schools, and other community structures.
16		Perform fuel mitigation and/or enhanced grazing around historic and cultural sites.
17		Perform fuel mitigation on evacuation routes, initial attack roads, power lines, and communication sites in the WUI.
18		Continue to increase size of ingress/egress roads where possible to create fire breaks.
19		Widen initial attack roads and install culverts where needed.
20		Continue grants programs to support hazardous fuel assessments and cost-share opportunities for landowners to create defensible space in the WUI.
21		Encourage at risk landowners to participate in cost-share fuel reduction programs to reduce fuels round homes.
	<b><i>Natural Resource Protection</i></b>	
22		Prevent water pollution to the public water supply by stabilizing burned slopes after a wildfire.
23		Encourage land management agencies and private landowners to conduct stabilization and revegetation projects in burned areas.
	<b><i>Emergency Services</i></b>	
24		Recruit and train volunteer firefighters.
25		Identify and facilitate additional training for firefighters
26		Improve training and qualifications of personnel to more effectively interface with incoming Incident Management Teams.
27		Enhance emergency services to increase the efficiency of wildfire response and recovery activities.

## WILDFIRE - EXAMPLE MITIGATION PROJECTS

28	Install more fire reporting stations for better access and coverage.
29	Encourage local fire depts./districts to assess and purchase necessary equipment through available grants.
30	Improve fire agency infrastructure (training facility, additional fire suppression equipment and storage, enhanced communication systems).
31	Install booster antennas to enhance cell service in fire districts where it would be beneficial.
32	Coordinate activities of rural fire departments and partner agencies to provide for cooperation before, during, and after a fire incident.
33	Formalize agreements for fire response in unprotected jurisdictional lands.
34	Develop and implement an enhanced communication/alert system for notification of impending wildland fire activity or evacuation for outlying areas.
35	Procure and designate a wildland supply cache to outfit fire departments to ensure wildland firefighter safety.
36	Develop public-private partnerships to fund regional water sources for fire protection.
37	Opportunistically improve access to structures and properties and water supplies for fire protection.
38	Obtain attachments to connect fire suppression equipment to rancher's sprinkler systems.
39	Obtain trailer-mounted 1,000-gallon pumps which can be used for fire fighting.
40	Upgrade water supply in communities as needed to more effectively assist with wildfire suppression.
41	Encourage rural fire dept. and private landowners to install dry hydrants and/or water storage tanks for fire protection.
42	Increase availability of water resources for wildland firefighting by strategic placement of water tanks and ponds.
43	Equip water storage facilities with fire-resistant electrical pump and/or other non-electrical source when not connected to a community water system.
44	Obtain more 4-WD tenders.
45	Obtain mobile air quality monitors to determine unhealthy wildfire smoke conditions.
<b><i>Public Outreach and Education</i></b>	
46	Provide FireWise education to urban interface landowners on adapting to life with wildfire and taking action to prevent losses.
47	Provide outreach to landowners on fuel mitigation funding opportunities for private land.
48	Encourage evacuation route safety, including making roads wider, reducing fuels along them, and having secondary access.
49	Implement robust public outreach project on FireWise principles.
50	Conduct community-based demonstration projects of fire prevention and mitigation in the urban interface.
51	Encourage homeowner associations to review their covenants to incorporate fire resistant materials.
52	Establish neighborhood "drive-through" activities that pinpoint site-specific mitigation activities.
53	Continue pushing out information on Red Flag Warnings for broadcast when conditions exist.
54	Support volunteer fire department fire prevention activities.
55	Conduct workshops and distribute information on wildfire hazard reduction and seasonal fire danger to rural property owners.
56	Partner with surrounding counties and present workshops and presentations focused on defensible space and FireWise principles targeting planning staff, planning boards, architects, engineers, and realtors.
57	Support FireSafe Montana in their work educating realtors, building contractors, insurance industry, and landscaping companies to ensure they have knowledge on FIREWISE principals.
58	Support efforts of Health Officers to provide public info and guidance when wildfire smoke conditions are unhealthy.
59	Provide timely messaging on wildfire smoke to protect vulnerable populations.
60	Continue community outreach on FireWise building practices in the wildland urban interface.
61	Promote and encourage individual fire departments to implement a FireWise program that will create fire adapted communities throughout the jurisdiction.

## WILDFIRE - EXAMPLE MITIGATION PROJECTS

WILDFIRE - EXAMPLE MITIGATION PROJECTS		
	<b><i>Mapping, Analysis, and Planning Projects</i></b>	
62		Conduct wildland fire mapping to identify high-risk areas.
63		Use digital wildfire mapping for land management and project development.
64		Integrate GIS technology for multi-jurisdictional response and mitigation planning.
65		Create a database of water sources, access points, and fire breaks and other relevant criteria to enhance fire agency response.
66		Develop database to track landowner assessments and fuel reduction projects to support future grants.
67		Develop and disseminate updated maps relating to fire hazard to assist builders and homeowners in wildfire mitigation and guide emergency services during response.
68		Study creation of fire breaks in appropriate locations in Conservation Reserve Program lands and areas of future development.
69		Conduct individual home audits for residences in the wildland urban interface.
70		Identify, maintain, update and support high priority fuel treatment areas within the WUI for hazardous fuel treatment by private landowners.
71		Update and implement the Community Wildfire Protection Plan.
72		Support efforts to improve roads and water supplies and reduce fuels through rural improvement districts on a case-by-case basis.
73		Complete a study of impact fees for rural residents to fund more reliable water supplies and fire safety.
74		Continue to update and maintain fire hazard mapping project as well as compilation of completed fuel mitigation projects.
75		Assist fire jurisdictions/community groups with mapping.
76		Continue to work with cooperating agencies to develop Population Protection Plans.
77		Promote evacuation planning for landowners.
78		Continue to look for funding opportunities for fuel mitigation on private land.
79		Support inter-agency collaboration on fuel management projects.
80		Encourage state and federal agencies, utility companies, and landowners to conduct fuel reduction on their property so there will be no gaps in treatment.
81		Assist fire departments/districts in identifying grant opportunities and assist them in grant writing.

APPENDIX D-2

RECONCILIATION  
BETWEEN 2013 &  
2021 MITIGATION  
STRATEGY

**APPENDIX D-2. RECONILATION BETWEEN 2013 & 2021 MITIGATION STRATEGY  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Goal	Objective	Mitigation Project	Reconciliation	Status: Reword, Retain, Delete, New for 2021	Current Priority	Former Priority
<b>Goal 1 - Reduce Impacts from Wildfire</b>				New Goal for 2021 Plan		
	<i>Objective 1.1: Implement Property Protection Projects to Reduce Impacts from Wildfire</i>			New Objective for 2021 Plan		
	1.1.1	Work with Montana DNRC to create and maintain fuel breaks around City of Colstrip.	Was Project 1.1.3	Retain.	Medium	Medium
	1.1.2	Work with Montana FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the Yellowstone River on the east side of Forsyth.	Was Project 3.1.1	Retain.	Medium	High
	<i>Objective 1.2: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Wildfire</i>			New Objective for 2021 Plan		
	1.2.1	Support coordination between private landowners, Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.	Was Project 3.1.3	Reword. Remove No. Cheyenne Tribe.	Medium	Low
	<i>Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire</i>			New Objective for 2021 Plan		
	1.3.1	Continue to make fuel mitigation information available online through the county with links to additional resources.	Was Project 3.1.2		High	Medium
	1.3.2	Provide recommendations for types of building materials in the WUI to reduce fire danger in new construction.	Was Project 3.1.5 (split in 2)	Reword. Public outreach on materials instead of regulation.	High	
	1.3.3	Continue to support Public Health Department's smoke advisories and alerts.		New Project for 2021 Plan	High	NA
	<i>Objective 1.4: Implement Prevent Projects to Reduce Impacts from Wildfire</i>			New Objective for 2021 Plan		
	1.4.1	Extend building regulations adjacent to city limits into potential future annexation areas, to require compliance with wildfire standards.		New Project for 2021 Plan	Medium	NA
	<i>Objective 1.5: Enhance Emergency Service Capabilities to Reduce Impacts from Wildfire</i>			New Objective for 2021 Plan		
	1.5.1	Continue to update equipment to enhance firefighting capabilities.		New Project for 2021 Plan	High	NA
		COMPLETE - Implement "Fire Programs" software program.	Was Project 3.1.6	COMPLETE		
		COMPLETE - When subdivision regulations are updated, review requirements for access (slope, egress, turnarounds, bridge standards, etc.).	Was Project 3.1.5 (split in 2)	COMPLETE		
<b>Goal 2 - Reduce Impacts from Drought</b>				New Goal for 2021 Plan		
	<i>Objective 2.1: Implement Public Education and Awareness Projects to Reduce Impacts from Drought</i>			New Objective for 2021 Plan		
	2.1.1	Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.		New Project for 2021 Plan	High	NA
	<i>Objective 2.2: Implement Structural Projects to Reduce Impacts from Drought</i>			New Objective for 2021 Plan		
	2.2.1	Improve water intake system for City of Forsyth.		New Project for 2021 Plan	High	NA
	<i>Objective 2.3: Implement Prevention Projects to Reduce Impacts from Drought</i>			New Objective for 2021 Plan		
	2.3.1	Improve water conveyance efficiencies in agricultural, municipal, and industrial users.		New Project for 2021 Plan.	Medium	NA
	2.3.2	Encourage voluntary water conservation by domestic, municipal, and industrial users.		New Project for 2021 Plan	High	NA
	<i>Objective 2.4: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Drought</i>			New Objective for 2021 Plan		
	2.4.1	Support completion of Colstrip Water Supply Feasibility Study.		New Project for 2021 Plan	High	NA
<b>Goal 3 - Reduce Impacts from Severe Summer Weather</b>				New Goal for 2021 Plan		
	<i>Objective 3.1: Implement Prevention Projects to Reduce Impacts from Severe Summer Weather</i>			New Objective for 2021 Plan		
	3.1.1	Implement the tree maintenance ordinance and address problem trees.		New Project for 2021 Plan	High	NA
	<i>Objective 3.2: Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather</i>			New Objective for 2021 Plan		
	3.2.1	Promote preparedness through outreach to community and schools.		New Project for 2021 Plan	High	NA
	3.2.2	Partner with National Weather Service on the Weather Ready Nation Ambassador Program.		New Project for 2021 Plan	High	NA
	<i>Objective 3.3: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Summer Weather</i>			New Objective for 2021 Plan		
	3.3.1	Provide preparedness training to community members and homeowners.		New Project for 2021 Plan	High	NA
	<i>Objective 3.4: Implement Property Protection Projects to Reduce Impacts from Severe Summer Weather</i>			New Objective for 2021 Plan		
	3.4.1	Encourage utility companies to bury electric and communication lines in hazard areas.		New Project for 2021 Plan	Medium	NA

**APPENDIX D-2. RECONILATION BETWEEN 2013 & 2021 MITIGATION STRATEGY  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Goal	Objective	Mitigation Project	Reconciliation	Status: Reword, Retain, Delete, New for 2021	Current Priority	Former Priority
<b>Goal 4 - Reduce Impacts from Communicable Disease</b>						
		<i>Objective 4.1: Implement Prevention Projects to Reduce Impacts from Communicable Disease</i>		New Goal for 2021 Plan		
		4.1.1 Control mosquito populations during summer in cities and town.		New Objective for 2021 Plan		
		4.1.1 Control mosquito populations during summer in cities and town.		New project for 2021 Plan	High	NA
		4.1.2 Prevent and control communicable disease through surveillance, testing and immunization.		New project for 2021 Plan	High	NA
		<i>Objective 4.2: Implement Public Education and Awareness Projects to Reduce Impacts from Communicable Disease</i>		New Objective for 2021 Plan		
		4.2.1 Promote public education on preventing communicable disease.		New project for 2021 Plan	High	NA
		<i>Objective 4.3: Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease</i>		New Objective for 2021 Plan		
		4.3.1 Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.		New project for 2021 Plan	High	NA
		4.3.2 Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.		New project for 2021 Plan	High	NA
<b>Goal 5 - Reduce Impacts from Severe Winter Weather</b>						
		<i>Objective 5.1: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Winter Weather</i>		New Goal for 2021 Plan		
		5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.	Was Project 3.1.4	Retain	Medium	Medium
		<i>Objective 5.2: Implement Public Education and Awareness to Reduce Impacts from Severe Winter Weather</i>		New Objective for 2021 Plan		
		5.2.1 Promote preparedness through outreach to community and schools.		New Project for 2021 Plan	Medium	NA
<b>Goal 6 - Reduce Impacts from Flooding &amp; Dam Failure</b>						
		<i>Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure</i>		New Goal for 2021 Plan		
		6.1.1 Address any issues related to the Forsyth levee on the Yellowstone River that arise during the current re-certification process.	Was Project 2.1.1	Retain	High	High
		6.1.2 Develop a stormwater management plan for Forsyth.		New Project for 2021 Plan	Medium	NA
		6.1.3 Support completion of floodplain mapping and update Flood Ordinance when complete.		New Project for 2021 Plan	High	NA
		<i>Objective 6.2: Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure</i>		New Objective for 2021 Plan		
		6.2.1 Stabilize bank erosion at intersection of River and Old Mission Roads in Ashland.	Was Project 3.1.17	Retain	Low	Low
		6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.		New Project for 2021 Plan	High	NA
		<i>Objective 6.3: Implement Property Protection Projects to Reduce Impacts from Flooding and Dam Failure</i>		New Objective for 2021 Plan		
		6.3.1 Continue to promote the National Flood Insurance Program and compliance with the Floodplain ordinance.		New Project for 2021 Plan	Medium	NA
		<i>Objective 6.4: Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure</i>		New Objective for 2021 Plan		
		6.4.1 Participate in dam exercises with emergency response partners.		New Project for 2021 Plan	High	NA
		6.4.2 Engage City of Colstrip in dam failure awareness and preparedness.		New project for 2021 Plan.	High	NA
<b>Goal 7 - Reduce Impacts from Structure Fire</b>						
		<i>Objective 7.1: Implement Public Education and Awareness Projects to Reduce Impacts from Structure Fire</i>	New Goal for 2021 Plan	New Goal for 2021 Plan		
		7.1.1 - Support the education program in school on topics supplied by International Fire Council.	New Objective for 2021 Plan	New Objective for 2021 Plan		
		7.1.1 - Support the education program in school on topics supplied by International Fire Council.	New Project for 2021 Plan	New Project for 2021 Plan	High	NA
		<i>Objective 7.2: Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire</i>	New Objective for 2021 Plan	New Objective for 2021 Plan		
		7.2.1 - Recruit and train volunteers for city fire departments.	New Project for 2021 Plan	New Project for 2021 Plan	High	NA
		7.2.2 - Update equipment needed for suppressing structure fires.	New Project for 2021 Plan	New Project for 2021 Plan	High	NA

**APPENDIX D-2. RECONILATION BETWEEN 2013 & 2021 MITIGATION STRATEGY  
ROSEBUD COUNTY MHMP - 2021 UPDATE**

Goal	Objective	Mitigation Project	Reconciliation	Status: Reword, Retain, Delete, New for 2021	Current Priority	Former Priority
<b>Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents</b>						
				New Goal for 2021 Plan		
		<i>Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents</i>		New Objective for 2021 Plan		
		8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.		New project for 2021 Plan	High	NA
		8.1.2 Encourage railroad, pipeline companies, mining company, and power plant to more consistently attend LEPC meetings to plan for haz-mat response.		New project for 2021 Plan	High	NA
		8.1.3 Encourage power plant, mining company, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.		New project for 2021 Plan	High	NA
		DELETE - Assist Rosebud school in preparation for railroad hazmat incident.	Was Project 3.1.16	DELETE. Don't feel it is necessary to go into schools with haz-mat message.		
		DELETE - Educate Rosebud area residents on what to during a hazardous material spill by the railroad.	Was Project 3.1.15	DELETE. Don't feel it is necessary to educate residents on this topic.		
<b>Goal 9 - Reduce Impacts from All Hazards</b>						
				New Goal for 2021 Plan		
		<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>		New Objective for 2021 Plan		
		9.1.1 Obtain back-up power for water and wastewater treatment plants.	Was Project 1.1.1, 2.1.3, 3.1.10	Retain	High	High & Medium
		9.1.2 Educate dispatch and responders about siren systems and procure additional equipment, as needed.	Was Project 1.1.4	Reword to include new equipment.	Medium	Medium
		9.1.3 Obtain back-up power for county and city critical facilities.	Was Project 2.1.4 and 3.1.8	Reword to include critical facilities.	High	Medium
		9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.		New project for 2021 Plan	High	NA
		9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.		New project for 2021 Plan	High	NA
		<i>Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards</i>		New Objective for 2021 Plan		
		9.2.1 Adopt updated building codes.	Combined Projects 1.1.2 & 2.1.2. Removed "once available from state"	Retain	High	High
		9.2.2 Update Growth Policies to encourage growth in low hazard areas.		New project for 2021 Plan	Medium	NA
		9.2.3 Consider updating subdivision regulations to adopt higher minimum standards that improve disaster resistance.		New project for 2021 Plan	High	NA
		<i>Objective 9.3: Implement Public Education &amp; Awareness Projects to Reduce Impacts from All Hazards</i>		New Objective for 2021 Plan		
		9.3.1 Promote registration of cell phones for "Regroup" emergency notification system.		New project for 2021 Plan	High	NA
		COMPLETE - Enhance communications infrastructure in Ashland area by constructing radio tower site and fireproof shed.	Was Project 3.1.7	Completed in 2015. Shed for backup generator.		
		COMPLETE - Enhance communications infrastructure by upgrading Treasure County repeater.	Was Project 3.1.9	Completed in 2015.		
		COMPLETE - Enhance communications infrastructure by upgrading Little Wolf radio repeater.	Was Project 3.1.11	Completed in 2015.		
		COMPLETE - Replace the radio tower at the Sheriff's office in Forsyth.	Was Project 3.1.12	Completed in 2017.		
		COMPLETE - Complete implementation of enhanced 911 system.	Was Project 3.1.14	Completed in 2018.		
		DELETE - Install/activate base unit in Sheriff's office for Sarpy Creek.	Was Project 3.1.13	Delete - Commissioner not aware of any problems. Project may be complete.		

