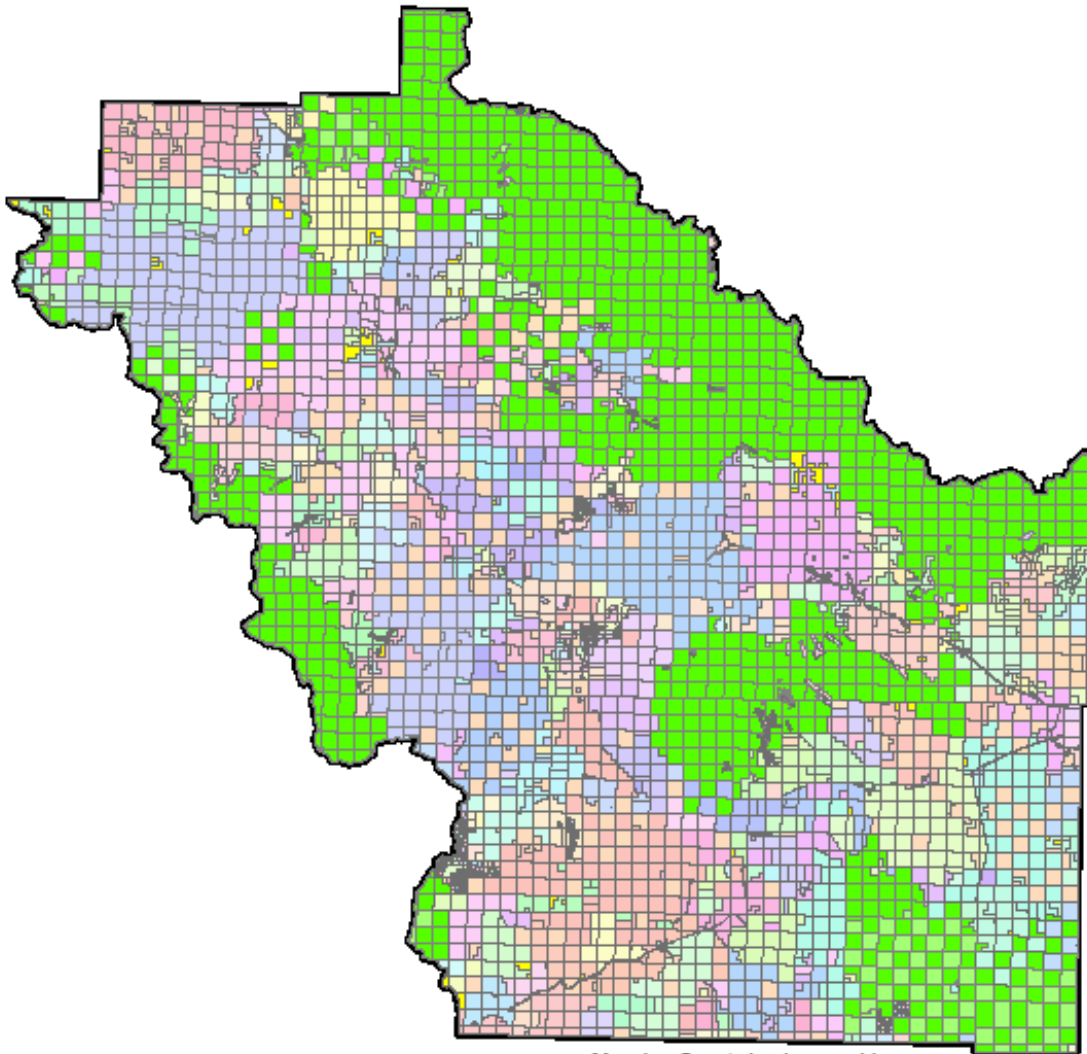


Meagher County Community Wildfire Protection Plan



Meagher County land ownership

May 2014

Meagher County Wildfire Protection Plan 2014

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The Meagher County Community Wildfire Protection Plan has been Reviewed and Approved by the following Signatories:

Prepared by: Jess Secrest, Secrest Fire Solutions, LLC. 

Chair, Board of County Commissioners

Meagher County Fire Warden

White Sulphur Springs Fire Department

BLM – Lewistown Field Office

Lewis & Clark & Helena National Forests

Gallatin National Forest

Central Land Office, MT Dept. of Natural Resources & Conservation

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Meagher County Wildfire Protection Plan 2014

1. Executive Summary

1. a. Problem Overview

Meagher County covers just over 2,394 square miles, or 1,530,867 acres and typically has 35 to 40 wildfires per year. Four fire departments are located throughout the county, including the White Sulphur Spring City Fire Department, Grassy Mountain Fire Department, Martinsdale Fire Service Area, and the Meagher County Rural Fire Department. Meagher County interacts with the Montana Department of Natural Resources and Conservation (DNRC), Bureau of Land Management Lewistown Field Office, Lewis and Clark NF, Helena NF and the Gallatin NF, thus creating a high degree of interagency complexity. In addition to the local government resources, a number of engines are positioned throughout the county by the DNRC, under the county coop program.

As with numerous counties in Montana, new structures continue to be built in the Wildland Urban Interface (WUI). This increasing development in interface areas is accompanied by potential access problems for fire suppression vehicles and a general lack of understanding by new residents of the need for an asset protection zone to guard the improvements against fire events. The increased activity of insects and pathogens (Mountain Pine Beetle, Spruce Bud Worm, White Pine Blister Rust and others) has caused considerable changes to the fuel conditions over the past decade, while shifting weather patterns are contributing to longer and more active fire seasons.

1. b. Process Overview

The Meagher County Community Wildfire Protection Plan (hereafter known as “CWPP”) has been developed to assist Meagher County, Meagher County Fire Departments and the federal and state 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 CWPP is intended to outline the Meagher County Fire Department’s plans and activities targeted at reducing the risk of high severity/intensity wildfires and/or WUI fire events in Meagher County. The intent of this planning document is to ensure that the health, safety and welfare of Meagher County’s citizens remain secure from the threats of structural and wildland fires.

1. c. Overall Goals

The CWPP will improve planning and fire management tools for county and the county fire department alike, which will allow Meagher County to provide its citizens with the means to live more safely in a fire prone ecosystem. The CWPP fosters the preservation of the economy of Meagher County by maintaining and improving the efficiency of fire protection in the County.

1. d. Methodology

The wildfire assessment for Meagher County was developed through analysis of Geographic Information Systems (GIS) data. This data-based approach enables fire management personnel to look at specific areas of high risk, such as municipal watersheds, wildland urban interface

Meagher County Wildfire Protection Plan 2014

subdivision areas and evacuation routes, as well as to recommend projects that should be included in the hazardous fuel mitigation plan.

1. e. Mitigation Plan

The planning priorities of the CWPP are: protect human health and life, protect critical community infrastructure, protect private property, and protect natural resources. Mitigation goals include performing structure protection evaluations and treatments, evacuation road evaluations, and completing fuel reduction projects. Fuel treatment areas, prioritized according to threat and community importance, are detailed in Hazardous Fuel Mitigation Projects.

2. Introduction

2. a. Background and History

This 2014 CWPP is a rewrite and update of the 2008 Meagher County CWPP. This 2014 CWPP has been developed to assist White Sulphur Spring City Fire Department, Grassy Mountain Fire Department, Martinsdale Fire Service Area, and the Meagher County Rural Fire Department and the federal and state agencies in identifying private and public lands at risk of severe wildfires, and to explore strategies for the prevention and suppression of such fires. The CWPP is intended to outline Meagher County's activities targeted at reducing the risk to human health and life, protect critical community infrastructure, protect private property, and protect natural resources.

The CWPP will improve planning tools for county officials as well as the fire departments, which will result in better building and development codes and regulations, particularly as they relate to the development of the WUI and urban expansion. The CWPP fosters the preservation of the economy of Meagher County by maintaining and improving the fire protection capability of the County.

This CWPP meets National Fire Plan (NFP), Healthy Forests Restoration Act (HFRA) and Federal Emergency Management Agency (FEMA) standards. The CWPP must be a standalone plan. The process must follow the guidance specified in Preparing a Community Wildfire Protection Plan - A Handbook for Wildland-Urban Interface Communities. This document is a collaboration of a number of organizations, and can be found at the website for the Society of American Foresters <http://www.stateforesters.org/files/cwpphandbook.pdf>.

2. b. Mission

The mission of the Meagher County Fire Departments is:

“To safely protect the lives and property of the residents of Meagher County to the best of our ability and in the most efficient manner possible.”

2. c. Current Relevant Fire Policies

A brief discussion of the relevant fire policies is provided to educate the community.

Meagher County Wildfire Protection Plan 2014

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.” (See <http://www.forestsandrangelands.gov/>). It mandates community participation in its implementation. 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.