APPENDIX D-3

MITIGATION ACTION  
PLANS

ROSEBUD COUNTY, MONTANA			
Multi-Hazard Mitigation Plan - 2021 Update			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.1: Implement Property Protection Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.1.1 - Work with Montana DNRC to create and maintain fuel breaks around City of Colstrip.</b>		
Jurisdiction	Colstrip		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Fire, DNRC		
Potential Funding Source(s)	DNRC, County Resources		
Implementation Schedule	Ongoing		
Progress Made	No progress to report.		
Planned Activities	High school area in hills northeast of Colstrip (state trust land) is where problem is. Fire history shows embers a concern. Coordinate w/ DNRC on thinning/ mitigation. Open up timber and get spacing. Keep ash rain down.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.1: Implement Property Protection Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.1.2 - Work with MT FWP to treat hazardous fuels at the East Rosebud Fishing Access site on the Yellowstone River on the east side of Forsyth.</b>		
Jurisdiction	County		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Fire		
Potential Funding Source(s)	MFWP, County Resources		
Implementation Schedule	Ongoing		
Progress Made	MT FWP comes in for 2 weeks during winter and drops trees. Have opened up area quite a bit with many hazardous trees removed.		
Planned Activities	Continue same		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.2: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.2.1 - Support coordination between private landowners, Forest Service and BLM to treat hazardous fuels on private lands adjacent to public lands.</b>		
Jurisdiction	County		
Category	Mapping, Analysis & Planning		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Fire		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	Coordination group meeting is held each spring to discuss upcoming fire season. Co-op agreement provides engines and air support during fires. County responsible for suppression on state land.		
Planned Activities	Continue same		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.3.1 - Continue to make fuel mitigation information available online through the county with links to additional resources.</b>		
Jurisdiction	County		
Category	Public Education & Awareness		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County PIO		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	Information is posted on the County website (under Fire) where there are links to state fire website.		
Planned Activities	Continue same. County has Facebook page and PIO officer will post information on wildfire mitigation opportunities.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.3.2 - Provide recommendations for types of building materials in the WUI to reduce fire danger in new construction.</b>		
Jurisdiction	County		
Category	Public Education & Awareness		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County PIO		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	No progress to report.		
Planned Activities	Utilize MT WUI model Building Code recommendations. Consult FireSafe Montana.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.3: Implement Public Education and Awareness Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.3.3 - Continue to support Public Health Department's smoke advisories and alerts.</b>		
Jurisdiction	County		
Category	Public Education & Awareness		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Public Health		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 MHMP.		
Planned Activities	Continue messaging through Facebook, newspaper, smart boxes in post office, radio, flyers, etc. to reach community members.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.4: Implement Prevent Projects to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.4.1 - Extend building regulations adjacent to city limits into potential future annexation areas, to require compliance with wildfire standards.</b>		
Jurisdiction	Forsyth		
Category	Prevention		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	City Councils		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Mid-term		
Progress Made	New project for 2021 MHMP.		
Planned Activities	Educate city council on benefit of implementing project.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.5: Enhance Emergency Service Capabilities to Reduce Impacts from Wildfire</i>		
Project	<b>Project 1.5.1 - Continue to update equipment to enhance firefighting capabilities.</b>		
Jurisdiction	County		
Category	Emergency Service		
Hazard(s) Addressed	Wildfire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Fire		
Potential Funding Source(s)	County Resources, Grants		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Add fire station near Ingomar to house equipment year round. Continue to obtain surplus equipment from DNRC/DOT to build engines.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 2 - Reduce Impacts from Drought		
Objective	<i>Objective 2.1: Implement Public Education and Awareness Projects to Reduce Impacts from Drought</i>		
Project	<b>Project 2.1.1 Support drought programs implemented through the Conservation District, FSA, NRCS, DNRC, and MSU Extension.</b>		
Jurisdiction	County		
Category	Public Education & Awareness		
Hazard(s) Addressed	Drought		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Extension		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Utilize social, broadcast, and print media to reach agricultural producers regarding resources available.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 2 - Reduce Impacts from Drought		
Objective	<i>Objective 2.2: Implement Structural Projects to Reduce Impacts from Drought</i>		
Project	<b>Project 2.2.1 Improve water intake system for City of Forsyth.</b>		
Jurisdiction	Forsyth		
Category	Structural		
Hazard(s) Addressed	Drought		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Forsyth Water Dept.		
Potential Funding Source(s)	City Resources, Grants		
Implementation Schedule	Mid-term		
Progress Made	New project for 2021 Plan.		
Planned Activities	City is completing Preliminary Engineering Report on how to make improvements to water intake system. Will implement action items in future.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 2 - Reduce Impacts from Drought		
Objective	<i>Objective 2.3: Implement Prevention Projects to Reduce Impacts from Drought</i>		
Project	<b>Project 2.3.1 Improve water conveyance efficiencies in agricultural, municipal, and industrial users.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	Drought		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	6
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Extension		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Municipalities to study and implement appropriate upgrades to their systems. Extension to work with agricultural users on conveyance improvements. Outreach to industrial users.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 2 - Reduce Impacts from Drought		
Objective	<i>Objective 2.3: Implement Prevention Projects to Reduce Impacts from Drought</i>		
Project	<b>Project 2.3.2 Encourage voluntary water conservation by domestic, municipal, and industrial users.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	Drought		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES, Forsyth & Colstrip Water Depts.		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Utilize social, broadcast, and print media to promote conservation. Municipalities to consider watering restrictions during periods of severe drought.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 2 - Reduce Impacts from Drought		
Objective	<i>Objective 2.4: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Drought</i>		
Project	<b>Project 2.4.1 Support completion of Colstrip Water Supply Feasibility Study.</b>		
Jurisdiction	County		
Category	Mapping, Analysis & Planning		
Hazard(s) Addressed	Drought		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	MDEQ, Colstrip Mayor		
Potential Funding Source(s)	Power Plant owners. City Resources		
Implementation Schedule	Short-term		
Progress Made	New project for 2021 Plan.		
Planned Activities	Study mandated by 2021 state legislature. MDEQ to be administrator. Colstrip water supply comes via pipeline (owned by power plant) from Yellowstone River. With closing of power plant, study will ensure water for City of Colstrip.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 3 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 3.1: Implement Prevention Projects to Reduce Impacts from Severe Summer Weather</i>		
Project	<b>Project 3.1.1 Implement the tree maintenance ordinance and address problem trees.</b>		
Jurisdiction	Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	Severe Summer Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Forsyth & Colstrip Public Works		
Potential Funding Source(s)	City Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Forsyth working with consultant to identify and assess problems trees. Tree ordinance will be updated upon completion of report. Tree maintenance ongoing. Colstrip may try to form a Tree Board.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 3 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 3.2: Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather</i>		
Project	<b>Project 3.2.1 Promote preparedness through outreach to community and schools.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Public Education & Awareness		
Hazard(s) Addressed	Severe Summer Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County Resources, NWS		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Utilitze social media and share NWS "Weather Ready Wednesdays" posts. Go into schools and provide outreach on preparedness to students.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 3 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 3.2: Implement Public Education and Awareness Projects to Reduce Impacts from Severe Summer Weather</i>		
Project	<b>Project 3.2.2 Partner with National Weather Service on the Weather Ready Nation Ambassador Program.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Public Education & Awareness		
Hazard(s) Addressed	Severe Summer Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County Resources, NWS		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Encourage organizations and business in communities to sign up and promote WRN program to their staff and post on websites.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 3 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 3.3: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Summer Weather</i>		
Project	<b>Project 3.3.1 Provide preparedness training to community members and homeowners.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Severe Summer Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	NWS		
Potential Funding Source(s)	County Resources, NWS		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	NWS will continue to provide spotter training every other year. Promote Storm Ready communications links as this program is modernized.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 3 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 3.4: Implement Property Protection Projects to Reduce Impacts from Severe Summer Weather</i>		
Project	<b>Project 3.4.1 Encourage utility companies to bury electric and communication lines in hazard areas.</b>		
Jurisdiction	County		
Category	Property Protection		
Hazard(s) Addressed	Severe Summer Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Commissioners		
Potential Funding Source(s)	County Resources, Utilities		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	MDU and Range Telephone have buried utilities in some areas. Have brought secondary feed into Forsyth from different set of lines. Mid-Yellowstone Rural Electric Co-op and Tongue River Electric in Ashland also provide utilities in county.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 4 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 4.1: Implement Prevention Projects to Reduce Impacts from Communicable Disease</i>		
Project	<b>Project 4.1.1 Control mosquito populations during summer in cities and town.</b>		
Jurisdiction	County, Forsyth, Colstrip, Ashland		
Category	Prevention		
Hazard(s) Addressed	Communicable Disease		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	City Public Works		
Potential Funding Source(s)	City & Town Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Spray on a weekly basis during summer as problem becomes apparent.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 4 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 4.1: Implement Prevention Projects to Reduce Impacts from Communicable Disease</i>		
Project	<b>Project 4.1.2 Prevent and control communicable disease through surveillance, testing and immunization.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	Communicable Disease		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	3
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Public Health		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Monitor Health Alert Network. Conduct annual flu clinics at Public Health Dept. and fairgrounds. Hold drive thru clinics during pandemic. Public Health to go to other places in communities, as needed, to reach vulnerable populations.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 4 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 4.2: Implement Public Education and Awareness Projects to Reduce Impacts from Communicable Disease</i>		
Project	<b>Project 4.2.1 Promote public education on preventing communicable disease.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Public Education & Awareness		
Hazard(s) Addressed	Communicable Disease		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Public Health		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Utilize broadcast, print, and social media to provide education. Medical director to give weekly updates, as needed, on the radio. PIO to post on EMS/DES and Public Health Facebook pages. Utilize smart box at post office for elderly who don't do Facebook. Hang posters in public places. Use electronic billboards of PSAs.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 4 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 4.3: Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease</i>		
Project	<b>Project 4.3.1 Collaborate with community partners to train and exercise public health emergency response and mass vaccination plans.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Communicable Disease		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Public Health		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Open pod for mass immunization once a year. Collaborate with Sheriff's Dept., EMS, Commissioners, and Hospital.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 4 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 4.3: Enhance Emergency Service Capabilities to Reduce Impacts from Communicable Disease</i>		
Project	<b>Project 4.3.2 Monitor disease outbreaks in neighboring counties and states through use of the Health Alert Network.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Communicable Disease		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Public Health		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan.		
Planned Activities	Receive HANs from state. Make decision who to distribute HAN to. Broad lists go to schools, veterinarians, every entity in county. Small list goes to medical providers.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.1: Enhance Emergency Service Capabilities to Reduce Impacts from Severe Winter Weather</i>		
Project	<b>Project 5.1.1 Purchase and replace county road signs with non-combustible, break-away signs.</b>		
Jurisdiction	Forsyth		
Category	Emergency Service		
Hazard(s) Addressed	Severe Winter Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Rural addressing, 911		
Potential Funding Source(s)	County Resources, Landowners		
Implementation Schedule	Ongoing		
Progress Made	Reflective address signs at driveways are about 10% complete in county. Have been promoted through 911 and 4-H/Boy Scout fundraisers.		
Planned Activities	Continue promoting through community service and fundraising projects.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.2: Implement Public Education and Awareness to Reduce Impacts from Severe Winter Weather</i>		
Project	<b>Project 5.2.1 Promote preparedness through outreach to community and schools.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Public Education & Awareness		
Hazard(s) Addressed	Severe Winter Weather		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County DES, City Chamber of Commerce		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan		
Planned Activities	Obtain MT Dept. of Transportation Winter Weather Survival guides and make available at courthouse and community events. Bring materials to schools for distribution.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.1.1 Address any issues related to the Forsyth levee on the Yellowstone River that arise during the current re-certification process.</b>		
Jurisdiction	Forsyth		
Category	Mapping, Analysis & Planning		
Hazard(s) Addressed	Flooding		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	City, County DES		
Potential Funding Source(s)	City & County Resources, Grants		
Implementation Schedule	Ongoing		
Progress Made	City working with ACOE on System-wide Improvement Framework (SWIF). Levee inspected annually. City has invested in tree & brush removal, installing culverts, working with every property owner, levee has been surveyed, owners have removed anything that infringes. County did tree removal and repair of washout at far east end.		
Planned Activities	Continue same. Major rip-rap project in future.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.1.2 Develop a stormwater management plan for Forsyth.</b>		
Jurisdiction	Forsyth		
Category	Mapping, Analysis & Planning		
Hazard(s) Addressed	Flooding		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Forsyth Public Works		
Potential Funding Source(s)	City Resources, Grants		
Implementation Schedule	Mid-term		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Hire consultant to complete stormwater management plan. Implement project as funding allows.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.1: Implement Mapping, Analysis, and Planning Projects to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.1.3 Support completion of floodplain mapping and update of Floodplain Ordinance.</b>		
Jurisdiction	County, Forsyth		
Category	Mapping, Analysis & Planning		
Hazard(s) Addressed	Flooding		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County & Forsyth Floodplain Administrators		
Potential Funding Source(s)	FEMA, DNRC, County Resources		
Implementation Schedule	Mid-term		
Progress Made	New Project for 2021 Plan.		
Planned Activities	High accuracy LiDAR available for Yellowstone River in county. DNRC in process of applying for a grant to update the studies. Inquiry by wind farm north of Forsyth would be in floodplain.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.2: Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.2.1 Stabilize bank erosion at intersection of River and Old Mission Roads in Ashland.</b>		
Jurisdiction	County (Ashland)		
Category	Structural		
Hazard(s) Addressed	Flooding		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	6
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	County Road Dept.		
Potential Funding Source(s)	County Resources, Grants		
Implementation Schedule	Long-term		
Progress Made	No progress to report.		
Planned Activities	Tongue River makes 90 degree turn here. Tongue River Electric had to move a couple of poles due to erosion. Used to be bridge pilings there that slowed river from pounding into bank. Future project to put in some riprap.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.2: Implement Structural Projects to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.2.2 Update bridges, culverts, and roads to allow sufficient passage of floodwaters.</b>		
Jurisdiction	County, Forsyth		
Category	Structural		
Hazard(s) Addressed	Flooding		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Road Dept., Forsyth Public Works		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Upgrade culverts when washouts occur. Encourage MDT to upgrade bridges that need work.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.3: Implement Property Protection Projects to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.3.1 Continue to promote the National Flood Insurance Program and compliance with the Floodplain ordinance.</b>		
Jurisdiction	County, Forsyth		
Category	Property Protection		
Hazard(s) Addressed	Flooding		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County & Forsyth Floodplain Administrators		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Flood insurance not required inside levee in Forsyth. Most properties outside levee are higher than river bank. Continue NFIP compliance.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.4: Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.4.1 Participate in dam exercises with emergency response partners.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Dam Failure		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County & City Resources, Dam Owners		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Encourage dam owners to conduct annual tabletop exercises. Ensure county and city response agencies participate.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 6 - Reduce Impacts from Flooding & Dam Failure		
Objective	<i>Objective 6.4: Enhance Emergency Service Capabilities to Reduce Impacts from Flooding and Dam Failure</i>		
Project	<b>Project 6.4.2 Engage City of Colstrip in dam failure awareness and preparedness.</b>		
Jurisdiction	Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Dam Failure		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Commissioners, City of Colstrip		
Potential Funding Source(s)	County & City Resources, Dam Owners		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Ensure City is invited to annual tabletop exercises. Obtain copy of Castlerock Lake Dam EAP. Provide info to public on exercises and dam failure risk via social media.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 7 - Reduce Impacts from Structure Fire		
Objective	<i>Objective 7.1: Implement Public Education and Awareness Projects to Reduce Impacts from Structure Fire</i>		
Project	<b>Project 7.1.1 - Support the education program in school on topics supplied by International Fire Council.</b>		
Jurisdiction	Forsyth, Colstrip, Ashland		
Category	Public Education & Awareness		
Hazard(s) Addressed	Structure Fire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Forsyth, Colstrip, Ashland VFDs		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Continue going to schools once a year and conduct active fire drills with smoke machines. Show students fire trucks. Colstrip will continue to fall fire prevention program in schools and include articles in quarterly city newsletter.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 7 - Reduce Impacts from Structure Fire		
Objective	<i>Objective 7.2: Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire</i>		
Project	<b>Project 7.2.1 - Recruit and train volunteers for city fire departments.</b>		
Jurisdiction	Forsyth, Colstrip, Ashland		
Category	Emergency Services		
Hazard(s) Addressed	Structure Fire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Forsyth, Colstrip, Ashland VFDs		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Continue to recruit firefighters through word of mouth. Continue bi-monthly training on basics and send new recruits annually to Cody for fire school.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 7 - Reduce Impacts from Structure Fire		
Objective	<i>Objective 7.2: Enhance Emergency Service Capabilities to Reduce Impacts from Structure Fire</i>		
Project	<b>Project 7.2.2 - Update equipment needed for suppressing structure fires.</b>		
Jurisdiction	Forsyth, Colstrip, Ashland		
Category	Emergency Services		
Hazard(s) Addressed	Structure Fire		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Forsyth, Colstrip, Ashland VFDs		
Potential Funding Source(s)	County & City Resources, Grants		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Buy new equipment. as needed. Look at grants for funding opportunities.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents		
Objective	<i>Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents</i>		
Project	<b>Project 8.1.1 Ensure local emergency responders have adequate training to respond to hazardous material incidents consistent with local capabilities.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Hazardous Material Incidents & Transportation Accidents		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County & City Fire Depts.		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Provide haz-mat awareness training to first responders every two years (ambulance, EMS, Fire Dept., Sheriff's Dept.). Colstrip to continue to train with power plant and mine haz-mat teams. Joint training with Police Dept., clinic, EMS.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents		
Objective	<i>Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents</i>		
Project	<b>Project 8.1.2 Encourage railroad, pipeline companies, mining company, and power plant to more consistently attend LEPC meetings to plan for haz-mat response.</b>		
Jurisdiction	County		
Category	Emergency Services		
Hazard(s) Addressed	Hazardous Material Incidents & Transportation Accidents		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Request entities to provide more than sporadic attendance to ensure a more cohesive planning effort takes place.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 8 - Reduce Impacts Hazardous Material Incidents and Transportation Accidents		
Objective	<i>Objective 8.1: Enhance Emergency Service Capabilities to Reduce Impacts from Haz-Mat Incidents and Transportation Accidents</i>		
Project	<b>Project 8.1.3 Encourage power plant, mining company, railroad and pipeline companies to exercise their haz-mat emergency plans together with county first responders.</b>		
Jurisdiction	County, Colstrip		
Category	Emergency Services		
Hazard(s) Addressed	Hazardous Material Incidents & Transportation Accidents		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New Project for 2021 Plan.		
Planned Activities	Ensure County and Colstrip Fire Depts. participate in training offered at Power Plant and annual safety meetings. Train with Safety & Rescue Teams at both Power Plant and mine. Coordinate training with railroad and pipeline companies.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.1.1 Obtain back-up power for water and wastewater treatment plants.</b>		
Jurisdiction	Forsyth, Ashland		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	City Public Works, Water Users		
Potential Funding Source(s)	County & City Resources, Grants		
Implementation Schedule	Mid-term		
Progress Made	Colstrip and Forsyth have generators for lift stations. No other progress to report.		
Planned Activities	Be aware of grants to provide funding for Forsyth water system generator. Determine generator needs Ashland water and wastewater systems.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.1.2 Educate dispatch and responders about siren systems and procure additional equipment, as needed.</b>		
Jurisdiction	Forsyth, Colstrip, Ashland		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	City Public Works, Water Users		
Potential Funding Source(s)	County & City Resources, Grants		
Implementation Schedule	Ongoing		
Progress Made	Forsyth has two sirens which are tested every month. Colstrip has four sirens that are tested monthly in conjunction with sirens at the power plant.		
Planned Activities	Continue same. Be aware of funding opportunities for third siren in Forsyth.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.1.3 Obtain back-up power for county and city critical facilities.</b>		
Jurisdiction	County, Forsyth		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	City Public Works, County DES		
Potential Funding Source(s)	County & City Resources, Grants		
Implementation Schedule	Mid-term		
Progress Made	Sheriff's office & hospital have automated systems. EMS/DES has a manual generator. Colstrip law enforcement has generator.		
Planned Activities	Be aware of grants to provide funding. Generator still needed for Forsyth City Hall and County Courthouse.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.1.4 Continue to recruit and provide training to first responders and EMS volunteers.</b>		
Jurisdiction	County, Forsyth, Colstrip,		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan		
Planned Activities	Ongoing effort to recruit first responders. Training to be held in next year for new recruits.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.1: Enhance Emergency Service Capabilities to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.1.5 Implement enhanced rural communication by coordinating and cooperating on getting First Net in place to enhance first responder communications.</b>		
Jurisdiction	County		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Mid-term		
Progress Made	New project for 2021 Plan		
Planned Activities	Continue to be aware of First Net project and implement when available.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.2.1 Adopt updated building codes.</b>		
Jurisdiction	Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	City Planning		
Potential Funding Source(s)	City Resources		
Implementation Schedule	Ongoing		
Progress Made	Forsyth and Colstrip update building codes each time new ones released by state.		
Planned Activities	Continue same.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.2.2 Update Growth Policies to encourage growth in low hazard areas.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County & City Planning		
Potential Funding Source(s)	County & City Resources, Grants		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan		
Planned Activities	City of Forsyth to update Growth Policy in 2021. County to update every 5 years. Colstrip updated in 2019.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.2: Implement Prevention Projects to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.2.3 Consider updating subdivision regulations to adopt higher minimum standards that improve disaster resistance.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Prevention		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County & City Planning		
Potential Funding Source(s)	County & City Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan		
Planned Activities	Consult with MT Dept. of Commerce on model subdivision regulations and incorporate development standards into future revision.		