10-Year Comprehensive Strategy for Reducing Wildland Fire Risks

See <http://www.forestsandrangelands.gov/resources/plan/documents/7-19-en.pdf>

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 Fuel
- Restore Fire Adapted Ecosystems
- Promote Community Assistance.

This is done through a Framework for Collaboration. Successful implementation will involve 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, cooperate on activities, and increase public awareness and participation to reduce the risks to communities and environments.

Healthy Forests Restoration Act

See <http://www.forestsandrangelands.gov/resources/overview/hfra-implementation12-2004.shtml>

The Healthy Forests Restoration Act (HFRA) represents the legislative component of the Healthy Forests Initiative, introduced by President Bush in January 2003. Title I of the HFRA authorizes the Secretaries of Agriculture and Interior to expedite the development and implementation of hazardous fuel reduction projects on federal land managed by the US Forest Service or Bureau of Land Management when certain conditions are met.

Priority areas for use of expedited authority include the wildland urban interface, municipal watersheds, areas impacted by wind throw or insect and disease epidemics, and critical wildlife habitat that would be negatively impacted by catastrophic wildfire.

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The HFRA emphasizes the need for federal agencies to work collaboratively with communities in developing hazardous fuel reduction projects and places priority on treatment areas identified by the communities themselves in a CWPP

Montana State Policies

76-13-115. State fire policy

The legislature finds and declares that:

- (1) the safety of the public and of firefighters is paramount in all wildfire suppression activities;
- (2) it is a priority to minimize property and resource loss resulting from wildfire and to minimize expense to Montana taxpayers, which is generally accomplished through an aggressive and rapid initial attack effort;
- (3) interagency cooperation and coordination among local, state, and federal agencies are intended and encouraged, including cooperation when restricting activity or closing areas to access becomes necessary;
- (4) fire prevention, hazard reduction, and loss mitigation are fundamental components of this policy;
- (5) all property in Montana has wildfire protection from a recognized fire protection entity;
- (6) all private property owners and federal and state public land management agencies have a responsibility to manage resources, mitigate fire hazards, and otherwise prevent fires on their property;
- (7) sound forest management activities to reduce fire risk, such as thinning, prescribed burning, and insect and disease treatments, improve the overall diversity and vigor of forested landscapes and improve the condition of related water, wildlife, recreation, and aesthetic resources;
- (8) development of fire protection guidelines for the wildland-urban interface is critical to improving public safety and for reducing risk and loss; and
- (9) catastrophic wildland fire in wildland-urban interface areas resulting from inadequate federal land management activities to reduce fire risk has the potential to jeopardize Montanans' inalienable right to a clean and healthful environment guaranteed in Article II, section 3, of the Montana constitution.

Currently there are no State policies that require a rural fire district or county fire organization to develop a community wildfire protection plan; however, it certainly is encouraged by the State Fire Policy.

It is the policy of the State to complete pre-disaster mitigation plans in compliance with the Federal direction noted above.

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Local Policies

Meagher County Growth Policy

Meagher County adopted the Meagher County Growth Policy in 2003 and updated it in 2004. In 1999, the Montana Legislature revised this community development and planning tool and renamed it the Growth Management Policy. The requirements of a Growth Management Policy are detailed in 76-1-601, Montana Code Annotated. The Meagher County Growth Policy provides guidance for the community as it grows and develops. Special attention is given to specific land uses and the need for infrastructure to support those identified uses. Preparing a growth policy includes describing the historical base, establishing key indicators and monitoring the growth trends, and developing policies to accommodate the potential growth and changes in the community.

There are no specific public safety goal statements in the Meagher County Growth Policy. However, there are goals, objectives, and policies which affect public safety throughout the document and provide some overall direction to this CWPP. The most significant are:

High Fire Hazard Areas

1. Revise the Meagher County Subdivision Regulations to ensure effective firefighting in all new subdivisions.
 - Provide proper firefighting water supplies;
 - Design and construct saferoads, bridges and turnarounds. Clear road rights-of-way of fire fuels;
 - Limit densities based on degree of slope;
 - Ensure that fire, emergency medical, and law enforcement agencies have access through any gates.

2. Ensure that the Meagher County Subdivision Regulations provide special requirements to ensure firefighter safety, effective firefighting, reduced fire damage, and safety in all new subdivisions proposed in designated high fire hazard areas.
 - Provide at least two entrance/exit roads;
 - Provide firefighting access to wildlands beyond development;
 - Provide clear signs to identify roads;
 - Provide fuel breaks by planning locations of roads, greenbelts, and/or parkland;
 - Provide for fire fighter safety by requiring a covenant to ensure that each homeowner maintains a "defensible space" around each home.

Meagher County Subdivision Regulations 2013

The Meagher County Subdivision Regulations requires that a Fire Protection Plan for major subdivisions addresses:

- Access, ingress, egress, and evacuation;

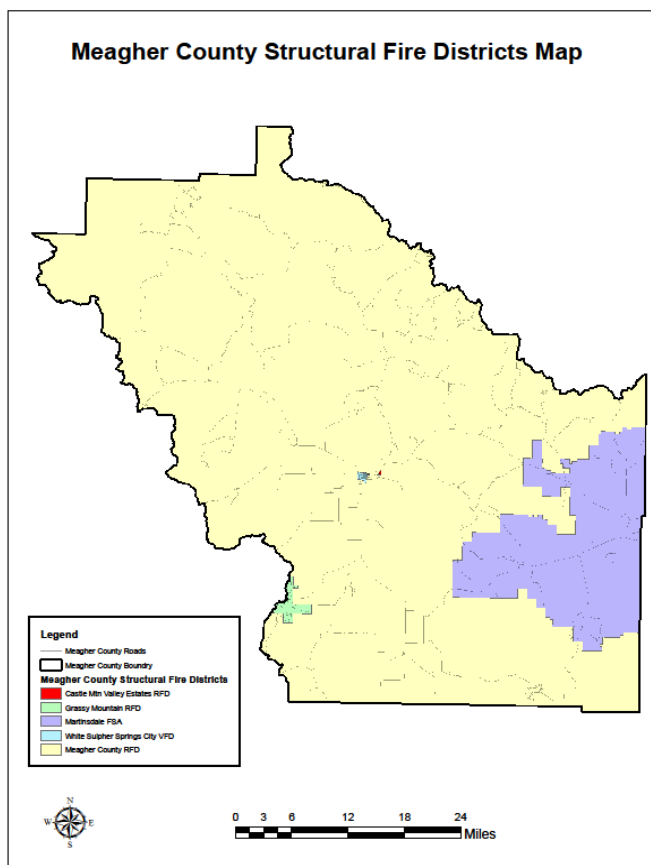
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- Fuel modification;
- Water Supply;
- Construction, location, and design of structures;
- Ignition potential of structures;
- Asset Protection Zones (Defensible Space);
- Adequate fire protection facilities for the project;
- Adequate signage for location by fire personnel;
- Response agency and approximate response time.

2. d. Planning Area Boundaries

The Meagher County CWPP covers Meagher County in its entirety.

2. e. Fire Protection Responsibilities for Structure and Wildland Fires



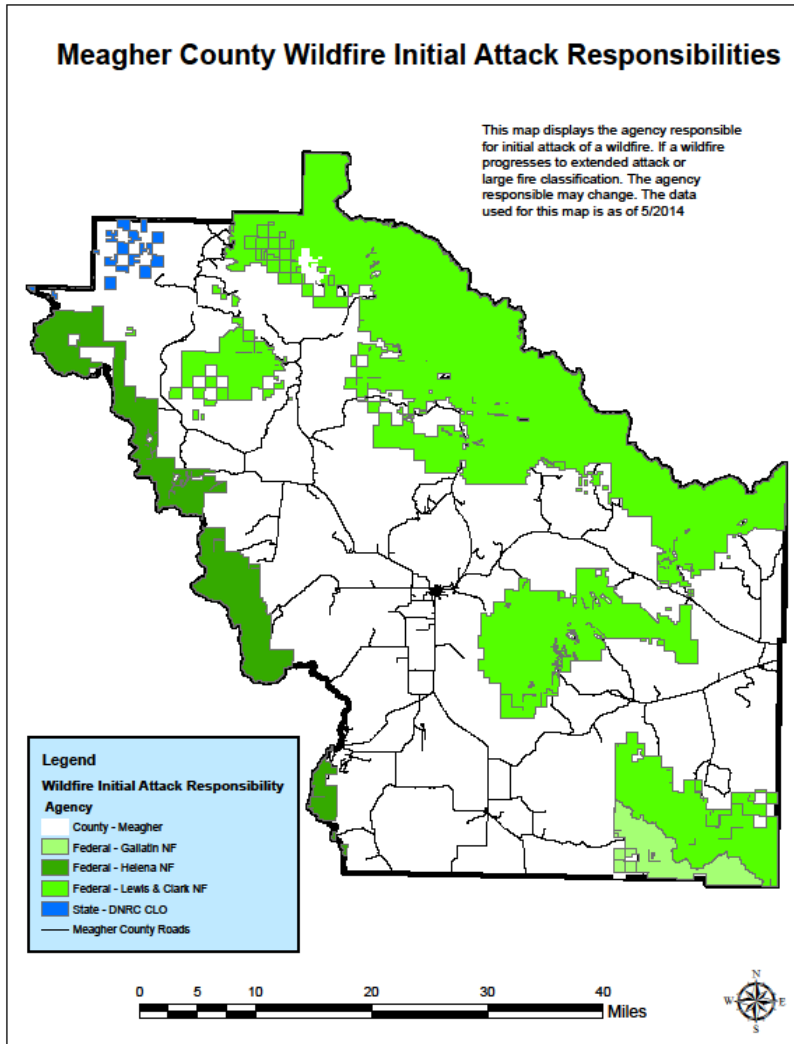
Fire protection responsibilities are shared by White Sulphur Springs Fire Department, Meagher County Rural Fire Department, Martinsdale Fire Service Area, Grassy Mountain Rural Fire District, Castle Valley Meadows Rural Fire District, MT Department of Natural Resources and Conservation, Bureau of Land Management Lewistown (BLM) Field Office, and the Lewis & Clark, Gallatin and Helena National Forests. The fire protection responsibility depends on whether the fire is a structure fire or a wildfire. If it is a structure fire, the White Sulphur Springs Fire Department, Meagher County Rural Fire Department and the Martinsdale Fire Service Area will be the responding agencies. Meagher County Rural Fire Department provides structure fire services by contract to Castle Valley Meadows Rural Fire District and through mutual aid agreement to Grassy Mountain Rural Fire District.

(See Meagher County Structural Fire Districts Map for page size map).

White Sulphur Springs Fire Department provides fire and emergency services within the incorporated city limits of White Sulphur Springs. Through mutual aid agreements, Meagher

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County Rural Fire Department, White Sulphur Springs Fire Department and Martinsdale Fire Service Area provide services to the other fire districts.



Wildfire protection and initial attack response is provided by Meagher County Rural Fire Department, MT Department of Natural Resources and Conservation, and the Lewis & Clark, Gallatin and Helena National Forests. The Bureau of Land Management Lewistown (BLM) Field Office has protection responsibility on BLM land within Meagher County, but has made agreements arranging for the Meagher County Rural Fire Department, the Lewis & Clark and Helena National Forests to provide initial attack. The Wildfire Initial Attack Responsibilities map displays the agency responsible for the initial response. If a wildfire escapes initial attack and the initial attack response agency is different from the protection agency, the protection agency will

become involved. This situation is based on agreements between the BLM, Lewis & Clark, and Helena National Forests, and Meagher County Rural Fire Departments. The MT Department of Natural Resources and Conservation has direct protection for areas in the northwest portion on the county. Though the County Cooperative Program, the Department of Natural Resources and Conservation provides fire support to the county when the county's capability has been exceeded and assistance is requested.

(See Meagher County Wildfire Initial Attack Responsibilities Map for page size map).

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3. Planning Process

3. a. Stakeholders

The following entities are affected by wildland fire and have a stake in a successfully implemented CWPP:

- Meagher County Fire Department
- White Sulphur Springs Fire Department
- Martinsdale Fire Service Area
- Grassy Mountain Rural Fire District
- Castle Valley Meadows Rural Fire District
- Lewis & Clark National Forest
- Helena National Forest
- Gallatin National Forest
- MT Dept. of Natural Resources and Conservation
- Bureau of Land Management
- City of White Sulphur Springs
- Triangle Telephone
- Northwestern Energy
- Fergus Electric Cooperative
- Vigilante Electric Cooperative
- AT&T
- Verizon
- Meagher County Local Emergency Planning Committee
- Grassy Mountain Homeowners
- Meagher County Road and Bridge Department
- Meagher County DES
- Meagher County Board of County Commissioners
- Residents of Meagher County

3. b. Collaboration

Each agency was contacted, and/or public meetings were held, to solicit input and ideas. The draft Meagher County CWPP was submitted for review and comment to the following entities:

- Bureau of Land Management
- Lewis & Clark National Forest
- Gallatin National Forest
- Helena National Forest
- MT Department of Natural Resources & Conservation – Central Land Office
- Meagher County Board of County Commissioners
- Meagher County Fire Department
- White Sulphur Fire Department
- Martinsdale Fire Service Area
- Grassy Mountain Rural Fire District

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- Meagher County Disaster & Emergency Services Coordinator

Comments were incorporated into the final version of the Meagher County CWPP.

3. c. Review of Existing Plans

The following documents have been reviewed for data, which may have been referenced and incorporated in the Meagher County CWPP:

- Meagher County Emergency Operations Plan
- Meagher County Growth Policy Plan, 2004
- Meagher County Subdivision Regulations, 2013
- Meagher County Pre-Disaster Mitigation Plan (draft)

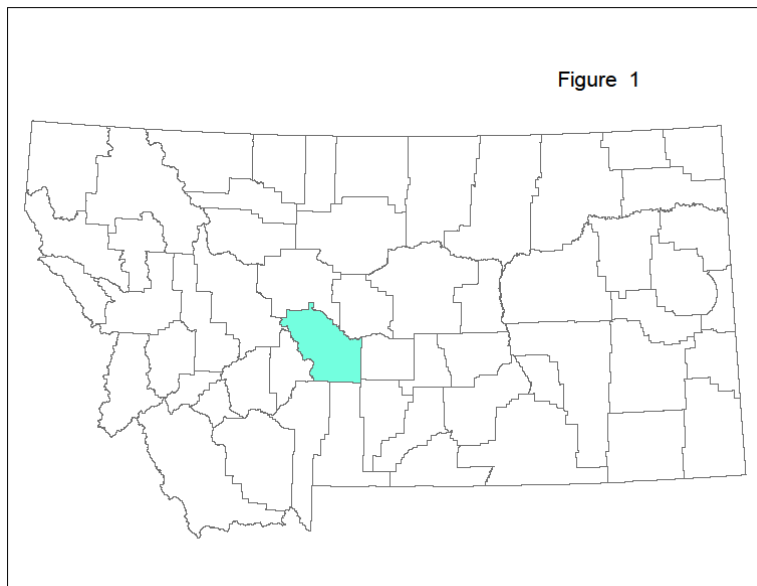
3. d. Local Approval, Adoption

Once the Meagher County CWPP is reviewed and approved by the Board of County Commissioners, it should be adopted and amended into Meagher County's Pre-Disaster Mitigation Plan as the fire component.

4. Community Description

4. a. General Environmental Conditions

Meagher County is located in central Montana (Figure 1). It was one of the original counties in Montana, and encompassed the majority of central Montana. Today, it covers just over 2,395 square miles and has a population of about 1,924 people. Meagher County is a headwaters county with high quality watersheds. The majority of the land type is mountainous, with large



areas of grassy foothills, valleys and river bottoms. The elevations vary from 3,975 feet in the north where the Smith River exits the county to 9,456 feet in the southwest at the peak of Mount Edith. The county receives 10-16 inches of annual rainfall on the valley floor, and the adapted ecosystems contain vegetative types and quantities commensurate with soil productivity and available moisture.

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4. b. Topography, Slope, Aspect, Elevation

Slopes in Meagher County range from 0% (flat) to >50% (very steep). Of all the topographic features reviewed in the county, the slope is among the most important. Fires will generally spread faster uphill than downhill, and will preheat upslope fuels, including homes, thereby increasing the likelihood of ignition.

Narrow canyons can act as chimneys, channeling heat, flame, and wind to dramatically increase a fire's intensity. When a fire becomes concentrated by such a canyon, the boosted flame length, rate of spread and wind speed can combine to create extreme fire behavior and significant control problems.

South, southwest and west aspects are called "high energy slopes" due to the amount of sunlight they receive during the spring, summer and fall. The vegetation on these slopes tends to be dry-site species that have adapted to significant amounts of sunlight and reduced amounts of available moisture. These vegetation types quickly mature and become cured early in the summer, and become an available fuel for a spreading fire.

The mountainous terrain also allows a thermal belt condition to set up, where the midslope area along the ridges will remain warmer and drier at night, affecting the fuel by reducing the humidity recovery on the site. The lack of humidity recovery in the thermal belt often keeps available fuel dry until the onset of the winter season. The fire behavior in these areas will be much more intense than in areas either above or below it. Thermal belt conditions begin in early summer and extend through mid-September.

The main river drainages are the Smith River, flowing south to north, and the Musselshell River, flowing west to east. The pine forests are generally located on higher ground where soil and moisture conditions are conducive to their survival.