**ROSEBUD COUNTY, MONTANA**

**Multi-Hazard Mitigation Plan - 2021 Update**

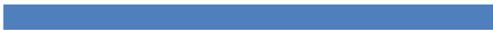
**Mitigation Action Plan**

Goal	Goal 9 - Reduce Impacts from All Hazards		
Objective	<i>Objective 9.3: Implement Public Education &amp; Awareness Projects to Reduce Impacts from All Hazards</i>		
Project	<b>Project 9.3.1 Promote registration of cell phones for "Regroup" emergency notification system.</b>		
Jurisdiction	County, Forsyth, Colstrip		
Category	Public Education & Awareness		
Hazard(s) Addressed	All Hazards		
<b>Benefit-Cost Ranking</b>	<b>Options</b>	<b>Selection</b>	<b>Score</b>
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County DES		
Potential Funding Source(s)	County Resources		
Implementation Schedule	Ongoing		
Progress Made	New project for 2021 Plan		
Planned Activities	County added "Regroup" for mass notification in 2016. Utilize print, broadcast and social media to inform citizens that they need to register their cell phones to receive notifications.		



Rosebud County  
Multi-Hazard  
Mitigation Plan  
2021 Update

**APPENDIX E**  
Relevant Plans





# ROSEBUD COUNTY COMMUNITY FIRE PLAN

## 1. Executive Summary

### 1.1. Problem Overview

Rosebud County is a large and remote county covering just over 5,000 square miles. It's over 85 air miles from the northern edge of the county to the southern edge. Under the current drought conditions, Rosebud County has a high degree of potential for extended fire seasons ranging from March through October or November. Rosebud County Fire Department, under the leadership of Doug Marten, is in charge with wildland fire protection throughout the county. He has strategically located engines based on historical fire occurrence throughout the county. In contrast to most eastern Montana counties, with few of the apparatus being positioned in the county by Montana Department of Natural Resources and Conservation, under the county coop program. Rosebud County has the potential to interact with not only DNRC, but also the Custer National Forest, Bureau of Land Management and the Northern Cheyenne Indian Reservation, thus providing a high degree of interagency complexity that some other counties in eastern Montana don't experience. As with a lot of counties in Montana, there is increasing development of wildland-urban interface areas with potential access problems and a general lack of understanding by homeowners of the need for asset protection zone to protect the home. As a matter of general occurrence, Rosebud County Fire Department has to deal with multiple ignitions throughout the southern half of the county from lightning storms.

### 1.2. Process Overview

The Rosebud County Community Fire Plan, hereafter known as "CFP," has been developed to assist Rosebud County, Rosebud County Fire Department and the federal and state wildland agencies in the identification of private and public lands at risk of severe wildland fires and to explore strategies for the prevention and suppression of such fires. The CFP is intended to outline the Rosebud County Fire Department's plans and activities targeted at reducing the risk of a catastrophic wildland and/or wildland-urban interface (WUI) fire event in Rosebud County. The intent of this planning document will ensure that the health, safety and welfare of Rosebud County's citizen's remain secure from the threats of structural and wildland fires in the county.

### 1.3. Overall Goals

The CFP will improve planning and fire suppression tools for county and the county fire department alike, which will result in Rosebud County providing it's citizens with tools to live more safely in a fire prone ecosystem. The CFP fosters the preservation of the economy of Rosebud County by maintaining and improving the fire protection capability of the County.

### 1.4. Methodology

Fire Logistics uses a Geographic Information System (GIS) based analysis approach to development of the fire hazard assessment for Rosebud County. This approach enables personnel from Fire Logistics to look at specific areas of high risk in the county such as wildland-urban interface and focus on items that would be included in the mitigation plan as recommended projects.



## 1.5. Mitigation Strategy – The Action Plan

This is a summary of the specific actions, which are developed in the *mitigation plan* of Chapter 7 to include mitigation goals such as evaluate upgrade and maintain emergency wildfire protection responsibilities, decrease fuels, etc. The assumptions for planning priorities of the community fire plan are: protect human health and life, protect critical community infrastructure, protect private property, and protect natural resources. The existing mitigation efforts are described, which include asset protection zones, neighborhood preparedness and fire protection response, and the coordination of prevention protection projects and response plans. Several recommended projects and programs are included as part of the mitigation effort for Rosebud County.



## 2. Introduction

### 2.1. Background and History

Rosebud County Fire Department retained Fire Logistics, Inc. in April of 2003 to:

1. Develop a training course for Custer & Rosebud county personnel (10-15) to evaluate fuels conduct hazard assessments, and development of a mitigation plan with recommended fuels treatment options.
2. Conduct the training course with practical applications.
3. Coordinate hazard assessments by trained county personnel on identified areas throughout the county, providing the data to Fire Logistics, Inc.
4. Develop a Strategic Wildfire Plan for the county to include the following components:
  - a. Develop a hazard assessment for the county including, at a minimum:
    - i. Terrain
    - ii. Fuels
    - iii. Flammability of structures
  - b. Recommended planning, zoning and ordinances.
  - c. Suggested mitigation and prevention activities.
    - i. Identify appropriate wildland/urban interface survivable space needs.
    - ii. Identify strategies for community involvement.
    - iii. Proposed vegetative management treatments and areas.
  - d. GIS layers associated with the plan, must be provided in an ArcView format acceptable to the county.
  - e. Identify appropriate sites for wildland fire engines throughout the County.
5. Work with the personnel selected by the county to gather data.
6. Identify areas of mutual concern between Rosebud and Custer County.
7. Make any desired associations with the County's computer aided dispatching program.

### 2.2. Mission

The mission of the Rosebud County Fire Department is to safely protect the lives and property of the residents of Rosebud County and our firefighters to the best of our ability and in the most efficient manner possible.

### 2.3. Current Relevant Fire Policies

A brief discussion of the relevant fire policies is provided to educate the leaders and residents of Rosebud County.

#### 2.3.1. Federal Policies “Homeland Security is Fire Safety”

We will briefly describe the relevant policies at the national level, which affect fire planning on the local level.

##### 2.3.1.1. National Fire Plan

“The National Fire Plan (NFP) is a long-term investment that will help protect communities and natural resources, and most importantly, the lives of firefighters and the public. It is a long term commitment based on cooperation and communication among federal agencies, states, local governments, tribes and interested publics.” It mandates community participation in its implementation.<sup>1</sup> The NFP also mandates that local governments develop and adopt local land use plans and ordinances that provide for the maintenance of defensible space and fuel management on municipal and private property.<sup>2</sup>

<sup>1</sup> See [www.fireplan.gov](http://www.fireplan.gov).

<sup>2</sup> See [www.westgov.org/wga/initiatives/fire/implement\\_plan.pdf](http://www.westgov.org/wga/initiatives/fire/implement_plan.pdf)



### 2.3.1.2 Disaster Mitigation Act 2000

Disaster Mitigation Act 2000 (DMA 2000) sets policies for “disaster mitigation plans”—plans designed to avoid disasters such as fires and floods. DMA 2000 requires 4 elements in these plans:

1. A planning process.
2. An assessment of risks.
3. A mitigation strategy (action plan) and,
4. A maintenance plan and updating process.

Disaster Mitigation Plans must be approved by 11/04 to receive HMGP funds after that date.<sup>3</sup>

### 2.3.1.3. Western Governor’s Association, *10-Year Comprehensive Strategy for Reducing Wildland Fire Risks<sup>4</sup>* and *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment—Implementation Plan*

The goals of the 10-Year Comprehensive Strategy are to:

- Improve Prevention and Suppression
- Reduce Hazardous Fuels
- Restore Fire Adapted Ecosystems
- Promote Community Assistance.

This is done through a “Framework for Collaboration... Local Level—Successful implementation will include stakeholder groups with broad representation including Federal, State, and local agencies, tribes and the public, collaborating with local line officers on decision making to establish priorities, cooperation on activities, and increase public awareness and participation to reduce the risks to communities and environments.”<sup>5</sup>

### 2.3.1.4. Local Implementation of Federal Fire Policies

Fire protection objectives on the state and private lands in Rosebud County are addressed indirectly in the Cooperative Fire Management Agreement between USDI’s Bureau of Land Management, National Park Service – Intermountain Region, Bureau of Indian Affairs – Portland and Billings Area, US Fish and Wildlife Service – Rocky Mountain Region; USDA’s Forest Service – Northern Region; and the State of Montana – Department of Natural Resources and Conservation. This agreement requires that Annual Operating Plans be developed and approved by May 1 of each year specifying how the terms of the agreement will be carried out between the cooperating agencies and the state. Cooperation with local county governments is encouraged and additional agreements may be made with counties through the State of Montana. These agreements are to validate the arrangements desired between the county and a federal agency or the state in respect to assistance with their fire management programs.

Generally, the county may not have the skills, resources or the interest to pursue a comprehensive fire use program. They are interested in, and in some cases dependent upon, help with their fire suppression program, however. As a minimum, those procedures for obtaining state and federal assistance for large wildland fire needs to be included in any agreements prepared at the local level. They should include an articulation of the suppression standards that need to be employed by federal or state agencies working on a fire on state and private land. The reverse is also true for county resources working on federal or state lands. In the former case the objective will most likely be to suppress the fire at the smallest size possible utilizing the full range of suppression resources

<sup>3</sup> [www.fema.gov/pdf/fima/howto1.pdf](http://www.fema.gov/pdf/fima/howto1.pdf)

<sup>4</sup> [www.westgov.org/wqa/initiatives/fire/final\\_fire\\_rpt.pdf](http://www.westgov.org/wqa/initiatives/fire/final_fire_rpt.pdf)

<sup>5</sup> [www.westgov.org/wqa/initiatives/fire/implement\\_plan.pdf](http://www.westgov.org/wqa/initiatives/fire/implement_plan.pdf)



available. In the latter case, however, certain land management objectives may preclude this approach, i.e., mechanical equipment in a proposed wilderness area.

There may be circumstances where a fire is human caused and assistance in an investigation is needed. The skill to be a fire investigator can either be developed within the county or it can be brought in from another agency on an as needed basis. Whichever route is chosen, there should be no delay in utilizing a fire investigator when the situation is warranted.

### 2.3.2. State Policies

Currently there are no State policies that require a rural fire district or county fire organization to develop a community fire plan.

It is the policy of the State to complete pre-disaster mitigation plans in compliance with the Federal direction as noted above.

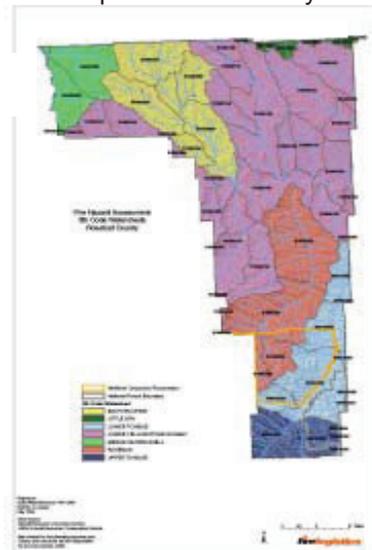
### 2.3.3. Local Policies

The Rosebud County Commissioners have not adopted an up-dated Growth Policy for the county. The existing Rosebud County Comprehensive Plan was adopted by the county in 1979. One of the goals of the Comprehensive Plan was to encourage growth in or near existing towns and communities. Unfortunately, there has been an increase in wildland-urban interface development in areas that were previously subdivided before the subdivision regulations were adopted by the Legislature. The other land use document that affects fire service delivery by the Rosebud County Fire Department is the Subdivision Regulations of Rosebud County (See Subdivision Regulations in Resources Section). Those subdivision regulations were adopted in October of 1995. The purposes of the Rosebud County Subdivision Regulations are to promote public health, safety and general welfare by regulating the subdivision land etc., providing ingress and egress. They also support the purposes of 76-3-102 MCA. The subdivision regulations are intended to promote the coordination of roads within subdivided lands with other roads, both existing and planned, the avoidance of danger or injury by reason of natural hazard or the lack of water, drainage, access, transportation or other public services, and the avoidance of excessive expenditure of public funds for the supply of public services. There is an existing county disaster plan, which has a wildfire annex; however, there is no pre-disaster mitigation plan adopted in Rosebud County as of the writing of this report. It is currently being drafted and will be adopted at some future date.

### 2.4. Planning Area Boundaries

Figure 1

The Rosebud County CFP covers Rosebud County in its entirety. The county has been further subdivided into sub-planning areas by the 5<sup>th</sup> Code Watershed. The purpose of the 5<sup>th</sup> Code Watershed is to provide a uniquely identified and uniformed method of subdividing large drainage areas. These smaller 5<sup>th</sup> Code Watershed units are approximately 40,000 acres to 250,000 acres and are useful for fire planning purposes as well as other programs by the Natural Resources and Conservation Service and other agencies in Figure 1 (See 5<sup>th</sup> Code Watershed Map and Planning Area Map in Map Section 10.4).



### 2.5. Acknowledgements

Fire Logistics, Inc. would like to thank the Rosebud County Fire Department, especially Chief Doug Martens and Brad Adler; Rosebud County Weed District, especially Amy Adler; Bureau of Land Management, especially Dena Sprandel-Lang; Custer National Forest, Ashland Ranger District; Northern Cheyenne Tribe; Rosebud County Disaster & Emergency Services Coordinator; the Rosebud County Local Emergency Planning Committee and Rosebud County Board of County Commissioners for their contributions to this plan.