4. c. Meteorology, Climate, Precipitation

Weather directly affects fire behavior, with wind and low humidity values being the major influencing factors due to their ability to rapidly dry fuels and help fires grow quickly. Generally, steering winds at the surface and aloft over central Montana in the spring and summer prevail out of the south to west and are moderate to strong across open areas, with lighter winds over hilly or mountain areas. Surface winds vary, depending on elevation, aspect and openness of the local terrain. Southwest and west facing slopes are more exposed to the prevailing winds and have drier fuel, which correlates to increased fire behavior activity. Fires in Meagher County generally spread from southwest to northeast.

Pressure gradient winds, which are caused by air moving from an area of high atmospheric pressure to a low one, typically have the most significant impact on fires in Meagher County. The passage of a cold front, for example, brings strong gusty wind to the area, and is often accompanied by a sudden shift in wind direction. Such winds can create significant control problems for fire fighters.

Meagher County Wildfire Protection Plan 2014

The normal summer weather pattern for central Montana can best be understood by looking at the larger weather pattern for the entire western United States.

In central Montana, the typical fire season runs from early spring into the fall or early winter (March through November). Spring, before green-up, can be a time of large fire growth as dry residual winter-cured fuel combined with gusty winds pose a threat of large fires. As summer approaches, the amount of moisture from rainfall tapers off. Grasses and shrubs begin to lose their live fuel moisture, and down-dead fuel begin to dry. Fire conditions normally peak by late August.

Dry cold frontal passages become common and can promote conditions of extreme fire behavior, especially when accompanied by very strong winds. Late October and November mark the transition into winter, but again, dry cold frontal passages at this time of year combined with the lack of snow pack can lead to rapid fire growth and high intensity fire behavior during wind events.

Since the 1980's, 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.

Moisture regimes in the spring and summer can be defined in terms of storm tracks, which typically move across the county from southwest to northeast. The storm track affecting the analysis area starts along the western or southern edges of Meagher County and tracks northeastward across the county before moving out onto the eastern plains of Montana. Thunderstorm activity is still possible in September and early October but at a much-reduced rate compared to June, July and August.

4. d. Infrastructure: Roads, Driveways, Utilities, Communication, and Water Supply

State Highway 12 traverses Meagher County, east to west, following the Musselshell River on the eastern edge of the county. State Highway 89 runs from the Little Belt Mountains south through the Shields River Valley and exits the county near Ringling. Meagher County has a number of graveled roads that can be utilized to provide access for fire suppression activities. There are no railroads located in Meagher County.

Meagher County has a well maintained airport located at White Sulphur Springs, capable of serving as a SEAT reloading base.

Large propane tanks are located throughout Meagher County at ranch and home sites.

Northwestern Energy, Fergus and Vigilante Electric Cooperatives provide electrical power to the county.

Triangle Telephone provide telephone service to Meagher County.

Meagher County Wildfire Protection Plan 2014

Cellular phone service is generally available; however, there are areas within the county that do not have cellular phone service. Cellular phone service is provided by AT&T and Verizon.

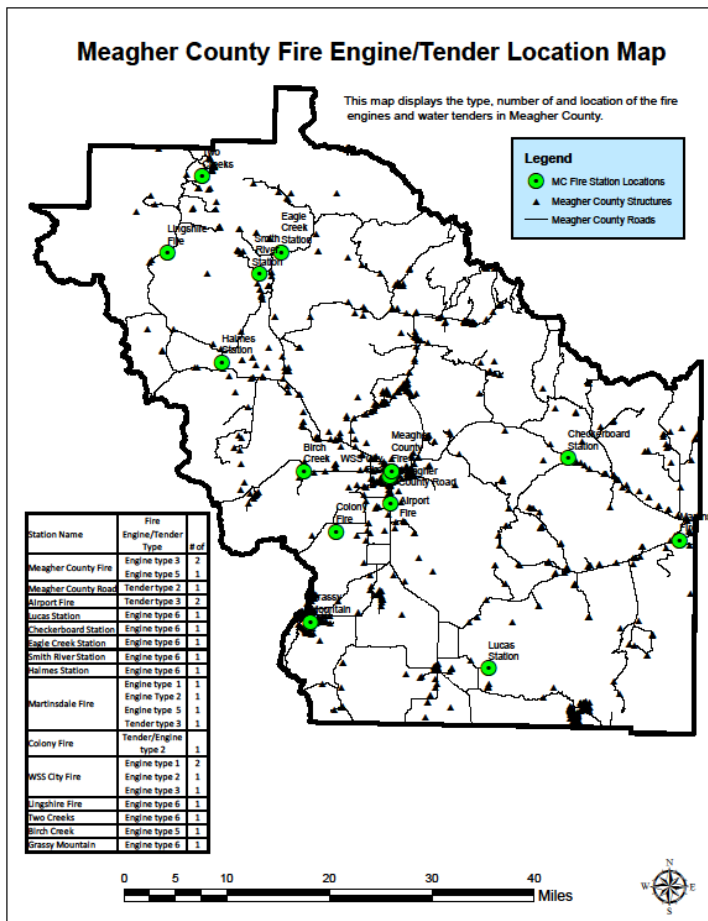
There is a municipal water system serving the City of White Sulphur Springs for fire protection purposes. In the County, there is no developed water supply; water tenders must transport water to the fire scene. Stock ponds, dry hydrants, rivers and creeks are available at times as a water supply point.

Radio communication for Meagher County Fire Department is adequate, with repeaters on Black Butte, Kings Hill, Mount Howe and Sky Ranch.

4. e. Emergency Services

Emergency services within Meagher County include fire protection; emergency medical services, including ambulance transportation; law enforcement; and emergency preparedness.

4. f. Fire Equipment (Fire Engines/Tenders)



The White Sulphur Springs Fire Department, Martinsdale Fire Service Area, and the Meagher County Rural Fire Department provide Meagher County with structural and wildland fire suppression equipment. This equipment is displayed on the Meagher County Fire Engine/Tender Location Map.

There are additional engines within the county. Some private land owners have equipment, and the Lewis & Clark National Forest has a Type 6 engine located in White Sulphur Springs.

(See “Meagher County Fire Engine/Tender Location Map” Appendix-Maps for page size map).

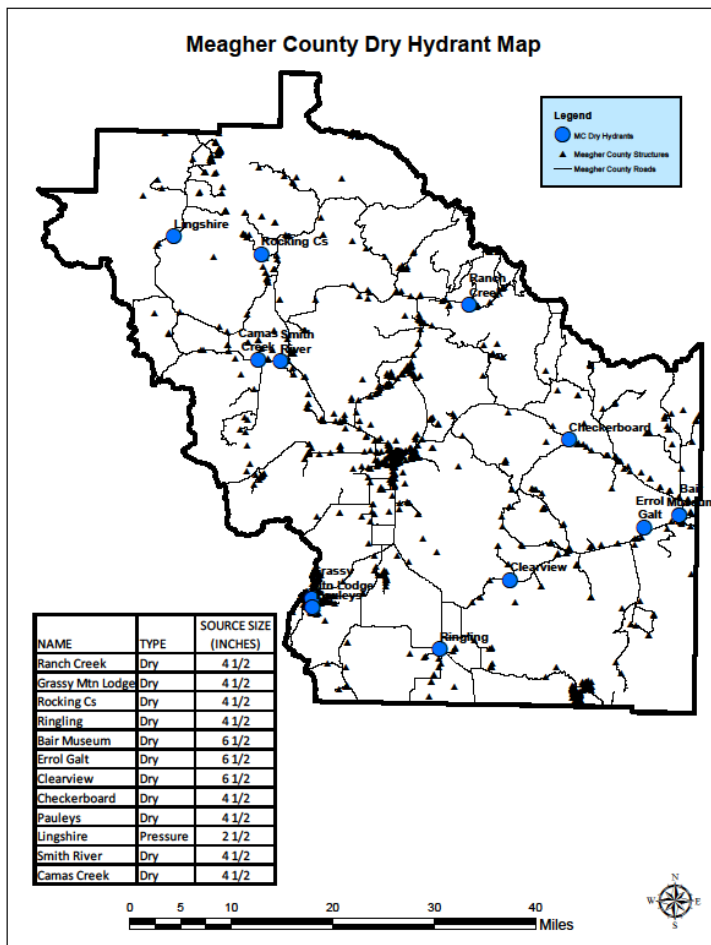
Meagher County is within the Central Land Office of the Montana DNRC’s geographic area. This provides additional resources such as air tankers from Missoula,

Meagher County Wildfire Protection Plan 2014

Helena and Billings, helicopters from Helena, single engine air tankers from Lewistown, as well as crews and overhead through the Central Land Office.

Meagher County Disaster Emergency Services has agreements with surrounding counties.

4. g. Fire Engine Refill / Dry Hydrant Sites



Water supply sources for wildland fire protection and structural fire protection are located throughout Meagher County. They include rivers, creeks, reservoirs, dry hydrants, stock ponds and stock watering systems. These water supply sources are often located a distance from wildfire locations, necessitating delivery through apparatus such as fire engines and water tenders.

The Meagher County Fire Department has located dry hydrants throughout the County to provide water supply sites in areas without easier access to water (See “Meagher County Dry Hydrant Map” in Appendix-Maps for page size map).

4. h. Training, Certification, and Qualification

Different incidents require incident management personnel of different skill levels. To assist in assigning appropriate incident commanders to wildfire incidents, an incident analysis can be used as a guide to identify and mitigate certain complexity and safety issues, such as selecting a different strategy, tactic, or filling command positions with higher-qualified individuals. Certain assumptions are made in this analysis:

- As an incident becomes more complex, the need for an incident management team or organization increases.

Meagher County Wildfire Protection Plan 2014

- 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-making process; local fire history, current fire conditions, and management experience must also 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.
-

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, extended attack fires until containment/control is achieved, or escaped fires 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.
- Staging areas or an incident base may be used.

By completing an Incident Complexity Analysis, a county fire warden can assess the hazards and complexities of an incident and determine the specific positions needed (See Incident Complexity Analysis in Appendix 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 (NRCG) and,

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consequently, applies to all wildland firefighting personnel in the state of Montana and Meagher County for mobilization outside of the county. Within the County, local standards would apply.

Members of the Meagher County Fire Department have extensive training and qualifications in the wildland fire arena. Members of Meagher County FD have advanced their qualifications to the point where members of the department are on interagency Type II Incident Management Teams (IMT). This training and experience allows Meagher County FD to safely and efficiently manage wildland and wildland urban interface fires for the county. Their experience on IMTs allows representatives of Meagher County Fire Department to effectively deal with incoming IMTs when they are deployed in Meagher County.

The level of training of Meagher County FD personnel allows the Meagher County FD to assist the USFS, BLM or DNRC with initial attack efforts on state or federal lands due to occasional shortages of initial attack resources. The level of training also allows Meagher County FD personnel to manage incidents on state or federal land because Meagher County FD personnel meet the same standards of training that state or federal personnel must meet.

4. i. Law Enforcement

The Meagher County Sheriff's Department provides law enforcement and evacuation services. Due to limited resources in the Sheriff's Department, a significant evacuation during a wildland urban interface fire may require mutual assist from other agencies and or counties.

4. j. Emergency Medical Services

Meagher County Ambulance, with ambulances in White Sulphur Springs, provides ambulance service to the entire county.

4. k. Emergency Management

County emergency preparedness comes under the office of the Meagher County Disaster and Emergency Services.

4. l. 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 weight of the components is:

Water Supply	-	50
Fire Department	-	40
Fire Dispatch	-	10

The ISO rating system produces ten different Public Protection Classifications, with Class 1 receiving the most insurance rate recognition and Class 10 receiving no recognition. A split rating such as Class 6/9 & 10 means that a department is rated as a Class 6 within 1,000 feet of a

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fire hydrant or certified water point, a Class 9 when over a 1,000 feet from a hydrant and within 5 miles of a fire station, and a Class 10 when the insured is more than 5 road miles from a fire station.

White Sulphur Springs FD has a rating of Class 6. This class 6 rating includes a five mile radius around White Sulphur Springs. Martinsdale Fire Service Area and the rest of Meagher County have ratings of Class 9.

Improvements to the water delivery system, dispatch and the fire departments could improve the ISO rating for the individual fire protection agencies. This would result in potential annual insurance premium savings to the fire department's customers, e.g., home and business owners. It is important to note that some insurance companies will not insure structures that are outside of 5 road miles from a fire station.

5. Wildfire Assessment

This assessment looks at factors within Meagher County to determine the risk to values and to help prioritize areas for hazardous fuel mitigation. The history of recorded fires, the ignition patterns, weather, topography, aspect and vegetation are all very important factors when determining the risk of a wildfire. The intensity of a wildfire is dependent on the likeliness of an ignition in combination with the amount and complexity of the vegetative fuel and weather conditions.

Tools available in Meagher County for evaluating wildfires include ignition and large fire history, fuel models, vegetative fire regime and condition classes, values at risk (structures), and assessments of the Wildland Urban Interface.

5. a. Areas Addressed by this Assessment

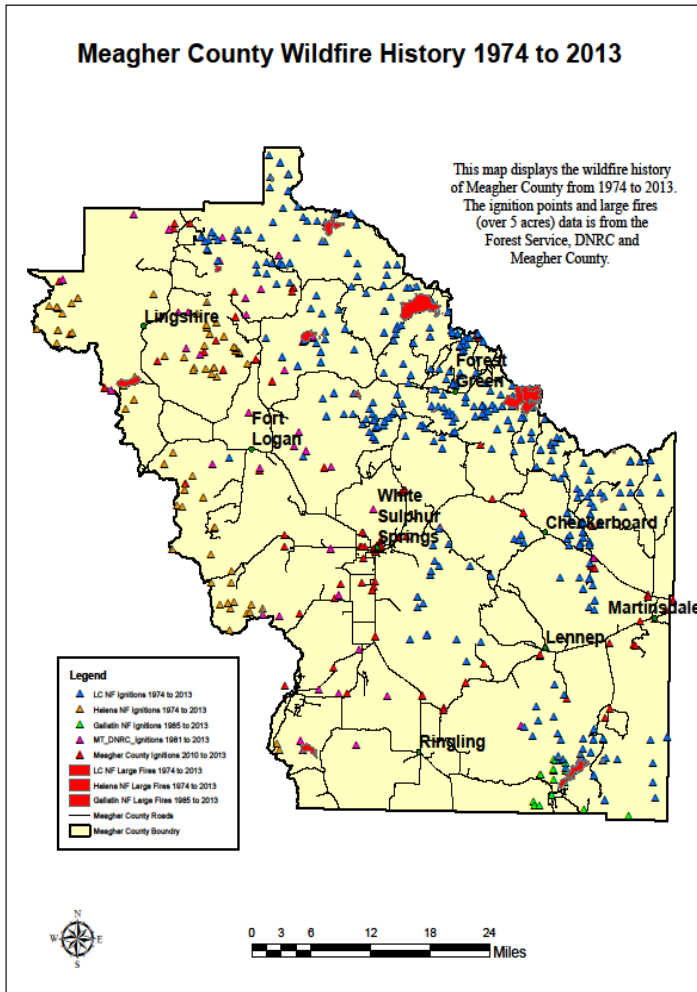
All of Meagher County is addressed by this assessment. The wildfire conditions are similar in the counties adjacent to Meagher County but are not included in this assessment.

5. b. Fire History: Ignitions and Large fires

Fire Ignitions Past fire ignitions give fire managers clues as to where there is a greater chance for future fire starts. These ignitions vary greatly and can either result from natural or human causes. Some areas receive more lightning activity due to frequent storms or magnetic attraction. Human starts are normally related to the occurrence of dwellings, roads and recreational activities

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Fire History Fire history maps of Meagher County allow fire managers to quickly see where past fires have occurred. While these maps give important information on the fuel based on how long ago a fire burned, they are not always accurate indicators of the intensity of the burn or the fuel remaining today.



Wildfires 1974-2013

Cause	# of Fires
Lighting	453
Equipment	30
Smoking	9
Campfire	40
Debris Burning	11
Railroad	0
Arson	4
Children	0
Miscellaneous	31
Power lines	4
TOTAL	582

The fire history data is from the Forest Service, DNRC and Meagher County. The DNRC data is of fires in which there was a DNRC assist.