## 3. Planning Process

### 3.1. Stakeholders

The following stakeholders are affected by wildland or wildland-urban interface fires and have a stake in a successfully implemented CFP:

- Rosebud County Fire Department
- Rosebud County Fire Warden
- Rosebud County Board of County Commissioners
- Bureau of Land Management-Miles City Field Office
- Custer National Forest-Ashland Ranger District
- Colstrip Fire Department
- Ashland Fire Department
- Forsyth Fire Department
- Northwestern Energy
- Tongue River Electric Cooperative
- Mid-Yellowstone Electric Cooperative
- Montana Dakota Utilities
- Range Telephone Cooperative
- Qwest
- Froze To Death Grazing Association
- Rosebud County Weed District
- Rosebud County Conservation District
- Rosebud County DES
- City of Forsyth
- City of Colstrip
- Rosebud County Sheriff
- Montana Department of Natural Resources and Conservation
- Bureau of Indian Affairs
- Northern Cheyenne Tribe

### 3.2. Current Process and Plan Development

In the spring of 2003, the Rosebud County Fire Department awarded a contract to Fire Logistics, Inc. to complete a comprehensive risk assessment of Rosebud County and to develop a mitigation plan which provides recommendations for improvements to the county's fire protection system, mitigation measures for treating the fuels and providing protection to structures. The Rosebud County Community Fire Plan (CFP) is the result of that effort.

#### 3.2.1. Avenues of Community and Public Input

The draft Rosebud County CFP was submitted for review and comment by:

- Custer National Forest
- Bureau of Land Management
- MT Department of Natural Resources & Conservation – Eastern Land Office
- Rosebud County Board of County Commissioners
- Rosebud County Fire Department
- Rosebud County Disaster & Emergency Services Coordinator
- Northern Cheyenne Tribe
- Bureau of Indian Affairs-Fire Management
- Rosebud County Local Emergency Planning Committee

Comments were incorporated into the final draft of the Rosebud County CFP.



### **3.3. Review of Existing Plans, Studies, Reports, Technical Documents**

The following documents have been analyzed for materials, which may need to be referenced and incorporated in the Rosebud County CFP:

- Cooperative Fire Protection Agreement
- Custer National Forest Plan
  - Wilderness Study Area – Zook Creek
  - Hiking and Riding Area – Tongue River Breaks  
- King Mountain
- Research Natural Area – Poker Jim
- BLM Fire Plans – Fort Howes Protection Area
- 1979 Comprehensive Plan

### **3.4. Local Jurisdictional Involvement, Approval, Adoption**

Once the Rosebud County CFP is reviewed and approved by the Board of County Commissioners, it should be adopted and amended into Rosebud County's Pre-Disaster Mitigation Plan as the fire component.



## 4. Community Description

### 4.1. General Environmental Conditions

Rosebud County is located in southeast Montana. It covers just over 5,000 square miles and has a population of about 9,300 people. There are 1,136 miles of road in the Rosebud County. The county also crosses seven distinct watersheds. Most lands in the county are used for some type of agriculture. It is approximately 85 air miles from the north edge of the county to the south edge. The majority of the land type is relatively flat when compared with the western part of the state and the Little Wolf Mountains in the southwestern portion of the county represents some of the highest elevations in the county. Elevations vary from 2,400 to 4,500 feet. The northern half of the county receives less than 12 inches of rainfall, while the southern half of the county receives less than 18 inches of rainfall and the adapted ecosystems contain vegetative types and quantities commensurate with soil productivity and available moisture.

#### 4.1.1. Topography, Slope, Aspect, Elevation

Generally, northern aspects and drainage bottoms support a greater amount of plant life than southern aspects and other dry sites. The greater share of the land mass in Rosebud County is covered by grasses and shrubs. There are scattered areas of pine forest as well as some hardwoods stands, especially along river bottoms. The portion of the county north of the Yellowstone River is much sparser than the area to the south. It does not experience the same lightning activity as the south end of the county and consequently has far fewer fire problems. The broad vegetative types of Rosebud County are displayed in Land Cover Map, Figure 2 (See Land Cover Map in Map Section 10.4).

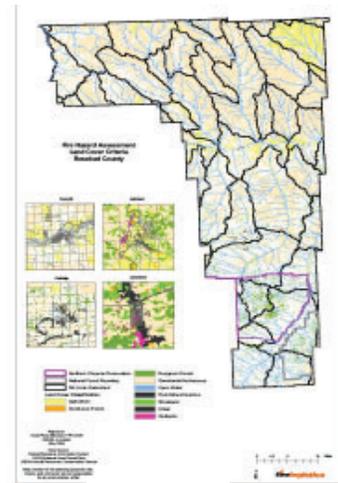


Figure 2

The main drainages are Yellowstone River flowing west to east, Tongue River and Rosebud Creek flowing southwest to northeast. There are no perennial drainages north of the Yellowstone River. There are a few smaller perennial streams and numerous other intermittent streams scattered throughout Rosebud County. The northern portion of the county drains south into the Yellowstone River, while the southern half of the county drains to the north into the Yellowstone River.

Rosebud County north of the Yellowstone River is best described as open arid grazing land with sparse grass, grease wood and sage fuels. Numerous escarpments resembling badland type topography break up the vegetative continuity. The area south of the Yellowstone River can be described as a mix of grazing land with scattered timbered ridges. The vegetation in the southern portion of the county is much heavier and the continuity of the fuels is more conducive to large wildland fire spread.

This area north of the Yellowstone River contains some scattered steep slopes and knobs. These are most common in the vicinity of the Black Buttes and Sand Creek. Overall, the elevational change north of the Yellowstone River is less than 500 feet. South of the Yellowstone River the terrain is more varied with drainages flowing into the Tongue River and Rosebud Creek from several different directions. Elevational changes are more pronounced and approach 1500 feet toward the southern boundary of the county. Along the conifer covered ridges, the slopes fluctuate widely, with some steep pitches approaching 60% plus.

Aspect is the direction toward which a slope faces. Because of the topographic nature of Rosebud County, the area north of the Yellowstone River has a higher representation of southern aspects, whereas south of the Yellowstone River the terrain is more conducive to all aspects being more or less equally represented.



The Planning Map shows the topography of Rosebud County and it is evident that there is some correlation between slope, elevation and vegetative cover types. The pine forest is generally located on higher ground in distinct bands where soil and moisture conditions are conducive to its survival. The ponderosa pine type is usually denser on north and east aspects where the soils can retain moisture somewhat longer than they can on south and west aspects.

The tillable lands that can be irrigated are used for hay; grain and root crops while the remaining lands are left in a more natural state. They are either grazed by domestic stock or they remain unused except for wildlife.

#### 4.1.2. Meteorology, Climate, Precipitation and Fire Weather

Climate directly affects fire behavior, with wind being the major influencing factor. Generally, steering winds aloft in this area prevail out of the south to west with surface winds southeast to southwest, and are moderate to strong, depending on the elevation and aspect. Southwest and west facing slopes are more exposed to the prevailing winds with drier fuels, which relates to increased fire behavior activity. Fires generally spread from southwest to northeast.

Because of the high frequency of thunderstorm activity in southeast Montana, it is not unusual to experience winds blowing from any quadrant of the compass. This wind anomaly challenges all wildland fire suppression efforts and leads to fire fighter safety concerns and the potential for large wildland fire growth. As the current and protracted drought continues, fire suppression personnel need to keep current on the fire weather, especially predicted wind direction, through spot weather forecasts from the National Weather Service in Billings (See Spot Weather Observation and Request in Resources Section 10.5).

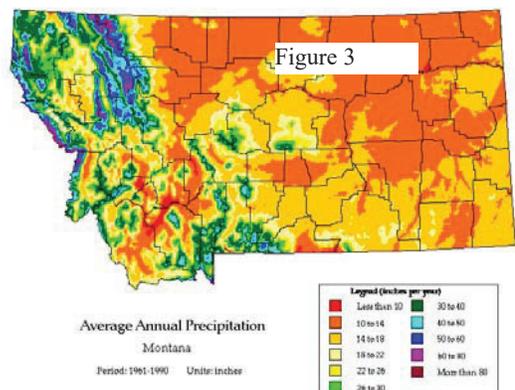
During calm days, fire spread will be dictated by topographic configuration and local upslope-down slope winds. During strong wind events fire spread will be dictated by wind direction and the winds will override the effects of the topographic features.

Moisture regimes can be defined in terms of storm tracks, which generally move across the county from west to east. The storm track affecting the analysis area starts along the western edge of Rosebud County and tracks from west to east across the county. Typically, any significant moisture associated with these storm tracks has often been depleted prior to reaching the northern half of the county.

The higher elevations in the Wolf Mountains provide the orographic lifting that results in more moisture to this forested area. However, heavy lightning activity associated with these storms contributes to a significant number of fire starts along the storm's path. These dry lightning events increase in number as the angle of the sun increases from spring into summer while the freezing level increases as the air mass becomes warmer. This allows the lower levels of the atmosphere to dry resulting in thunderstorms that become more dry than wet. These thunderstorms often produce strong down draft winds and produce virga with little, if any, rain reaching the ground. These storms can be 15-30 miles wide at their bases with lightning expected anywhere within a 40-50 mile radius of the storms.

Winters have been mild for the past few years and moisture continues well below normal. Winter and spring snow events have been fewer with less snow accumulating over the mountains with streams and rivers flowing at or near record low levels. In addition, subsurface moisture continues to be short helping stress vegetation of all types.

Figure 3 depicts the average annual precipitation for the State of Montana during the years of 1961 through 1990. Climatic seasonal changes can influence fire behavior as well. Winter months of





December through February are generally non-fire months, but snow pack accumulations can be a key factor in potential fire activity for any given fire season. In the last half of the 20<sup>th</sup> century, spring seasons (April through June) were generally moist months with low fire frequencies. The ignitions that did occur resulted in mostly low intensity fires. Since 1988, the weather patterns have been changing to a warmer and dryer cycle resulting in extended fire seasons; spring months no longer can be counted on as a low fire period of the year. Long-term drought conditions have increased the complexity in Rosebud County and it is not unusual for significant pre green up fire to occur.

As the season turns to summer, grasses and shrubs begin to lose their live fuel moisture, down fuels begin to dry, and fire conditions normally peak by late August. As autumn approaches, conditions generally begin to cool, but the presence of dry cold frontal passages become common and can promote conditions of extreme fire behavior, similar to those experienced with the Horse Creek Fire in 2003. Late fall conditions in November mark the transition into winter, but again, dry cold frontal passages at this time of year and the lack of snow pack can lead to conditions of rapid fire growth and high intensity fire behavior during wind events.

The normal summer weather pattern for Rosebud County can best be understood by looking at the larger weather pattern for the entire western United States. As discussed previously, the Bermuda High makes it way across Texas and New Mexico in July; it cuts off a supply of low-level moisture. As this moisture is diminished, general thunderstorm activity decreases across eastern Montana and allows the lower atmosphere to dry. This is timed with the development of a high-pressure system that sets up across Montana with subsidence in the high pressure that dries the atmosphere. This subsidence does two things; it brings very warm temperatures (90-105) to the area and it lowers the relative humidities. This lower relative humidity begins to dry the fuels of all size classes (1 hour, 10 hour, 100 hour, and 1000 hour plus time lag fuels). The 1-100 hours time lag fuels will show evidence of drying within 3-5 days. The 1000 hours fuels will take significantly longer to dry, usually in the 3-5 weeks range.

Long-term drought poses another significant challenge because of its effect on current vegetative conditions i.e., reduction in live fuel moisture content. Fire records for Rosebud County indicate that the current wildland fire suppression actions are effective when the energy release component (ERC) is below the 97<sup>th</sup> percentile. When the ERC is above the 97<sup>th</sup> percentile, wildland fire suppression actions are historically not effective. Since 1988 Rosebud County area has experienced 10 significant fire seasons. The fire seasons of 1988, 1996 and 2003 are considered the benchmark years for the county.

A review of the fire history for Rosebud County for these years showed the following correlations:

- Average maximum temperature 88-96 degrees.
- Average wind speed was 7-12 mph consistently from the southwest. Wind gusts from 30-40 mph were common and often exceeded 55 mph. These gusty winds were most common through out the year.
- August is consistently the driest month with weather records showing poor nighttime relative humidity recovery. During the day light hours the relative humidity begins to drop substantially beginning at 0900 and remains low until 2100. These lows bottom at the lower teens around 1700-1800. The August time frame from consistently remains the time period with the lowest relative humidity and poorest humidity recovery. In reviewing the weather history, these are also days in the month where relative humidities remained low for multiple twenty-four hour periods.
- Moisture events did occur in August, but were limited in location, content and duration. The remnants of these events kept the maximum relative humidity high in that particular area for a period of seven days after initiation.
- ERC were recorded above the 90<sup>th</sup> percentile for the majority of the time for the months of July, August and September.
- Continued drought conditions are causing stress on live plant species resulting in ERC levels approaching the 90<sup>th</sup> percentile in the spring months of 2004.
- Conifer stands contributed to large fire spread, where high fire intensities did not allow for aggressive initial attack or fire suppression with ground forces due to safety concerns.



- Lightning occurrence usually begins in late May with the heaviest occurrence in June through August. Dry lightning is most prevalent in July and August.

## 4.2. Population, Demographics

Population and demographics information was derived from the 2000 Census. The population for Rosebud County was 9,383. The area in square miles was given as 5,027. The Census showed 3912 housing units with a density of 0.8 housing units per square mile with a population density of 1.9 per square mile.

The Census also revealed five individual geographic areas with demographic breakdowns. Ashland, with a population of 464 had 170 housing units spread out over 7.55 square miles, which breaks down into a population density of 61.4 and a housing density of 22.5 units per square mile. Birney with a population of 108 had 39 housing units spread out over 15.10 acres, which breaks down into a population density of 7.2 and a housing density of 2.6 per square mile. The City of Colstrip with a population of 2346 had 936 housing units spread out over 4.49 square miles, which breaks down into a population density of 522.6 and a housing density of 208.5 per square mile. The City of Forsyth with a population of 1944 had 976 housing units spread out over 1.11 square miles, which breaks down into a population density of 1759 and a housing density of 883.1 per square mile. Lame Deer with a population of 2018 had 573 housing units spread out over 55.58 square miles, which breaks down into a population density of 36.3 and a housing density of 10.3 units per square mile.

## 4.3. Infrastructure: Roads, Driveways, Utilities, Communication, Water Supply, Schools, and Hospitals

Interstate 94, US Highway 12 & 212 and Montana 39 are the major roadways that serve Rosebud County. A spur line of Burlington Northern Santa Fe Railroad extends south along Montana 39 to south of Colstrip. It is used primarily for transportation of coal to the main line in Forsyth. Burlington Northern Santa Fe Railroad follows the Yellowstone River and provides a significant amount of rail traffic. In addition to the Yellowstone River the Tongue River and Musselshell Rivers and Rosebud Creek also flow through the county.

A power generation facility is located in Colstrip with major electric transmission lines extending throughout the county. Power distribution lines along with telephone lines and railroad signal lines are concentrated along the Yellowstone River and into Colstrip. There are portions of the County without utility services.

Many private ranches and developments are provided access utilizing graveled roads. Utilities in the form of overhead transmission and distribution lines are present.

The county has three public airports located at Forsyth, Ashland and Colstrip.

Electric service is provided by Northwestern Energy, Montana Dakota Utilities, Tongue River Electric Cooperative, and Mid Yellowstone Electric Cooperative through an aboveground electrical distribution system, that requires annual inspection and clearing of right of way of flammable vegetation.

Large propane tanks are located throughout Rosebud County at ranch and home sites.

Telephone service is provided by Range Telephone Cooperative and Qwest through underground lines. Cellular phone service is provided by Verizon and Cellular One and there is reasonable cellular coverage throughout the county.

## 4.4. Emergency Services

Emergency services within Rosebud County include fire protection, emergency medical services including ambulance transportation, law enforcement, and emergency preparedness.



#### 4.4.1. Fire Protection

Community fire suppression and protection is provided by several volunteer fire departments - Ashland, Colstrip, Lame Deer, and Forsyth. Wildland fire protection is provided by the Rosebud County Fire Department under the direction of the county fire warden with various fire suppression resources throughout the County under the Rosebud County Co-Op plan (See Engine Locations in Map Section 10.4).

ID	Year	Make	Model	Vin Number	License	4x4	Location
2	1984	Chevy	Custom Deluxe	1GBJK34M7EV123225	DSL28 / Gas	Yes	Forsyth
3	1987	Ford	F250 XLT	1FTHF2613HPA74934	29-295 /	Yes	Forsyth
4	1987	Mack	Econodyne	1M2P141Y1HA005426	29-210 /	No	Forsyth
5	1997	Ford	XL	1FTHL126G2VEA70448	29-234 / Gas	Yes	Hutson
6	1986	Ford	XL	2FTJF35L4GCA57313	29-75 / Gas	No	Bierys
7	1988	Chevy	Scotsdale 2500	1GCGK24KXKE109975	29-268 / Gas	Yes	Sleaford
8	1986	Ford	F-350	1FDHF38L4GPC01091	29-67 / Gas	Yes	Kluser
9	1992	Chevy	Cheyenne	1GCGK24KONE173897	29-221 / Gas	Yes	Baileys
10	1977	Chevy	Custom Deluxe	CCS3375158513	29-133 / Gas	No	Clifton
11	1974	Dodge	Custom 200	W26BB7S060623	DSL 53 / Gas	Yes	Wildhorse
12	1985	Ford	F-250	1FTEF26GE3PA05857	29-227 / Gas	Yes	Hathaway
13	1992	Chevy	Silverado 2500	1GCGK24FXNE219903	29-288 /	Yes	Angela
14	1969	Mack		4P8654	DSL 70 /	No	Wildhorse
15	1980	Chevy	bridge truck	C17DBAU138416	29-77/gas	No	Ingomar
16	1977	Chevy	2500	CCL2472132540	29-25/gas	Yes	Bascom
17	1979	GMC	2500	TKL249J512987	29-47/gas	Yes	Birney
18	1997	Ford	F350		/Diesel	Yes	McRae
19	1975	Ford	LN700	N7CFVV94116	29-179/gas	No	Birney
20	1988	AMC	6X6	NKOD4J30839	29-337/multi	No	Baileys
21	1991	AMC	6x6	024514432	29-317/multi	No	Birney
22	2001	Ford	F550	1FDAW57F41ED62407	29-142/Diesel	Yes	Forsyth
23	2000	Ford	F250	1FTNX21F1YEA15878	29-316/Diesel	Yes	Forsyth
24	2001	Ford	F550	1FDAF57F01ED08098	29-25/Diesel	Yes	Forsyth
25	1995	GMC	3500	1GTHK39N35E509891	29-343/gas	Yes	Forsyth
26	1997	Ford	F250	1FTHW26GOVEA70447	29-344/gas	Yes	Ingomar

Rosebud County is within the Eastern Land Office of the Montana DNRC's geographic area and is a "coop" county. This provides additional resources such as air tankers from Billings and Rapid City, helicopter from Miles City or Ashland/Fort Howes, single engine air tankers from Miles City and crews and overhead through the Eastern Land Office. Single engine air tankers (SEATs) can load retardant at the Colstrip Airport reload facility. During the fire season these resources may be committed to other incidents and may not be available.