“(See Meagher County Wildfire History Map” Appendix-Maps for page size map)

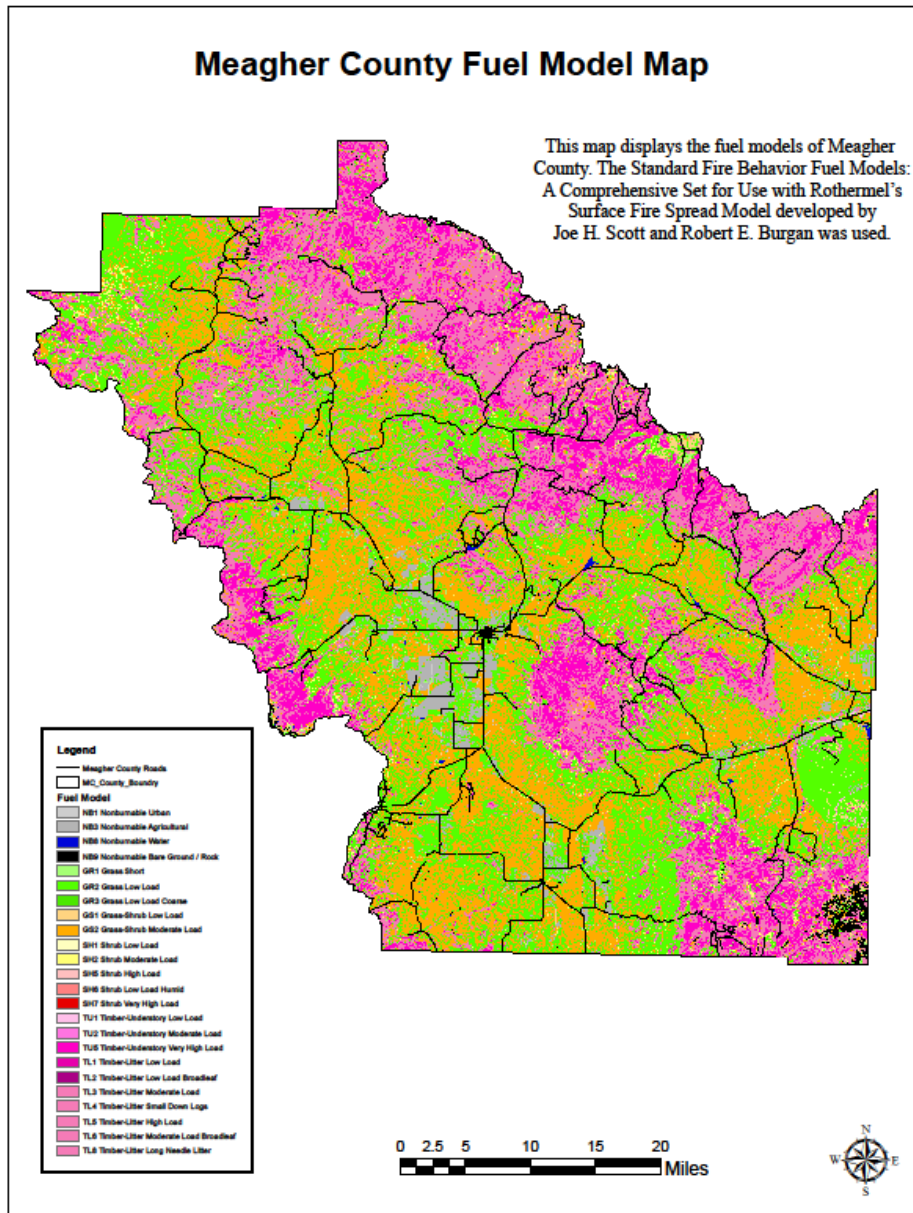
Meagher County Large Fire (100 acres or greater) Year 1974 to 2013

FIRE NAME	YEAR	CAUSE	ACRES	AGENCY
Tenderfoot	1984	Lighting	150	L&C NF
Smith Creek	1994	Lighting	1386	Gallatin NF
Coyote	1996	Equipment	3500	L&C NF
Lost Fork Ridge	2000	Lighting	1300	L&C NF
Lost Fork	2001	Miscellaneous	2338	L&C NF
Sheep Camp	2003	Campfire	832	Helena NF
Ant Park	2003	Lighting	2106	L&C NF
Iron Butte	2003	Lighting	151	L&C NF
Battle Mtn	2007	Lighting	586	Helena NF
Rugby Creek	2007	Lighting	129	L&C NF
Elk Park	2011	Lighting	600	L&C NF
Taylor Hills	2011	Lighting	742	L&C NF

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5. c. Fuel Models

Fuel Model maps help identify the type of wildland fuel in Meagher County. These maps were created using the LANDFIRE project data products, which were developed through integrating a collection of advanced scientific procedures, including relational databases, geo-referenced land-based plots, treatments, satellite-enabled remote sensing, systems ecology, gradient predictive



landscape modeling, and vegetation and disturbance dynamics. Fuel models are used in fire behavior modeling programs to determine fire behavior factors. Some fuel models will cause more active fire behavior (flame length, intensity). These fuel models should be targets for mitigation if they are in proximity to values at risk. Refer to Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model by Joe H. Scott, and Robert E. Burgan

(http://www.fs.fed.us/rm/pubs/rmrs_gtr153.pdf) for information and description.

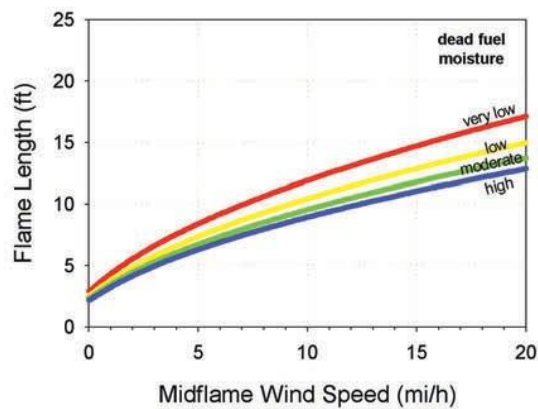
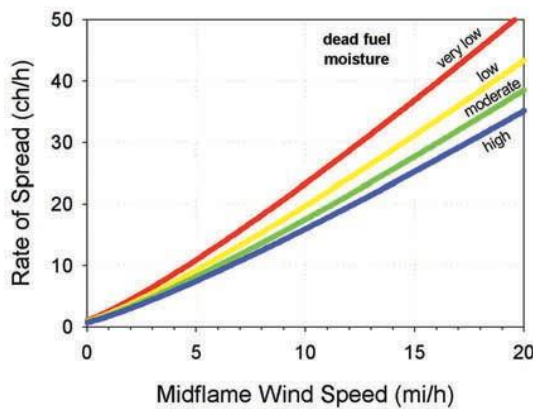
(See "Meagher County Fuel Model Map" Appendix-Maps for page size map).

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The fuel models of concern in Meagher County are ones that have potential fire behavior of rates of spread and flame lengths that individually or in combination are moderate to high. Two fuel models of concern in Meagher County are TU5 Timber-Understory and TL8 Timber-Litter.

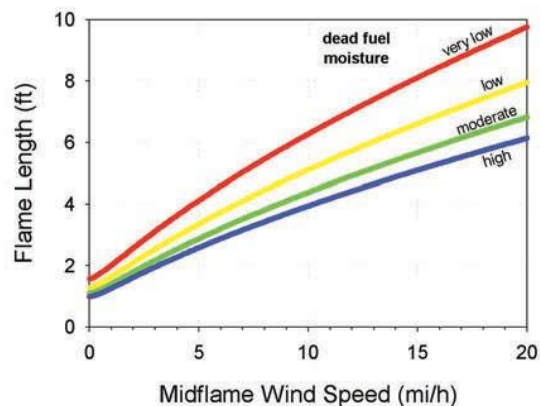
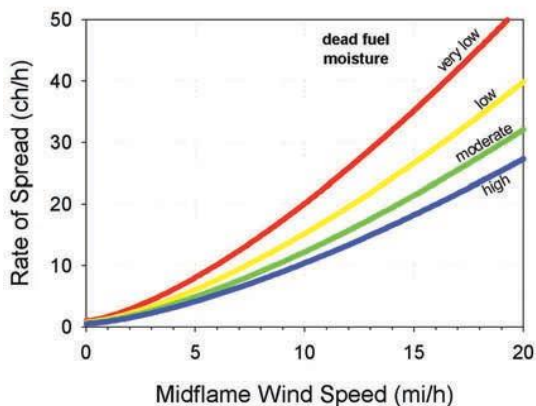
TU5 Timber-Understory Very High Load, Dry Climate Timber-Shrub

Description: The primary carrier of fire in TU5 is heavy forest litter with a shrub or small tree understory. Spread rate is moderate; flame length moderate. In Meagher County this fuel model is representative of Douglas fir, Engelmann Spruce, Subalpine Fir with and understory of Juniper and or brush types.



TL8 Timber-Litter Long Needled Litter

Description: The primary carrier of fire in TL8 is moderate load long-needle pine litter, may include small amount of herbaceous load. Spread rate is moderate; flame length low. In Meagher County this fuel model is representative of Ponderosa Pine sites.



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5. d. Fire Regime and Condition Classes

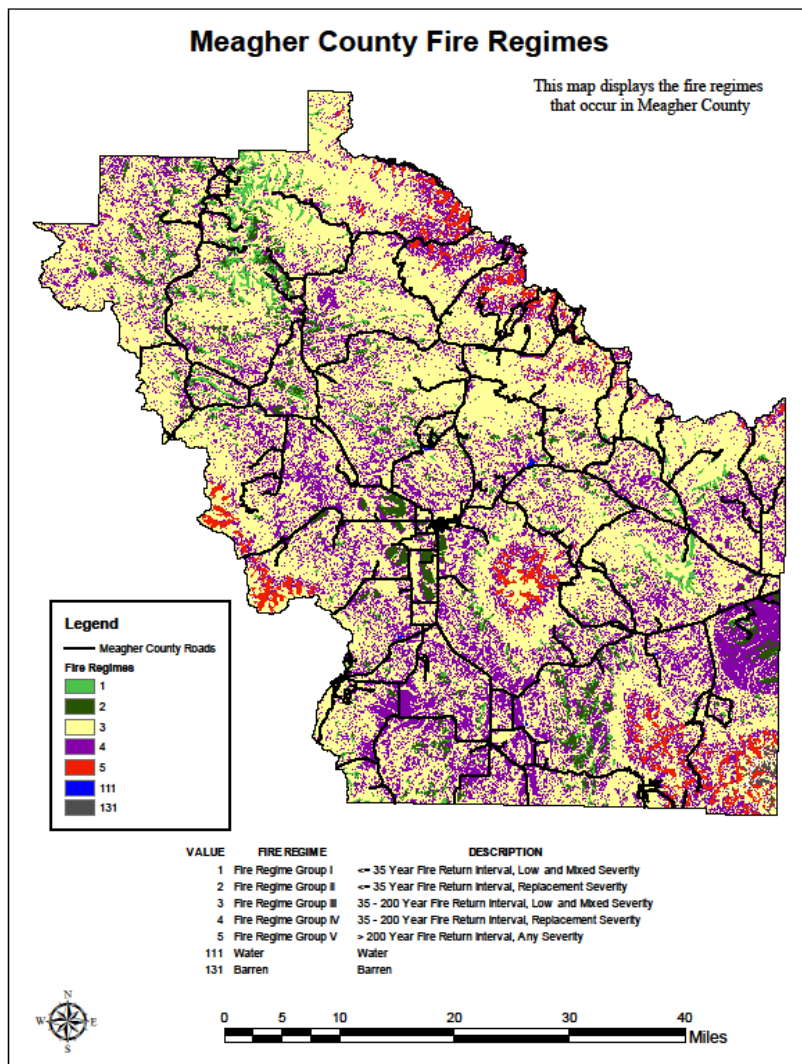
Fire regimes and condition classes are important factors in identifying the potential range of forest conditions that can occur on a landscape, and in an understanding the influence of historical disturbance regimes on vegetation structure, species composition and spatial distribution. Some of the common disturbance regimes within North America include fire, insects, disease, hurricanes, blow down and flooding. Within any given landscape, several different historic disturbance regimes may have operated to influence vegetation in this manner.

In Meagher County, fire was the primary disturbance agent. Insect activity and disease often contribute to the occurrence and severity of fire. Consequently, fire was the predominant driving force of large scale disturbance on the landscape, directly influencing broad changes in forest species composition, structure and spatial distribution.

Human-induced changes and their impact have functionally suppressed, eliminated or changed many of the historical disturbance regimes throughout the west. Fire suppression in Meagher County has been effective in suppressing fires and changing the historical structure of many forest stands.

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Coarse-scale definitions for natural

(historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuel management by Hann and Bunnell (2001). The five natural (historical) fire regimes are classified based on average number of years between fires (fire

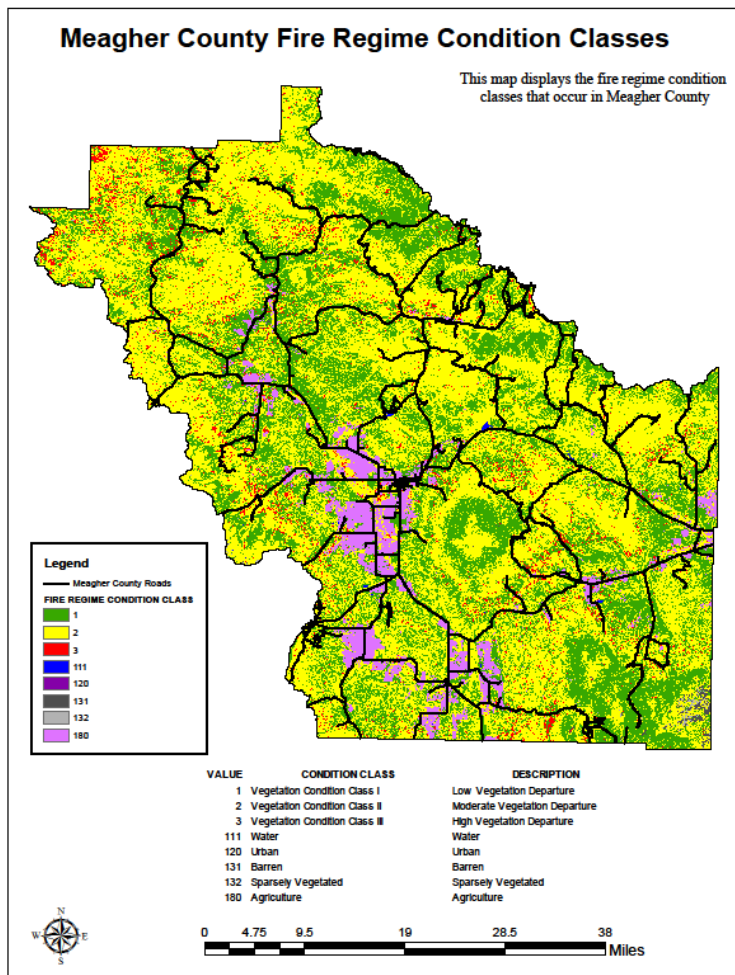


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frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five regimes include:

- 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.

As scale of application becomes finer, these five classes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse-scale definitions should be retained.



A fire regime condition class (FRCC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. This departure results in changes to one (or more) of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated disturbances (e.g. insect and disease mortality, grazing, and drought). There are no wildland

vegetation and fuel conditions or wildland fire situations that do not fit within one of the three classes.

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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.	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. Composition and structure of vegetation and fuel are similar to the natural (historical) regime. Risk of loss of key ecosystem components (e.g. native species, large trees, and soil) is low.
Condition Class 2	Moderate departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are moderately departed (more or less severe). Composition and structure of vegetation and fuel are moderately altered. Uncharacteristic conditions range from low to moderate. Risk of loss of key ecosystem components is moderate.
Condition Class 3	High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.	Fire behavior, effects, and other associated disturbances are highly departed (more or less severe). Composition and structure of vegetation and fuel are highly altered. Uncharacteristic conditions range from moderate to high. Risk of loss of key ecosystem components is high.

The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside.

(See “Meagher County Fire Regimes and Condition Classes Map” Appendix-Maps for page size map)

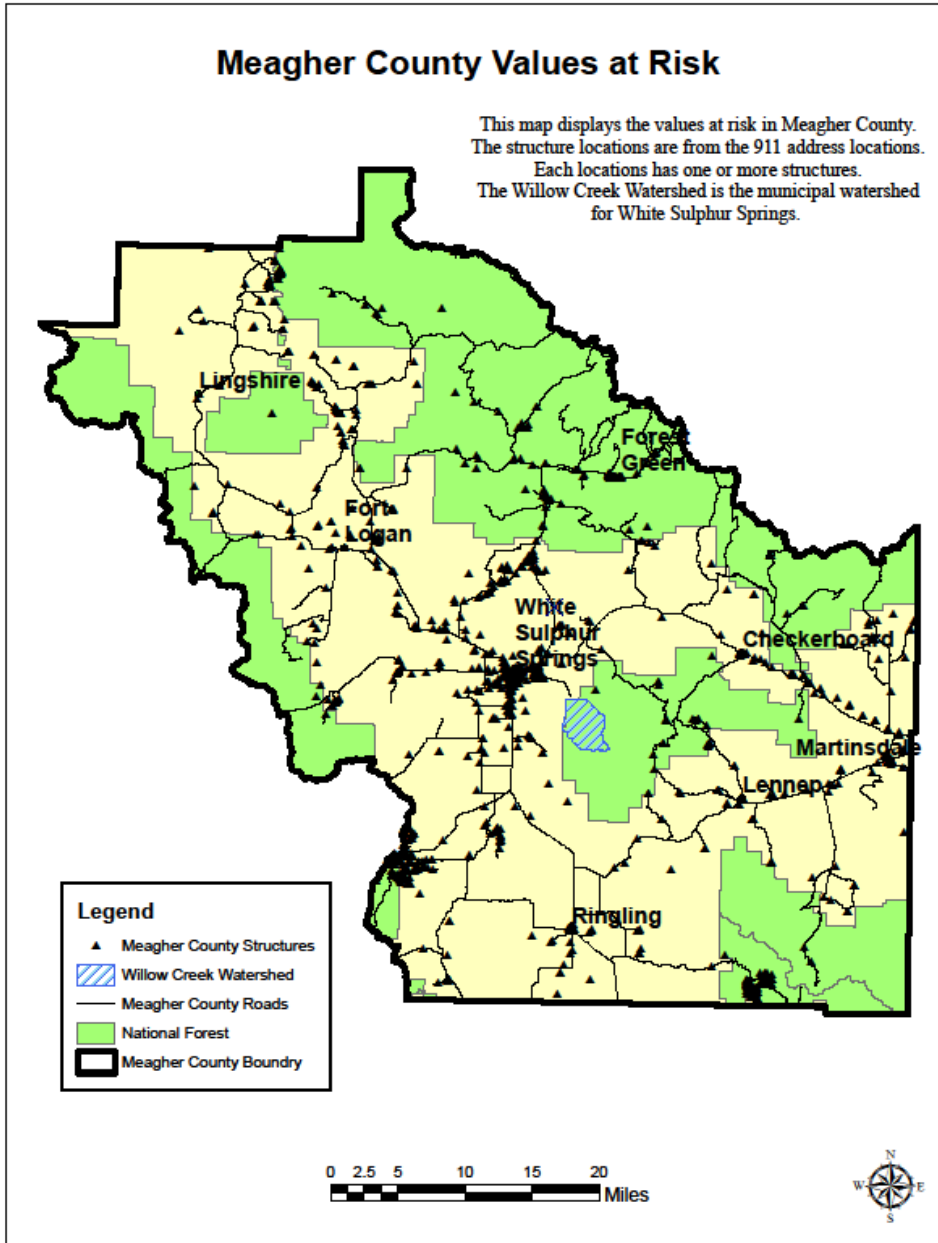
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5. e. Values at Risk