Rosebud County has a mutual aid agreement between all the fire protection entities within the county. Rosebud County Disaster Emergency Services has agreements with surrounding counties and these have recently been updated.

##### 4.4.1.1. Fire Engine Pump/Draft Source Sites

Water supply sources for wildland fire protection and structural fire protection throughout Rosebud County are relatively scarce. They include stock ponds, holes in creeks, etc. Due to the long-term drought in Rosebud County, most ranchers would not authorize fire protection entities to utilize their scarce water resources for fire protection. As a result during this extended drought period, water supply sources need to be brought to the fire, through fire apparatus such as water tenders.



#### 4.4.1.2. Training, Certification, and Qualification

All incidents require different skill levels of incident management personnel. To assist in assigning appropriate incident commanders to wildland fire incidents, an incident analysis can be used as a guide to identify and mitigate certain complexity and safety issues by selecting a different strategy, tactic, or higher qualifications of incident command personnel. Certain assumptions are made in this analysis:

- As an incident becomes more complex, the need for an incident management team or organization increases.
- To facilitate assembling an efficient and effective organization, key managers should be involved during the early stages of the complexity analysis; this should include federal, state, and local officials.
- The analysis is not a cure-all for the decision process; local fire history, current fire conditions, and management experience must be considered.

All wildland fires, regardless of size, should have an assigned Incident Commander (IC). The training, certification and qualifications of the Incident Commander (IC) vary by the type of fire. General guidance is:

##### **Type 5 Incident**

- Resources required typically vary from two to six firefighters
- The incident is generally contained within the first burning period and often within a few hours after resources arrive on scene.

##### **Type 4 Incident**

- Command staff and general staff functions are not activated.
- Resources vary from a single resource to several resources.
- The incident is usually limited to one operational period in the control phase.
- No written incident action plan (IAP) is required. However a documented operational briefing will be completed for all incoming resources (See Briefing Checklist in Resources Section).

##### **Type 3 Incident**

- In-briefings and out-briefings are more formal.
- Some or all of the command and general staff positions may be activated, usually at the division/group supervisor and/or unit leader level.
- Type 3 organizations manage initial attack fires with a significant number of resources, an extended attack fire until containment/control is achieved, or an escaped fire until a Type 1 or Type 2 team assumes command.
- Resources vary from several resources to several task forces or strike teams.
- The incident may be divided into divisions.
- The incident may involve multiple operational periods prior to control, which may require a written IAP.
- A documented operational briefing will be completed for all incoming resources and before each operational period (See Briefing Checklist in Resources Section).
- Staging areas or an incident base may be used.

By completing an Incident Complexity Analysis, a fire county fire warden can assess the hazards and complexities of an incident and determine the specific positions needed (See Incident Complexity Analysis in Resources Section).

Required training, experience and prerequisites for various wildland fire management positions are contained in PMS 310-1 (Wildland and Prescribed Fire Qualification System Guide). PMS 310-1 has been adopted by the Northern Rockies Coordinating Group (NRCCG) and, consequently, applies to all wildland fire fighting personnel in the state of Montana and Rosebud County for mobilization outside of the county. Within the County, local standards would apply.



Experience in mobilizing to wildland fires in the county throughout the southeast Montana Region and the Northern Rockies has allowed Rosebud County to apply and to gain experience training and qualifications in wildland fire management, resulting in the members of the Rosebud County Fire Department being trained as high as county fire advisor, liaison officer, strike team leader for engines, etc. Those experiences have allowed Rosebud County Fire to more efficiently perform and manage fire operations within the county.

#### **4.4.2. Law Enforcement**

Law enforcement and evacuation services are provided by the Rosebud County Sheriff and Colstrip Police Department.

#### **4.4.3. Emergency Medical Services**

Rosebud County ambulances and ambulance transport services are provided by the Rosebud County Volunteer Ambulance, with ambulances located in Forsyth, Colstrip, and Ashland.

#### **4.4.4. Emergency Management**

Overall County emergency preparedness comes under the office of the Rosebud County Disaster and Emergency Services.

### **4.5. Insurance Ratings**

The insurance premiums that residential and commercial customers pay are based on a rating system established by the Insurance Services Office (ISO). In its evaluation of a community, ISO considers the water system and the fire protection provided by the fire department. The relative weights of the components are:

Water Supply	-	50
Fire Department	-	40
Fire Dispatch	-	10

The rating system produces ten different Public Protection Classifications, with Class 1 receiving the most insurance rate recognition and Class 10 receiving no recognition.<sup>6</sup> It is important to note that some insurance companies will not insure structures that are outside of the 5 road miles from a fire station.

Throughout Rosebud County there are a number of communities Forsyth, Colstrip, Ashland, and Lame Deer that have individual ISO ratings. Rosebud County, not having a structural fire department, has an ISO Rating of Class 10.

Improvements to the water delivery system dispatch and to the fire district could improve the ISO rating, which would result in some annual insurance premium savings to the county's customers.

### **4.6. Land Use/Development Trends**

The majority of lands in Rosebud County are dedicated to ranching and agricultural but gas/oil production, and coal mining are growing land uses. Increased activity in oil and gas as well as continued coal mining operations will be the dominant land use trends.

Recently there has been an increase in subdivision activity in Rosebud County with a couple of new subdivisions proposed within the county.

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<sup>6</sup> *Fire Protection Handbook*, NFPA 1997  
**firelogistics**



## 5. Current Fire Environment

The following narratives describe the current fire environment in Rosebud County. These perspectives are a result of an on the ground tour conducted by Rosebud County fire authorities and Fire Logistics personnel in October of 2003.

### 5.1. Wildfire Problem Definition

As stated in Chapter 4, Rosebud County does have areas of forested land. Almost all of these are the ponderosa pine ecosystems typical of eastern Montana. As will be discussed in the next section, this ecosystem is prone to have frequent wildland fire interval. The impacts of those frequent fires can be quite variable depending on the values at risk. The emergence of subdivisions within the large open blocks of rangeland presents the probability of material losses to man made improvements as well as possible threats to the occupants of those new developments.

Currently, Rosebud County Fire Department has fire protection responsibilities for wildlands within the county. They are also the de facto structure protection organization with the county. There are at least five major challenges facing the county fire protection organization in the performance of their duties:

Water Supply – Rosebud County is a very arid county with little natural water aside from the Yellowstone River.

Access – The terrain of Rosebud County is such that cross-country travel by engines is difficult and much of the area would be considered inaccessible to vehicles other than dozers or all terrain vehicles.

Communications – Rosebud County is a sparsely settled county with limited infrastructure and, as such, does not have good communication's coverage. Rosebud County does not have good telephone and cell phone communications coverage.

Travel Times – Rosebud County is a very large county and the travel times required to respond to wildland fires is often an hour or more.

Multiple Ignitions – Lightning is the main ignition source for wildland fires with the county and thunderstorms normally start multiple fires per episode. Multiple fire starts challenge the capacity and incident management leadership of Rosebud County Fire Department.

Another situation that has complicated fire protection within Rosebud County was the transfer of initial attack responsibilities on national forest lands from the Forest Service to the Bureau of Land Management. Once a fire exceeds the capabilities of the initial attack suppression resources, however, responsibility for continued actions reverts back to the Forest Service.

### 5.2. Wildland/Urban Interface

During the past several fire seasons of 2000, 2001 and 2002, it has become evident that wildland/urban interface fire losses have increased throughout the Western United States. The expectation under the Federal Fire Policy is "that losses will increase in the future."<sup>7</sup>

The wildland/urban interface is defined as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels.<sup>8</sup> Similar terms are wildland/residential interface and wildland/urban intermix.

The Bureau of Land Management assessed the wildland-urban interface areas within the Miles City District in the early 1980's in Rosebud County by the BLM (See Figure 4). No wildland-urban

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<sup>7</sup> Federal Fire Policy, 2001

<sup>8</sup> Ibid.

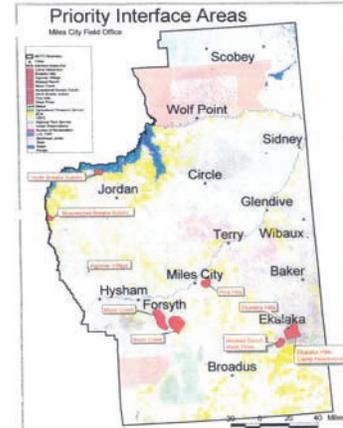


interface areas were identified. However, there are several areas of wildland-urban interface within the county, which have been identified during this planning process (See Planning Area Map in Map Section 10.4).

Areas of wildland-urban interface in Rosebud County include:

- Wildhorse Subdivision
- Hidden Meadow Subdivision
- Bascom Subdivision
- Ashland
- Colstrip
- Forsyth
- Rosebud

Figure 4



The development of portions of Rosebud County into residential lots of varying sizes is contributing to the wildland/urban interface fire problem for the fire protection agencies in Rosebud County. This leads to several complex problems, which need to be addressed in the Fire Plan:

- Access
- Asset Protection Zones
- Water Supply
- Building Construction Requirements
- Fuel Reduction On All Ownerships
- Kinds And Types Of Fire Apparatus Required For Fire Protection
- Structural Fire Protection For Structures Outside Organized Fire Protection Jurisdictions

### 5.3. Structure Fire Problem Definition

The best way to quantify the structure fire problem in the Rosebud County is to conduct an occupancy risk assessment, which evaluates the severity of a specific structure in relation to the fire districts ability to handle the types and severity of emergencies with that structure.<sup>9</sup> Risk categories used in the Self-Assessment Manual developed by the International Commission on Fire Accreditation are:<sup>10</sup>

Category	Description
Maximum/Worst Risk	Occupancies classified as maximum risk will be of substantial size and contain a concentration of properties, which present a very high risk of life loss, loss of economic value to the community or large loss damage to property in the event of a fire. These risks impact the need for the fire department to have multiple alarm capability and have an adequate assessment of their ability to concentrate resources.
High Hazard/Key Risk	Built-up areas of substantial size with a concentration of property presenting a substantial risk of life loss, severe financial impact on the community or unusual potential damage to property in the event of fire.
Moderate/Typical Risk	Built up areas of average size, where the risk of life loss or damage to the property in the event of a fire in a single occupancy is usually limited to the occupants. In certain areas, such as small apartment complexes, the risk of death or injury may be relatively high. The moderate/typical risks are often the greatest factor in determining fire station locations and staffing due to the frequency of emergencies in this category. To assure an equitable response and to provide adequate initial attack/rescue capability to the majority of incidents, the typical risk is often used in determining needed resources.

<sup>9</sup> Fire and Emergency Service Self-Assessment Manual, Commission on Fire Accreditation International, 6<sup>th</sup> Ed.

<sup>10</sup> Fire and Emergency Service Self-Assessment Manual, Commission on Fire Accreditation International, 6<sup>th</sup> Ed.



Rosebud County has buildings and occupancies in all three categories with the majority being in the moderate/typical risk category.

There is no structure fire protection outside the city limits of the incorporated cities and towns in Rosebud County. If a structure fire were to occur and Rosebud County Fire requested mutual aid from one of the incorporated cities or towns to fight the structure fire while Rosebud County's Fire Department's responsibility is to keep the fire from spreading to the wildlands. The issue of no entity providing structural fire service to Rosebud County places the Rosebud County Fire Department in a very tenuous position of responding to a wildland fire with what looks like a fire truck, but not being able to fight the fire due to pump capacity, training, equipment, etc. The issue of structure fire protection in Rosebud County should be addressed by the Rosebud County Commission.

## 5.4. Local Fire Ecology

The prevalent timber type in Rosebud County is ponderosa pine. This type is a fire adapted tree species that has developed natural mechanisms to cope with frequent fire. It has a thick corky bark that insulates the tree's cambium from heat generated by wildland fires. The cambium is the living layer of cells between the bark and the woody portion of the tree stem and is responsible for the growth of both new wood and new bark. Ponderosa pine can be found on hot dry sites such as those found in Rosebud County. Because of the frequency of lightning storms in the county, it is estimated that fire burned in and under most of the natural pine stands at a 10-20 year interval and less than that in some areas. Because of this frequency fuel loadings were traditionally low in the stands as dead branch wood and needle litter were consumed during these fire events. The fires also tended to thin out patches of heavy regeneration that resulted from good cone crop years and favorable moisture conditions. The fires kept the density of trees lower by selectively killing some of the thinly barked seedlings and smaller individual trees. The trees that did survive had a greater supply of nutrients and water to nourish them and were stronger and healthier. In the absence of the heavy fuel loadings, periodic low intensity fires would have had no significant impacts on the older trees that remained.

Figure 5



Since the advent of fire protection, however, the situation has changed considerably. The natural litter occurring from the trees in these stands has accumulated for decades. In most areas there are many more trees per acre than there would have been historically. There are also more situations where continuous fuel exists from the ground to the crowns of mature trees (ladder fuels). This results when too many seedlings survive and, because of intense competition for water and nutrients, form overcrowded pockets of spindly trees. These trees will survive to intermediate heights with many of them bent or broken by snow loads, Figure 5.

Today, when a wildland fire occurs it is much more likely to have greater negative consequence. The higher fire intensity caused by a greater amount of fuel, results in an increased amount of heat. This increased heat can have adverse effects on the soil and, subsequently, the productivity of the site. Higher intensity fires are also more difficult to keep away from improvements that landowners and firefighters wish to protect. Most importantly, they increase the risk to firefighters.

## 5.5. Hazardous Fuels

As displayed in the Land Cover Map, the continuity of heavy fuels, i.e. ponderosa pine, is relatively scattered in Rosebud County. There are areas of continuous pine type covering several thousand acres in size and are the areas that have the greatest potential for supporting large intense fires. Fires may be terrain driven, (plume dominated) or wind driven in this fuel type. This is also the ecosystem type most attractive to developers for the placement of subdivisions.

Areas of sage and brush species also have potential for large intense fires but they are less likely



except under wind driven conditions. There are many thousands of acres of this fuel type in the county.

The most common fuel type is grassland. Fires will normally be of a lower intensity level in this type and will be easier to control. In addition, fires are less likely to start from lightning in this ecosystem.

### 5.5.1. Fire Regime Condition Class

Fire has always been a part of the wildland environment, changing and shaping the structure and composition of vegetation in the area. The five natural (historical) fire regimes are classified based on average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include:

I – 0-35 year frequency and low (surface fires most common) to mixed severity (less than 75% of the dominant overstory vegetation replaced);

II – 0-35 year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

III – 35-100+ year frequency and mixed severity (less than 75% of the dominant overstory vegetation replaced);

IV – 35-100+ year frequency and high (stand replacement) severity (greater than 75% of the dominant overstory vegetation replaced);

V – 200+ year frequency and high (stand replacement) severity.

In southern Rosebud County the predominant tree species of ponderosa pine, a fire dependent tree species, was maintained by fire. Low intensity surface fires burned relatively frequently, keeping ground vegetation and prolific pine regeneration from becoming established and producing ladder fuels. As fire became less of a factor, due to fire suppression, in maintaining the vegetation in these areas the fuel structure changed. As a result, there are more ladder and ground fuels (litter mat and down woody material) that contribute to higher intensity crown fires than what would have occurred historically. This has increased the threat of fire to people and human resource values within the wildlands and wildland-urban interface.

Current “Condition Class” is defined in realms of departure from the historic fire regime, as determined by the number of missed fire return intervals. There are three “Condition Classes” that have been developed to categorize the current condition with respect to each of the historic fire regime groups.

The following table describes each Condition Class:

Fire Regime Condition Class	Description	Potential Risks
Condition Class 1	Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	<p>Fire behavior, effects, and other associated disturbances are similar to those that occurred prior to fire exclusion (suppression) and other types of management that do not mimic the natural fire regime and associated vegetation and fuel characteristics.</p> <p>Composition and structure of vegetation and fuels are similar to the natural (historical) regime.</p> <p>Risk of loss of key ecosystem components (e.g. native species, large trees, and soil) are low</p>
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	<p>Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe).</p> <p>Composition and structure of vegetation and fuel are moderately altered.</p> <p>Uncharacteristic conditions range from low to moderate; Risk of loss of key ecosystem components are moderate</p>



Fire Regime Condition Class	Description	Potential Risks
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances	<p>Fire behavior, effects, and other associated disturbances are highly departed (more or less severe).</p> <p>Composition and structure of vegetation and fuel are highly altered.</p> <p>Uncharacteristic conditions range from moderate to high.</p> <p>Risk of loss of key ecosystem components are high</p>

### 5.5.2. Fire Breaks

Since Rosebud County is primarily an agricultural based county there are many land use activities that break up the continuity of the fuel types, particularly in the sage and grassland types. Cropland, grazed land and roads all contribute to interrupting continuous fuel beds thus giving firefighters an opportunity to safely take effective action on wildland fires.

The Yellowstone River, Tongue River, and Rosebud Creek also provide natural fuel barriers within the county.

There are also areas of open rock and clay bluffs that can prove to be effective barriers to the spread of wildland fire.

### 5.6. Fire History

Almost all fires experienced in Rosebud County are the result of lightning fires resulting from thunderstorms. These starts occur in the ponderosa pine forested areas and are relatively fast spreading in the grass and needle cast understory. They are also relatively easy to control unless they are located in an area where the topographic or fuel conditions are conducive to the fire getting into the crowns of the trees or when high winds move the fire rapidly through the prevalent fuel type. The current long-term drought has made control more difficult in recent years. In an average year there are 60-70 fire starts, which burn a total area of 2000-7500 acres. There have been several large fires in the county over the last ten years. Significant fires in the past include the Early Bird Fire in 1988, Rosebud Fire in 1996 and the Eastern Montana Complex in 2003, Figure 6. These fires occurred on the types of days described in Section 4.1.2 (See Fire History Map in Map Section 10.4).

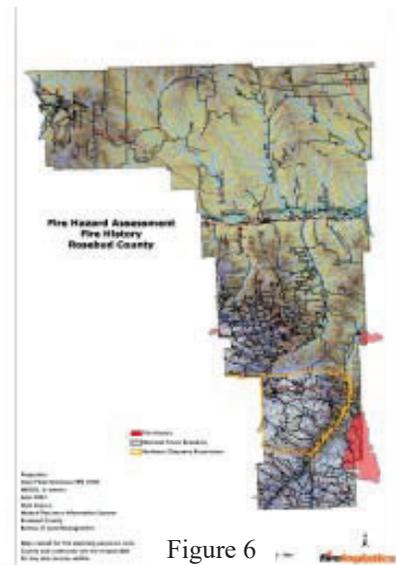


Figure 6

The current performance of wildland fire protection personnel in Rosebud County is admirable considering the size of the county and the travel times required to respond from one end to the other; the frequency of wildland fires and the challenges of keeping local firefighters motivated and qualified to perform fire suppression work. In addition, the overall lack of a water supply in many areas within the county significantly adds to the difficulty of maintaining an effective suppression effort on wildland fires.

On a severe burning day with extreme fire danger and multiple new ignitions it is probable that the supervisory capability and the county resource availability would be quickly exceeded. Mutual assistance agreements with the State of Montana, BLM and the USFS are imperative at a time like this to insure losses are kept to a minimum. Unfortunately, it is likely that local cooperators will have fire problems of their own under these conditions and rapid mobilization and deployment of resources from outside the area will be needed.



## 5.7. Expected Fire Behavior

Fire behavior describes the way fires ignite and spread. Topography, fuel conditions, and weather all influence fire behavior and how wildland fires burn in Rosebud County. Fuel is the only factor influencing fire behavior that we have the ability to manage. The following fire behavior assessment shows fire intensities and fire spread rates in different fuel types/models that are found in Rosebud County. It is important to understand this information to determine what areas contribute to the fire problem in the county.

The following fuel types/models were used for analyzing potential fire behavior:

Fuel Type/Model 1: Grass that dominated by short grass where very little shrubs or timber is present over less than 1/3<sup>rd</sup> of the area. The fine, porous, and continuous fuels that have cured or are nearly cured govern fire spread.

Fuel Model 2: Grass with open timber overstory that cover 1/3<sup>rd</sup> to 2/3<sup>rd</sup> of the area. This model represents the open grass and ponderosa pine and harvested areas where an overstory of timber remains. Fire spread is primarily by a surface fire through the curing or dead grasses with the litter and dead down wood from the open shrub or timber overstory contributing to fire intensity.

Fuel Model 6: Shrubs are older and require moderate winds for fire spread, but can be extremely flammable. Fire will fall to ground at low wind speeds. This fuel model includes sage and pinion juniper shrub lands. Under drought conditions, live fuel moisture is less than normal, causing shrubs to be more flammable.

Fuel Model 10: Older mature timber stands, that have large fuel loads of dead material on the forest floor, are represented by this model. This would include areas that are insect and disease ridden, wind-thrown stands, and over mature stands with deadfall or heavy accumulations of debris. Ladder fuels are usually present. Fire burns in the surface and ground fuels with greater intensity than the other timber types. Crowning, spotting, and torching of individual trees are more frequent in this fuel type.

Fire behavior calculations for these fuel models were made using the fuels, weather, and topographic conditions prevalent for Rosebud County. One is for normal August fire season conditions, called Average, and one for extreme August fire season conditions, called Extreme. The extreme case also takes into consideration severe drought conditions. These conditions would be present in August and September when all the vegetation has cured and dried.

Weather	Average	Extreme
High Temperature	80 degrees	90 degrees
Low Relative Humidity	20%	10%
Mid Flame Wind Speed	5 mph	15 mph

	Fuel Moistures	
	Average	Extreme
Fine Fuels, 0-1/4 in.	6%	3%
Small Fuels, 1/4 - 1 in.	9%	4%
Medium Fuels, 1-3 in.	10%	5%
Large Fuels, >3in.	14%	8%
Shrubs, Live Fuel Moisture	80%	50%
Trees, Live Crown Moisture	100%	60%



The following table is the fire behavior interpretations that should be used for the fire behavior outputs.

### Fire Suppression Interpretations from Flame Length

Flame Length	Fireline Intensity	Interpretations
< 4 feet	< 100 BTU/ft/sec	Fires can generally be attacked at the head or flanks by fire fighters using hand tools. Handline should hold fire.
4 – 8 feet	100 – 500 BTU/ft/sec	Fires are too intense for direct attack on the head with hand tools. Handline cannot be relied upon to hold the fire. Bulldozers, engines, and retardant drops can be effective.
8 – 11 feet	500 – 1000 BTU/ft/sec	Fires may present serious control problems: torching crowning, and spotting. Control efforts at the head will probably be ineffective.
> 11 feet	> 1000 BTU/ft/sec	Crowning, spotting and major fire runs are probable. Control efforts at the head of the fire are ineffective.

Fires are classified according to the fuels they are burning in; ground fires, surface fires, and crown fires. Each burns with different intensities and spread rates depending on fuel, wind, and topography. The following fuel types/models were used for analyzing potential fire behavior:

### Fire Behavior Outputs Average and Extreme

Fuel Type/Model	Rate of Spread (Chains/hour)		Flame Length (Feet)		Fire Size after 1 hour (Acres)	
	Average	Extreme	Average	Extreme	Average	Extreme
1	101	446	5	10	385	4,812
2	40	372	7	20	61	2,333
6	31	212	7	18	57	752
10	10	68	6	15	4	77

The transition from a fire burning in the surface fuels on the forest floor to a fire that burns in the crowns of the trees is determined by the amount of available fuel, the fire intensity or flame length, the presence of ladder fuels to carry the fire into the standing trees, and the wind. A fire may start out torching a single tree or small group of trees. When a fire becomes established in the tree crowns, the wind will usually carry the fire in the crowns creating fire intensities that cannot be dealt with by fire suppression forces.

Crown fires are normally driven by the wind but the dryness of the fuels and tree crowns can cause what is known as a plume dominated crown fire. Crown fires of this type occur because of dry, explosive, and cumulative drought conditions present in the forest. A plume dominated crown fire does not necessarily need wind to keep it sustained. Because of successful fire suppression efforts for the last 100 years, the increased fuel complex in many areas increases the potential for a plume dominated wildland fire.

Spot fires are caused by burning embers carried aloft by the wind and smoke column and dropped ahead of the main fire front. Spot fires need a dry fuel bed to ignite and it is not uncommon for these



fires to start  $\frac{1}{4}$  to  $\frac{3}{4}$  of a mile ahead of the main fire front. These spot fires create serious problems for fire suppression forces trying to protect lives and property well ahead of an advancing fire front.

As spot fires start and gain intensity, they can become as active as the main fire front. This was experienced during the Eastern Montana Complex in 2003. Some fires travel so quickly through a combination of crowning and spotting that there is absolutely no way for fire suppression forces to gain control.

Many of the timber stands in the Rosebud County are ripe for crown fires because of the presence of ladder fuels, heavy, down woody debris on the forest floor and mature or over-mature age classes of the timber stands. These high-risk stands will be available through the BLM some time late in the fall of 2004. This is an incentive for private landowners, county, state and federal agencies in the county to implement a hazardous fuels treatment program on a landscape scale.

## 5.9. Fire Effects Assessment

Wildland fires generally have three possible outcomes on forested areas. They can be lethal, non-lethal or mixed. These outcomes are alluded to in 5.1 Fire Regime Condition Class. A broad definition of each follows:

- Lethal – Fire is of high enough intensity and long enough duration to cause mortality in all or most of the trees and shrubs in the burned area. This result is likely in a hardwood ecosystem but the exception in a healthy ponderosa pine ecosystem. It can result, however, from severe burning conditions and/or unnaturally high fuel accumulations in the forest. When a lethal fire occurs it will be evident for decades that the area has been burned.
- Non-lethal – Fire is not of high enough intensity or long enough duration to kill the trees in the burned area. This is a more normal result in a healthy ponderosa pine ecosystem since the trees have adapted to fire by producing a thick bark. This bark protects the tree's cambium from heat. Within two years of a non-lethal burn almost all evidence of the fire has disappeared.
- Mixed – Fire will create significant areas of both lethal and non-lethal effects within the burned area.

Unless a lethal or mixed fire is experienced, any wildland fire burning in Rosebud County has a much higher probability of negatively impacting human improvements, livestock and forage than it does creating any long term damage to natural resources. While a wind driven, high intensity fire can certainly occur in the county, most fires are expected to be non-lethal or mixed. They may kill pockets of trees in places like draws and steep slopes but many trees will survive. A ponderosa pine can have over 60% of its crown scorched and it can still produce new needles the following year. The most significant natural resource loss from a non-lethal fire may be the short-term loss of forage for livestock.

Landowners can reduce the exposure of their buildings, structures and themselves to a spreading fire. Asset protection and fuel modification zones, which may include grazed areas, should be in place around sites needing protection. This is particularly effective on the south and west sides or down slope from such areas since most fires will progress to the north and east or upslope. Exceptions to this general rule can occur when a thunderstorm is in the vicinity of the fire and downdrafts from it cause the fire to spread erratically.

It is imperative that any new start be controlled as soon as possible. If a fire goes unattended it will continue to spread making eventual control more labor intensive and probably more difficult as it gets into new fuel sources. It also increases the chances of the fire being exposed to some type of severe weather event that can create a dangerous situation for life and property including those of the firefighters.



## 6. Risk Assessment

A fundamental part of any fire plan is identifying what you might lose in a wildland fire, known as assets or values at risk.

### 6.1. Values at Risk

The primary intent of fire protection is to protect the values at risk and maintain healthy forest and grassland ecosystems. The purpose of a successful fire management program is to reduce the risks associated with values that are important to the county, its citizens, and natural resources. Values at risk will be used to assist fire protection agencies in prioritizing mitigation projects.

Some of the values at risk in Rosebud County are:

- Health & Safety – Public & Firefighters
- Property, Improvements & Facilities – Private & Public
- Recreation/Community Impacts – Economic & Social
- Forest/Ecosystem Health
- Timber and Grazing

#### 6.1.2. Health and Safety

***Fire fighter safety should never be compromised***

Rosebud County needs to maintain the safety of their firefighters. Thorough situational awareness on the part of the firefighter and strong incident management by the fire department leadership is critical to the safety of personnel. Wildland fires are capable of moving over significant distances in a short period of time. It is possible that firefighting resources could become trapped during one of these events if they do not maintain a constant situational awareness.

Rosebud County, under current drought conditions, has the potential to have multiple complex wildland fire situations that could conceivably extend for several months. Rosebud County Fire Department should work toward expanding its leadership capability so the county can simultaneously deal with complex multiple ignitions.

In 1997, the “TriData Study: Wildland Firefighter Safety Awareness Study” was commissioned to find ways to improve firefighter safety. Of the 114 recommendations, the #1 recommendation was to “Implement a large-scale, long-range fuel management program.” Fire protection agencies, county officials, and the public must insist on hazardous fuel reduction efforts on a landscape-basis if they are truly serious about improving safety of not only firefighters but the public in general.

#### 6.1.3. Property, Improvements & Facilities

Few wildland fires burn where there is not some threat to homes, ranch out buildings or other structures, fences, power lines, communication sites, or some other type of infrastructure. Fuel treatments (asset protection zones, see in Resources Section 10.5) in the immediate area around structures, designed to reduce wildland fire intensity, can dramatically improve their probability of survival. However, restricting treatments to these areas does little to protect other values-at-risk, some of which may be equally or more important from a neighborhood and/or a community standpoint.

Wildhorse Subdivision is currently in the process of installing water supply tanks and constructing a fire station. Fuel reduction and other mitigation projects designed to enhance the protection of these wildland-urban interface subdivisions are essential.



### 6.1.4. Recreation

Opportunities to enjoy outdoor recreation activities can also be severely hampered by wildland fire and fires can have an adverse effect on the economy of Rosebud County. Areas can be closed to the public for extended periods of time during high fire danger. Often these closures and restrictions occur in early fall during up-land bird and big-game hunting seasons when many non-county residents have plans to travel to the area.

### 6.1.5. Forest/Ecosystem Health

See Section 5.4 Local Fire Ecology.

### 6.1.6. Grazing and Timber

The Forest Service is responsible for providing for multiple-use on national forest lands. The western portion of the Ashland Ranger District of the Custer National Forest is located in Rosebud County. The most common uses on this national forest land would include grazing, timber management and recreation use. This is also the predominant land use on the portion of the Northern Cheyenne Indian Reservation located in Rosebud County. The Bureau of Land Management has a scattering of sections within the county rather than a consolidated block of land like the Forest Service. It is similarly tasked with providing rangeland and recreation use on those BLM lands.

Agriculture and grazing are two of the primary uses on the remainder of the private lands in Rosebud County.

## 6.2. Risk Estimation

The purpose of our fire hazard assessment model is to develop a basic fire risk assessment and to prioritize areas within a county by 5<sup>th</sup> code watershed. The assessment consists of three sub-models: fuel hazard, values at risk, and risk and was designed with the following criteria in mind:

- The model is descriptive and not predictive.
- The assessment is used to prioritize area for further analysis.
- Each model is analyzed separately before being combined in an overall risk rating in order to avoid conflicts between values.

### 6.2.1. Fuel Hazard Sub-Model

Hazard parameter is defined as the physical or biological factors resulting in similar fire behavior characteristics and may result in an undesired wildfire event. The model was developed using slope, aspect, elevation and land cover type. Each criteria was weighted with land cover type weighted X 10 the slope, aspect, and elevation. A low, moderate or high rating indicates the potential for extreme fire behavior, Figure 7 (See Fuel Hazard Model Map in Map Section).

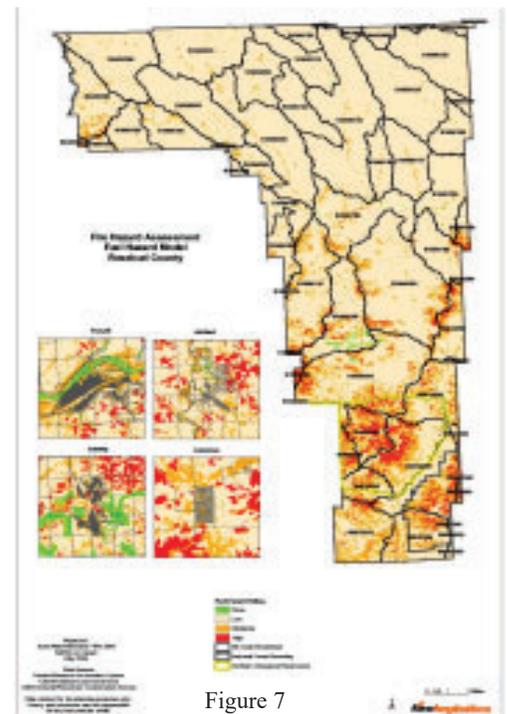


Figure 7

## 6.2.2. Values at Risk Sub-Model

Values at Risk, or the human development data parameter, are defined as natural or developed features that can be affected by fire. Attributes for parcels with structures are extracted from the CAMA data and a point value is assigned for each parcel based on structure presence. A low, moderate or high ranking is assigned each 5<sup>th</sup> code watershed based on the number of parcels with structures within the watershed, in Figure 8 (See Values At Risk Model Map in Map Section 10.4).

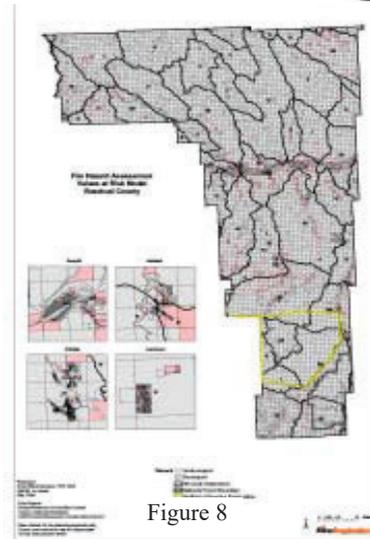


Figure 8

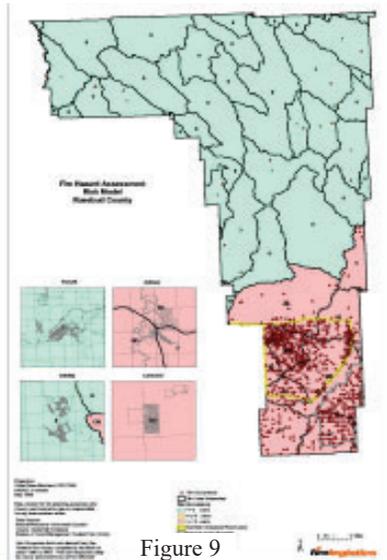


Figure 9

## 6.2.3. Risk Sub-Model

Risk is defined as potential risk to wildfire and is determined by the number of fire ignitions over a time period. Fire ignition points will be totaled by 5<sup>th</sup> code watershed and a low, moderate, or high rating assigned, Figure 9 (See Risk Model Map in Map Section 10.4).

## 6.2.4. Final Fire Hazard Assessment

A grid or vector layer of accumulated point value will be created for each of the three models. The models will be represented separately and assigned a low, moderate or high risk for catastrophic fires by 5<sup>th</sup> code watershed. The final base map will consist of the fuel hazard model, in 30m raster format, assigned low, moderate, or high fire hazard and delineated by 5<sup>th</sup> code watershed. This hazard model will be overlaid with the values at risk (structures) and risk (fire occurrences) models. A final rating fire hazard rating of low, moderate or high will be assigned each watershed and will identify areas in need of further assessment, Figure 10 (See Final Fire Hazard Assessment in Map Section 10.4).

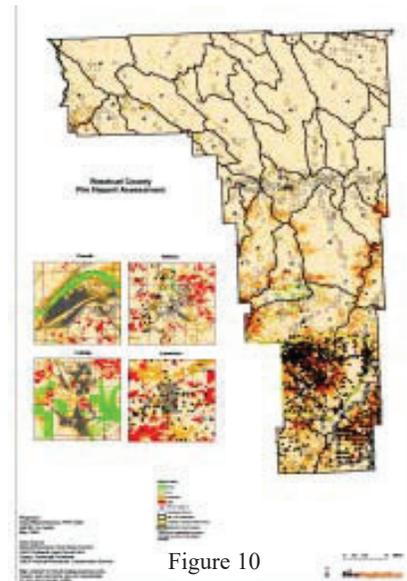


Figure 10

In looking at the GIS generated maps of Rosebud County some areas of potential risk began to take form. When the fuel models are overlain with potential occurrence the areas most likely to experience a wildland fire can be identified. By adding the areas of human occupation or high value one can begin to assign priorities for protection. As with the federal agencies, the county's first priority is protection of human life and secondly, personal property.



### 6.2.1. Discussion of Risk

Most working ranches have adequate clearing around them to hypothetically protect them from crown fire or a running surface fire. A problem can occur if there is too much clutter or untended vegetation around their structures however, that would allow for a simple surface fire to ignite those structures.

Subdivision structures are inherently more vulnerable. People who own them often fail to recognize the relationship between the amount of vegetation around their structures and the threat to that structure from a wildfire. Some are even obstinate about that point refusing to remove any vegetation even though its continued presence reduces the probability that their home will survive a wildfire to almost zero. Firefighters must be very careful to look out for their own welfare first when asked to protect a structure where the owner has refused to do any work to enhance that structure's probability of surviving a wildland fire.

The following list represents Rosebud County's current priorities for fire protection.

- Wildhorse Subdivision
- Hidden Meadow Subdivision
- Bascom Subdivision
- Ashland
- Colstrip
- Forsyth
- Rosebud

In looking at the GIS layered map of Rosebud County it is apparent why these priorities have been established. The three subdivisions are particularly challenging from a protection standpoint because of the lack of some basic amenities such as telephone service and a water supply. The response times are also lengthy for wildland firefighters because of the remoteness of the subdivisions.

History has proven the possibility for large wildland fires in this part of the state when enough continuous fuels are available and when certain weather conditions are present. During one of these events, the actions that have been taken beforehand will generally prove to be much more effective than any actions taken during the event. When conditions of extreme fire behavior exist little can be accomplished aside from evacuating people from harms way and keeping firefighters in safe positions. Any fuel modification efforts that have been completed prior to the event will greatly enhance the firefighter's efforts to protect property during the event.



## 7. Mitigation Strategy -- The Action Plan

This Chapter provides the steps that are being taken or should be taken in Rosebud County to reduce the wildland fire threats to public, fire fighters and other values at risk.

### 7.1. Mitigation Goals

***An overarching principle of this Community Fire Plan is that fire fighter and public safety is the highest priority!***

The mitigation goals of this Community Fire Plan are to:

- A. Rosebud County will evaluate, upgrade and maintain community wildland and structural fire preparation and response facilities, training and equipment to deal with multiple ignitions.
- B. Rosebud County will prevent threats to and destruction of property from wildland fire by adopting subdivision regulations, which include access, water supply, communications and fire stations.
- C. Rosebud County will decrease fuels to reduce wildfire intensity and impact in and around the improvements in the county.
- D. Rosebud County will help educate community members to prepare and respond to wildfire.
- E. Rosebud County will develop and implement a comprehensive emergency response plan.
- F. Rosebud County will improve training and qualifications of their personnel to more effectively interface with incoming Incident Management Teams deployed in the county.
- G. Rosebud County will coordinate fuels reduction opportunities between private landowners and the Custer National Forest, the Miles City Field Office of the Bureau of Land Management and the Northern Cheyenne Tribe.

Planning priorities of the CFP in order of importance are:

- Protect human health and life
- Protect critical community infrastructure
- Protect private property
- Protect natural resources

### 7.2. Existing Mitigation Efforts

The following sections describe the existing mitigation measures that are being utilized in Rosebud County to decrease the risks from wildland or wildland-urban interface fire. Rosebud County and Rosebud County Fire Department should ensure that these efforts are supported and continued.

#### 7.2.1. Asset Protection Zone (Defensible Space)

Generally when you look at a county in Eastern Montana, where the residents are native to Montana and have experience with the fire history in a county, you will see that these residents generally construct, on an annual basis, a fire break around their homes and ranch improvements.

The problem lies with either people inexperienced with the fire history in Rosebud County or people who build summer cabins who do not realize they need to protect themselves from wildland fires. As future development occurs within the county, the Board of County Commissioners should ensure that *Firewise* principles are adopted and that there are adequate development regulations to provide and maintain asset protection zones in these developments (See in Resources Section 10.5).

#### 7.2.2. Neighborhood Preparedness

Wildhorse Subdivision is in the process of installing some water storage tanks for fire protection and they are also constructing a fire station.



### **7.2.3. Fire Protection Response**

Long travel distances for fire suppression resources are the norm in Rosebud County. The County Fire Warden has located the three Department of Natural Resource engines and nineteen county Type VI engines as strategically as he can throughout the county within the opportunities that exist. Each engine must be hosted, maintained and operated by a willing volunteer. Three water tenders and two 6x6's are also located at hosted locations within the county. When a fire is reported the volunteers are notified and they respond on a closest forces concept. They also respond to new ignitions reported on national forest and BLM administered lands. In many cases the actual land ownership cannot be accurately determined until initial attack is in progress. When fires are located on lands other than Forest Service or BLM, the county volunteers continue their actions until the fire is controlled or until relieved by the fire warden.

The opportunity for misunderstanding occurs when the fire is located on federal lands. The federal agencies have developed strict requirements for wildland firefighters including an annual physical fitness-testing requirement. These are the result of a myriad of reviews and investigations of serious incidents that have occurred in wildland firefighting over the years. For all practical purposes the volunteers meet all the standards except for the physical fitness requirement. The test itself involves walking three miles in under 45 minutes while carrying a 45-pound pack. Whether it is the logistical aspect of conducting the test, the perceived intrusion of requiring it or the inconvenience of taking it, the volunteers have not embraced it. As long as the volunteers are acting within the scope of an existing mutual aid agreement and no "hiring" is enacted they may continue to operate on federal lands, albeit under the direction of the federal Incident Commander when he/she arrives. When responding to a fire on federal lands that has already been initial attacked by county volunteer forces through a mutual aid agreement, the federal Incident Commander will either release the county forces or continue using them depending on the situation.

If the fire is already contained the IC will most likely ask the volunteers if they wish to be released and, if so, continue the control and mop up with federal firefighters. When the fire is not contained and the county forces are still needed, the IC should continue to use them as long as they are still operating within the scope of their mutual aid agreement. If at some point, however, the volunteers are to be hired by the IC, i.e. their continued use would require payment from federal funds, they are then required to meet all federal standards, including satisfactory completion of the pack test. This is where the potential for misunderstanding occurs. When a volunteer engine cannot verify that it meets all standards and is released instead of being hired, the volunteer firefighters often feel as if they have been "run off" the fire. While many of the volunteers may prefer to go home it is difficult for them to understand why they would be released when they are clearly needed in the suppression effort. On the other hand, if they were hired and one of the volunteers was seriously injured the subsequent accident investigation would fault the IC for knowingly utilizing a resource that did not meet federal standards on a federal fire.

Various IC's may react differently depending on their knowledge of the rules of engagement but, from a legal standpoint, no engine or firefighter can be reimbursed unless they meet all federal standards, including the pack test. Unfortunately, this difference in firefighter standards, dependent on the status of a particular fire, raises the greatest barrier to smooth working relationships between the federal and volunteer firefighters in Rosebud County or elsewhere in eastern Montana for that matter.

### **7.3. Coordinated Prevention, Protection Projects, and Response Plan**

Future efforts in planning and implementation of prevention, mitigation and response project should be closely coordinated between Rosebud County and their cooperating partners, i.e., BLM, USFS and the State of Montana. It is likely that some projects would be more effective if implemented on the lands of two or more jurisdictions rather than by a single entity. Cooperation and coordination will also result in avoiding duplicating efforts or overlooking opportunities to protect values at risk.



In an effort to reduce new fire starts during periods of very high or extreme fire danger, there is a statewide process for instituting fire restrictions and closures by zone in the Northern Rockies Geographic area. Rosebud County is in the Eastern Montana Zone, Figure 11. Rosebud County Fire Department and its cooperators need to be coordinated in this process to ensure close communications and common actions occur during critical periods of fire danger.



Figure 11

## 7.4. Prioritization Process

Recommended projects have been prioritized based on the risk estimation in Section 6.2.

## 7.5. Recommended Projects and Programs

This area describes recommended projects and actions that address the mitigation goals of the Rosebud County CFP.

### 7.5.1. Vegetation Management/Fuel Modification Projects

This section addresses specific actions to reduce fuel loads, whether in forests, brush, or grasslands.

Proposed Project 7.5.1.1 – Form a collaborative planning group (Fire Safe Council) with the BLM and USFS, ranchers, Rosebud County Fire Department, Rosebud County Disaster & Emergency Services, Board of County Commissioners, power companies and other cooperators, and other to plan fuel reduction projects on a landscape basis.

Project Coordinator – Rosebud County FD

#### 7.5.1.1. Thinning and Limbing

Silvicultural treatment of fuels is a technique used to eliminate a portion of the fuels in forested areas. Some of the smaller trees are cut and removed to create more growing space between the larger trees. This basic forestry practice of thinning will usually increase timber values for the landowner by concentrating annual growth in a few larger trees rather than many small trees. Limbing is another technique accomplished by removing the lower branches of trees and like thinning it reduces the ladder fuels that allow a fire to climb from the ground up into the forest canopy. General litter cleanup is the removal of dead and downed woody debris on the forest floor that can contribute significantly to fire behavior, as these fuels tend to be very dry and readily combustible.



Figure 12

Proposed Project 7.5.1.1.1 – Reduce the vegetation in those areas within the subdivisions where the continued presence of the fuels represents a clear potential to generate high fire intensities, Figure 12. Wildland fires burning under high intensities will pose the greatest threat to structures, their inhabitants or firefighters. The county could start in those areas where fuel modification projects would have the most potential to positively impact the greatest number of people or structures. Normally, these areas would be on the western or southern edges of the



subdivisions or down slope from improvements. Changing crown density and interrupting the ladder fuel continuity should be highest priority. Fuel modification areas need to be a minimum of 50 feet wide and closer to 100 feet whenever possible. Look for areas of active tree or shrub encroachment where the absence of periodic natural fires has allowed vegetation, like juniper or heavy ponderosa pine regeneration, to survive. Eliminating these plants while they are young is relatively inexpensive and over time it will significantly reduce the resistance to control factor for firefighters when fighting a fire in that area. This is a treatment that can be especially effective upwind from subdivisions.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.1.1.2 – Once the fuels in an area have been reduced to an acceptable level it is critical that they not be allowed to return to the condition they were in prior to treatment. Treated areas should be inspected at 5-10 year intervals to determine if they would still be effective during a wildland fire. Most likely they will need some type of follow up maintenance, at that point in time, but this work should require less effort and at a reduced cost from the original treatment. If it is not accomplished periodically the full treatment costs will be required again in 20-30 years.

Project Coordinator – Rosebud County FD and BLM

### **7.5.1.2. Prescribed Burning**

Prescribed burning—or controlled burning—is a relatively quick and inexpensive way to reduce fuel loads. However, in many situations, especially where there are structures nearby, preparatory work needs to be done to reduce the overall flammability of the site.

The county may wish to explore the opportunities for using prescribed fire on private lands within the county. There are some tangible benefits to local ranchers when they use low to moderate intensity prescribed fire to increase the quantity and palatability of grass on pastures, especially on those now occupied by sagebrush or other brushy hardwood species. It will also set back the encroachment of ponderosa pine unto grasslands where this is a problem. Forage levels have been increased two to four times the pre-burn levels on many sites in Montana and sage has been reduced to about 10 percent of pre-burn levels. One drawback to prescribed fire is that the area to be burned should not be grazed for one season prior to burning and one season after burning. The reasons are to insure enough fine fuels are present on the site to adequately carry the fire during burning and to allow the new and/or rejuvenated grass plants adequate time to develop healthy root systems the following growing season. Several research publications completed by the Intermountain Research Station discuss the types of results that can be expected.

Areas that have been previously treated by prescribed fire make effective fuel breaks when attempting to control a wildland fire. The lighter nature of the grassy fuels reduces the resistance to control required of firefighters and if the lands have been grazed, may even cause the fire to burn itself out on its own.

One of the greatest benefits to prescribed burning is the training opportunity it provides for the volunteers. On a wildfire they are often forced to be reactive rather than to plan and execute actions in a more orderly fashion. When conducting a prescribed burn they will be able to observe fire behavior in a non-emergency setting. They will also learn how to effectively ignite the area to be burned and how to deploy the holding forces to make the best use of available skills and equipment. All of this can be accomplished while functioning in the serious but more controlled environment of a prescribed fire.

Proposed Project 7.5.1.2.1 – Opportunities may arise from planning efforts to jointly conduct prescribed fire projects. Rosebud County Fire Department should participate in these burns to improve their training, qualifications and experience in wildland fire management. Efforts such as these promote better interagency cooperation and working relationships.

Project Coordinator – Rosebud County FD/Northern Cheyenne/USFS/BLM



Proposed Project 7.5.1.2.2 – Work with the Rosebud County Weed Department to establish a wash requirement for contractors, other local and government apparatus that conduct prescribed burns within the county (see the Weed Management Plan).

Project Coordinator – Rosebud County Weed and Fire Department

### **7.5.1.3. Grazing**

Rosebud County can expect the continued encroachment of fires off of timbered grounds, such as the USFS, BLM, and Northern Cheyenne onto private ownership.

Proposed Project 7.5.1.3.1 - Landowners should be encouraged to sustain grass ecosystems through grazing and to control tree encroachment in those areas, particularly where they are adjacent to heavily timbered federal or tribal ownership.

Project Coordinator – Rosebud County FD

### **7.5.1.4. Industrial Resource Management**

Proposed Project 7.5.1.4.1 – Ensure that the Tongue River RR develops and maintains the fire management plan required by the Memorandum of Agreement between the counties and the railroad.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.1.4.2 – Ensure that railroads within the county control the fire hazard along their right-of-way according to Section 69-14-721. If a fire occurs as a result of an ignition along the railroad right-of-way, the Rosebud County Fire Department should ensure that a fire investigation occurs to document that the cause and origin of the fire was the railroad and then bill the railroad for suppression costs for all railroad fires.

Project Coordinator – Rosebud County FD

### **7.5.1.5. Biomass Utilization**

Proposed Project 7.5.1.5.1 – Explore any opportunities to dispose of biomass material on either a profit or break even basis. If there is no market for chips or hog fuel in the area and no possibility of utilization for posts or poles, look at designating a site or sites where material can be safely piled and burned during low fire danger periods.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.1.5.2 – Explore involving the local RC&D or other economic development agencies within southeastern Montana to work with Chuck Waldie’s Portable Sawmill, which is located off of Moon Creek, and try to utilize that sawmill to make timber out of fuel reduction project biomass.

Project Coordinator – Economic Development Groups in Rosebud County in southeastern Montana

## **7.5.2. Safety Zones**

Location of safety zones within some of the subdivisions is probably the best approach to protecting human life during a fast moving fire, especially when residents are faced with the alternative of trying to navigate narrow roads under smoky conditions. Any required clearance work on these identified areas should be accomplished prior to fire season as labor and equipment become available. One important point is to insure that the development of procedures, such as when to occupy them and



what should and should not be taken into them, are clearly understood by anyone who may need to use them.

Proposed Project 7.5.2.1 – Review each subdivision and determine if safety zones may be necessary considering ingress and egress issues as well as the surrounding fuel type. Where they are appropriate, assist the subdivision residents in determining where to locate them, what maintenance work needs to be done and how and when they should be used.

Project Coordinator – Rosebud County FD

### **7.5.3. Infrastructure Improvements**

Improvements to improve local infrastructure are discussed in this section.

#### **7.5.3.1. Water Supply**

Although water supply is not a direct function of the Rosebud County Fire Department, water supply unquestionably impacts the structure fire suppression performance of the department. Water supply, or lack of water supply, indirectly affects the whole community through the insurance rates they pay.

Proposed Project 7.5.3.1.1 – Prepare a strategic water source plan for the county, which shows the most efficient sources of water to support wildland firefighting efforts. It may be necessary to develop new sources in some isolated dry locations in order to reduce refill times to an acceptable level. GPS the location of water supply points and work with the Rosebud County Weed Department to develop a water supply map for Rosebud County.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.1.2 – Continue to encourage homeowners associations and individuals to develop water sources that can be used by fire protection personnel. Placement of water tanks in Wildhorse Subdivision is an innovative approach although the vulnerability of the fiberglass tanks to vandals could be a problem in the future as non-local visitation increases.

Project Coordinator – Homeowners' Associations

#### **7.5.3.2. Utilities**

Proposed Project 7.5.3.2.1 – The Rosebud County FD should work with the Northwestern Energy, Tongue River Electric Cooperative, Mid Yellowstone Electric Cooperative, and Montana Dakota Utilities to ensure that the required clearances are maintained for all electrical transmission lines in the Rosebud County.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.2.2 – The Tongue River Electric Cooperative, Mid Yellowstone Electric Cooperative, Montana Dakota Utilities, and Northwestern Energy should provide power line safety demonstrations to the Rosebud County Fire Department members and subdivision and homeowner associations on a biannual basis.

Project Coordinator – Rosebud County FD and Power Company Managers

#### **7.5.3.3. Emergency Response**

Emergency response to wildland, wildland-urban interface and structure fires includes the placement of stations, apparatus and personnel to meet the needs of the community.



Proposed Project 7.5.3.3.1 – Develop a capital improvements plan to up-grade fire apparatus and equipment in Rosebud County Fire Department.

Project Coordinators – Rosebud County Fire Warden with assistance of the Rosebud County Board of County Commissioners.

Proposed Project 7.5.3.3.2 – Either put a radio into rancher's vehicles or authorize them to utilize county fire frequencies in the local ranch radios, especially in the Birney area and throughout the rest of the county, as needed.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.3.3 – Work with the county commissioners to develop a long-term plan to provide structural fire services to as many structures throughout the county as possible. One mechanism might be what is called an ISO Engine, which is basically a beefed-up brush engine with ladders, breathing apparatus and some minor equipment. To qualify for Class 9 Fire Protection, an apparatus needs to have a pump capable of delivering 50 gpm or more at 150 psi and a tank of at least 300 gallons. There should be training records, which indicate date and time, location of fires, number of members, meetings, training sessions, maintenance of apparatus, etc. A roster of fire department personnel should be kept up to date. Equipment is 250 foot lengths of ¾ inch or 1 inch booster hose, 1 ½ pre-connects or equivalent with a nozzle, 2 portable fire extinguishers. Minimum size should be 20 bc with 10 bc 2A rating, one 12 ft ladder with folding hooks, one 24 foot extension ladder, one pick head axe, 2 electric hand lights, one pike pole, one bolt cutter, one closet tool and one crow bar. These standards qualify an engine and meets ISO to get your rating from a 10 to a 9.

Project Coordinator – Rosebud County FD and Rosebud County Commissioners

Proposed Project 7.5.3.3.4 – Ensure that potential impacts from the Lewis and Clark Bicentennial are anticipated during the 2006 fire season. Bicentennial events will occur in mid-to late summer during 2006 and will have a high impact on fire protection entities in Rosebud County.

Project Coordinator – Rosebud County Fire Department, Rosebud County Sheriff, and Rosebud County DES

Proposed Project 7.5.3.3.5 – The Rosebud County Board of County Commissioners should consider making the position of the Rosebud County Fire Chief a full-time position due to the complexity of the wildland fire program.

Project Coordinator – Rosebud County Commissioners

### **7.5.3.3.1. Fire Stations**

Proposed Project 7.5.3.3.1.1 – Establish protection, i.e., fire stations, from the elements for strategically located county and state engines and tenders where it is not currently provided. Getting this equipment under some type of cover will greatly extend the life of rubber and synthetic components such as tires and hoses. It will also reduce oxidation of metal components and will increase the overall reliability of the equipment.

Project Coordinators – Rosebud County Fire Department and Board of County Commissioners

Proposed Project 7.5.3.3.1.2 – At the existing fire station site, develop a capital plan to finance the construction of a building for a training room and office space for the Rosebud County Fire Department.

Project Coordinator – Rosebud County Fire Department and Rosebud County Commissioners



### **7.5.3.3.2. Training, Certification, and Qualification**

In a needs assessment of the US Fire Service conducted by US Fire Administration in an NFPA in December of 2002, one of the items that was found regarding training was that an estimated 41% of the fire department personnel involved in wildland fire fighting lack formal training in those duties with substantial needs in all sizes of communities.<sup>11</sup> Needs Assessment also found that only 26% of the fire departments could handle wildland/urban interface fire affecting 500 acres with locally trained personnel. Rosebud County Fire Department greatly exceeds this capability. It is not unusual for them to handle a fire of 1000 acres or larger, either a wildland/urban interface fire or a wildland fire.

Proposed Project 7.5.3.3.2.1 – Encourage volunteers to meet training requirements, wear their personal protective equipment and to take the firefighter pack test each spring. The County Attorney should determine if existing county standards are adequate to protect the county from any litigation concerning the injury or death of a volunteer firefighter.

Project Coordinator – Rosebud County Attorney

Proposed Project 7.5.3.3.2.2 – Work on qualifying each engine operator as a Type IV or Type V Incident Commanders for greater effectiveness and to provide more relief for the county fire warden and his assistant.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.3.2.3 – Training Incident Commanders to request and understand a spot fire weather forecast. (Request, data, belt weather kit)

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.3.2.4 – Develop a training program which encompasses County Fire Wardens, County Sheriff's, Disaster and Emergency Service officials, Mayors, City Councils and Fire Chiefs, and other government officials, to maintain currency with their fire program to include their roles and responsibilities as government officials. This training would provide the skill level to determine the appropriate level of Incident Management Team (IMT) and the ability to write a delegation to the IMT, which would include the management objectives of the local government for the emergency incident.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.3.2.5 – Develop a limited Type 3 capability in Rosebud County utilizing personnel from the Rosebud County Fire Department, Rosebud County Sheriff's Office, Rosebud County Ambulance Services, and others that might be available within the county to provide some limited Type 3 capability to support an all risk incident, including wildland and wildland/urban interface fires.

Project Coordinator – Rosebud County DES with support from Rosebud County Fire

### **7.5.3.3.4. Operational Procedures & Programs**

Proposed Project 7.5.3.3.4.1 – Work with BLM to obtain a real time representation of their Lightning Detection System for the Rosebud County Fire Department. This will give the County Fire Chief a marked advantage in deploying county fire protection assets during periods of lightning activity.

Project Coordinator – Rosebud County FD

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<sup>11</sup> Needs Assessment US Fire Administration NFPA December 2002



Proposed Project 7.5.3.3.4.2 – GPS the perimeters of all fires that are 100 acres or larger and develop a fire history database and maps for the county utilizing GIS. Upgrade GPS units so that they are capable of tracts allowing Rosebud County Fire personnel to map the perimeter of fires larger than 100 acres so that they interface with the county's GIS program at the Rosebud County Weed Department.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.3.4.3 – Rosebud County Fire Department should order the County Assistance Team (CAT) as early as possible during an emerging incident to avoid experiencing key overhead shortages and overloading Rosebud County personnel.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.3.3.4.4 – The Rosebud County Weed Plan requires that fire suppression equipment be washed down prior to fire suppression activities to eliminate weed seeds and other noxious species moving into Rosebud County. Selected spots throughout the county should be established, and a wash-down facility, which is transportable, be developed and moved to a site.

Project Coordinator – Rosebud County Weed Department with support from the Rosebud County FD

Proposed Project 7.5.3.3.4.5 – Develop a plan that will alternately schedule a county Duty Officer or Relief Duty Officer to be on call daily during the critical fire season months of July and August. The intent of this recommendation is to insure that key personnel are getting sufficient rest periodically and that they do not go through the entire season without a break.

Project Coordinator – Rosebud County Fire Warden

Proposed Project 7.5.3.3.4.6 – Rosebud County Fire Department needs to keep records on fire responses to all areas within the county to establish a fire history and occurrence map. This information will be invaluable in establishing mitigation activities and future funding requirements. The records should include a GPS location of each fire if not mapped to be included in the fire history maps.

Project Coordinator – Rosebud County FD

#### **7.5.3.4. Access**

Proposed Project 7.5.3.4.1 – As road signs are replaced throughout the county, replace them with non-combustible reflective road signs that would withstand a wildland fire.

Project Coordinator – Rosebud County Road Department and Rosebud County Commissioners

#### **7.5.4. Asset Protection Zone (Defensible Space)**

Figure 13

One of the single most important mitigating factors to increase the chances for the home's survival during a wildland-urban interface fire is the creation and maintenance of an asset protection zone (defensible space). Defensible space refers to an area around the home where the native vegetation has been modified to reduce the wildland/urban interface fire threat to the home and provides a safe area for fire fighters to work effectively and safely, Figure 13 (See Asset Protection Zone Guideline Table in Resources Section 10.5.5).





Slope and fuels affect the size of the defensible space. Homes near steep slopes and in heavy fuels will need to clear additional vegetation to mitigate the effects of the radiant and convective heat currents and flame lengths. The slopes should be planted to native vegetation that is fire resistant.

Proposed Project 7.5.4.1 - The National Fire Plan also mandates that local governments develop and adopt local land use plans and ordinances that provide for the maintenance of defensible space and fuel management on municipal and private property.<sup>12</sup> The Rosebud County Commissioners should develop land use plans and ordinances that provide for defensible space and fuel management.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.4.2 – Work with Colstrip Parks and Recreation Department and PPL Montana to ensure that there are fuel mitigation projects accomplished on the common areas within the city of Colstrip. There is an extensive amount of bug kill and dead/dying trees in those common areas and those are beginning to represent a significant fire hazard to the community.

Project Coordinator – City of Colstrip

Proposed Project 7.5.4.3 – City of Colstrip, Ashland and Forsyth Fire Departments should ensure that residences adjacent to common areas within the Cities of Colstrip, Ashland and Forsyth are provided with adequate defensible space and adequate asset protection zones.

Project Coordinator – Colstrip City Fire Chief, Ashland City Fire Chief, and Forsyth City Fire Chief

## 7.5.5. Recommended Building Materials/Fire Wise Construction

A home may be vulnerable to a wildland/urban interface fire because of its design, construction and/or location. There are steps a homeowner or developer can take to reduce the chance of home catching fire, or resist further damage if it does catch fire.

Proposed Project 7.5.5.1 – Recommend the use of Firewise Construction, Design and Materials<sup>13</sup> and Firewise Construction Checklist<sup>14</sup> to developers and homebuilders (See in Resources Section 10.5)

Project Coordinator – Rosebud County FD

## 7.5.6. Fire-Resistant Landscaping

The landscaping plan of the homeowner is an integral component of the defensible space developed by the homeowner. Each lot should be thought of in terms of four zones, with each zone having a different purpose and emphasis in the overall defensible space concept for the property.

Zone A consists of the area from immediately next to the home to a distance of approximately five feet. The primary purpose of this zone is to have the least flammable type of landscaping immediately adjacent to the home to prevent ignition from firebrands and direct flame contact.

Zone B lies between five feet and at least 30 feet from the home. This zone provides the critical area where fire fighters can defend the home and where the fuels have been substantially reduced in height and volume.

Zone C represents the lot from 30 feet to approximately 60 feet from the structure. This area lies outside the formal landscape area and should be modified as described in the asset zone guidelines, which are attached.

Zone D is the property perimeter buffer which is 60 feet to the property line for lots 2 ½ acres or less

<sup>12</sup> See [www.westgov.org/wqa/initiatives/fire/implement\\_plan.pdf](http://www.westgov.org/wqa/initiatives/fire/implement_plan.pdf)

<sup>13</sup> Firewise Construction, Design and Materials, Stack, Colorado Forest Service

<sup>14</sup> [www.firewise.org](http://www.firewise.org).



or 60 feet to 200 feet around the perimeter of lots larger than 2.5 acres. This serves as a transition zone where you want to reduce the wildfire rate of spread and intensity, begin bringing the fire from a crown fire into a ground fire so that fire department resources can safely respond.

Provisions should be made as each phase is submitted for review to ensure the landscaping plans are reviewed for their appropriateness as a component of the defensible space requirement for the property. Provisions also need to be made by the developer to ensure long-term continuing maintenance for the defensible space surrounding the homes and businesses in the project. (See Asset Protection Zone Guidelines, Firewise Landscaping Checklist<sup>15</sup>, Fire and Your Landscape, Fire Scaping Resources for Montana Homeowners<sup>16</sup> in Resources Section 10.5 of the CFP).

Proposed Project 7.5.7.1 – Utilize the Firewise Landscaping Checklist and Fire and Your Landscape (See in Resources Section 10.5).

Project Coordinator – Rosebud County FD

### **7.5.7. Evacuation Plan**

Getting people out of harms way in a fire is critical. This section addresses specific projects designed to move people quickly, safely, and effectively.

Proposed Project 7.5.7.1 – Develop evacuation plans for the Wildhorse Subdivision and Ashland.

Project Coordinator – Rosebud County Sheriff

### **7.5.8. Public Education**

Educating residents about wildland fire issues is one of the most effective ways to reduce fire hazards, whether that be in K-12 schools, or programs designed for adults.

Proposed Project 7.5.8.1 – Sponsor a Firewise Community Program locally within the county for the public and continue that every other year. Integrate weed and fire into any public education that is conducted during the Firewise Community Program.

Project Coordinator – Rosebud County FD

### **7.5.9. Legal Requirements**

#### **7.5.9.1. Subdivision Regulations**

Proposed Project 7.5.9.1.1 – Adopt appropriate subdivision regulations which address the wildland-urban interface (See Model Regulations in Resources Section 10.5).

Project Coordinator – Rosebud County FD

Proposed Project 7.5.9.1.2 – The county fire warden needs to ensure that wildland fire concerns are addressed in the subdivision review process for any future planned subdivision. The purpose for his input is to avoid creation or perpetuation of any untenable situations, from a fire protection standpoint. Issues such as road systems, water supply, building materials and covenants covering vegetation management are all of concern to the fire warden and they can directly affect his ability to be effective.

Project Coordinator – Rosebud County FD

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<sup>15</sup> [www.firewise.org](http://www.firewise.org)

<sup>16</sup> Montana Nursery & Landscape Assoc. 2003



## 7.5.9.2. Agreements, MOU's & Operating Plans

Proposed Project 7.5.9.2.1 – Review all agreements and memorandums of understanding with cooperators. Follow up on those that have not yet been completed and insure annual operating plans are completed when specified. The following key points should be adequately covered within the agreements so that there are no unanswered questions:

- Clearly state who has jurisdiction for and will provide an IC for fires on BLM, national forest and county lands, respectively.
- When one agency responds first to another agency's fire, clarify what the rules of engagement, disengagement and expectations are for that agency when the responsible agency arrives at the scene.
- When a complexity analysis indicates a Type III, Type II or Type I Incident Management Team is needed, how is that request processed and who must approve it.
- Who will be the county liaison with that overhead team?
- Detail the process that the county needs to follow in order to obtain aviation resources such as air tankers and helicopters in a timely manner.
- Lay out reimbursement procedures.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.9.2.2 – One issue that it might be helpful to periodically review is the jurisdictional responsibilities for wildland fire on Tribal, Custer National Forest and Bureau of Land Management lands within Rosebud County. The Organic Act, the Protection Act, and the Taylor Grazing Act place the responsibility for fire protection on the respective federal agencies for the lands administered by them. There are exceptions when another agency has been designated as the Protecting Agency by virtue of an agreement, i.e. BLM protects NF lands for the Custer National Forest through the Cooperative Fire Protection Agreement. This assigned protection responsibility only involves initial attack on new fire starts. Once a fire escapes initial attack and extended attack efforts, the responsibility falls back to the home agency. A clear understanding of jurisdictional authorities will help all firefighters understand their roles within the county. Agreements and operating plans with BIA, BLM, USFS, State of Montana and adjoining counties must be current and valid. Without these operating plan requirements being fulfilled, the likelihood of a misunderstanding among the parties concerned continues.

Project Coordinator – Rosebud County FD

Proposed Project 7.5.9.2.3. – Develop materials and training programs to ensure that a delegation of authority is properly executed between the appropriate "Authority Having Jurisdiction" and the Type III, II, or I Incident Commanders.

Project Coordinator – Rosebud County Fire Warden

## 7.6. Prioritized Actions, Implementation Timeline

Ask Doug for his thoughts on priorities.

### 7.6.1. Short Term (< 1 year)

Identify your simplest, most ready, or most pressing projects that you can begin almost immediately.

Your project list.



### **7.6.2. Medium Term (1- 3 years)**

Identify those projects that are of high – medium priority that you will address in the next decade. Develop a timeline for which projects to implement when.

Your project list.

### **7.6.3. Long Term (3 + years)**

Identify those projects that are either very long-term, or of low priority, to be addressed in the next decade. These projects can be just as important as your immediate projects, but need to wait to be implemented.

Your project list.



## 8. Plan Monitoring and Review: How to Keep this Plan Active and Up-to-Date

### 8.1. Timeline (5 years)

DMA 2000 requires that plans be updated every five years. This does not mean you have to rewrite it or redo this entire process. Rather, you are required to review your mitigation plan.

Proposed projects should be updated as the keeper of the plan becomes aware of new projects that might be implemented to mitigate a wildland fire problem. The prioritized project list should be revised every year based on new data and available dollars. The entire plan should be updated or reviewed on the same cycle as the pre-disaster mitigation plan.

### 8.2. Incorporation into Local Jurisdictional Plans

This plan should be adopted by local Rosebud County and the recommendations be incorporated into their other planning mechanisms, such as a County Growth Policy and Pre-Disaster Mitigation Plan.



## 9. Summary and Conclusions

### 9.1. Analysis and Findings

The complexity of the wildland fire program has significantly changed in Rosebud County over the last 15 years, due the development of wildland/urban interface, long term drought, and changes in the wildland ecosystems. The leadership and the level of fire preparedness within Rosebud County have been able to keep pace with this changing environment through the efforts of the County Fire Warden. The Rosebud County Board of Commissioners need to recognize this effort and also need to be supportive of future needs of the County's fire forces to further respond to a changing fire environment and the associated public safety risks.

In the recommended projects and programs section of this report, Section 7.5, significant changes are recommended. Funding for many of these suggested projects and programs can be obtained through the National Fire Plan and FEMA grant programs. The Rosebud County Board of Commissioners are strongly encouraged to utilize a grant writer to increase the wildland fire suppression, public education, training and qualifications capability of the Rosebud County and County Fire Department.



## 10. Appendices

10.1. Bibliography

10.2. Glossary

10.3. Public Education Materials

10.4. Maps

10.5. Resources