Values at Risk include property, structures or structure complex locations (including communication sites), physical improvements, natural and culture resources, community infrastructure, and economic, environmental, and social values. 911 address structure location data was used to create a “values at risk map”. Each structure point represents at least one structure and can be represent many, depending on the number of structures associated with an address location.

The Willow Creek Watershed is also displayed. Willow Creek Watershed is the municipal watershed for White Sulphur Springs.

(See “Meagher County Values at Risk Map” Appendix-Maps for page size map)



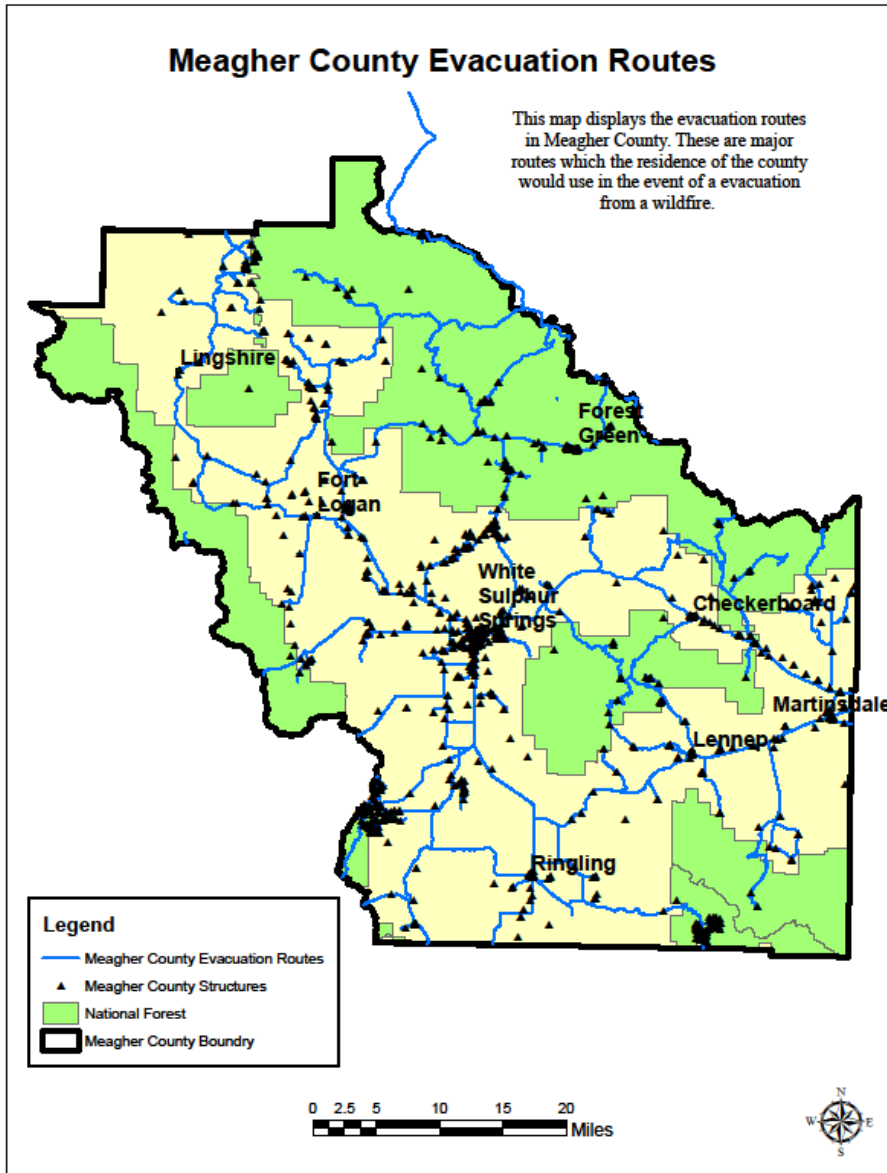
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5. f. Evacuation Routes

Evacuation routes are critical to public safety. Egress is needed for residents to evacuate in the event of an emergency, and ingress is required for emergency services. The identification of evacuation routes during an emergency incident will be determined at the time of an incident with the incident specific factors taken into consideration. Major evacuation routes documented in the Meagher County CWPP need to be evaluated for hazard (fuel mitigation) reduction needs. It is critical that all roadways be treated to reduce fuel volumes in order to provide safe egress in

the event of an emergency, as well as viable access for responders. It may be possible, in the interim, to create small staging areas that can allow residents to remain temporarily when emergency services may be trying to enter the neighborhood. Efforts should be made to work with Meagher County to see if alternate access is possible into areas with limited access.

Some routes were identified as needing structural improvements also. The identified evacuation routes needing mitigation work are displayed in Hazardous Fuel Mitigation Projects.

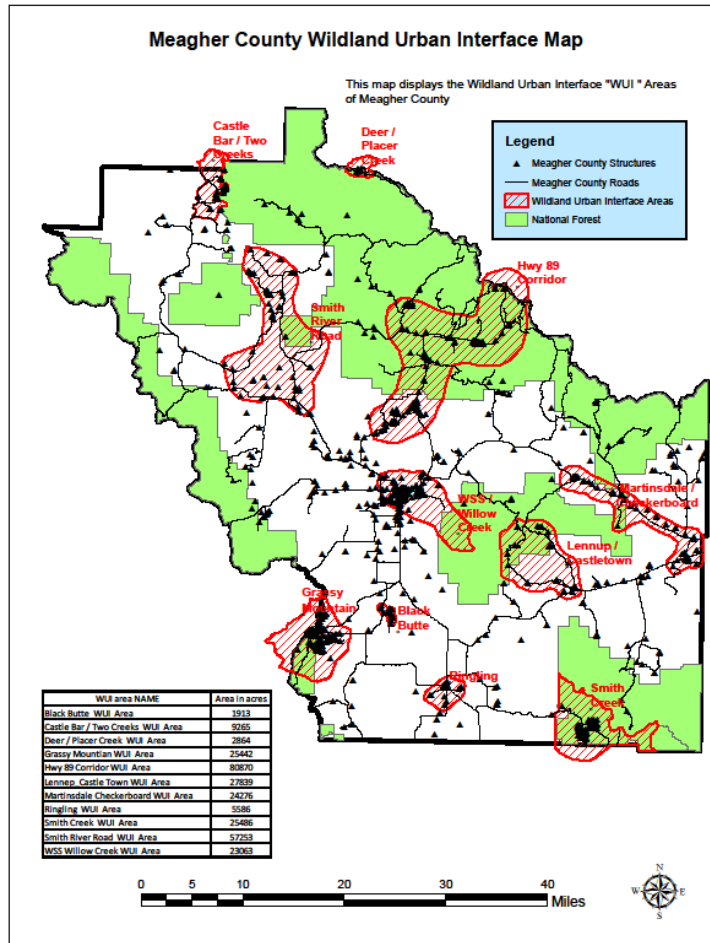


(See Meagher County Evacuation Routes Appendix-Maps for page size map)

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5. g. Meagher County's Wildland Urban Interface Area

The wildland urban interface (WUI) has gained attention through efforts targeted at wildfire mitigation; however, this analysis technique is also useful when considering other hazards, because the concept looks at where people and structures are concentrated in any particular region. (See "Meagher County Wildland Urban Interface Map" Appendix-Map for page size map)



A key component in meeting the underlying need for protection of people and structures is the treatment of hazards in the wildland-urban interface. The wildland-urban interface, or WUI, refers to areas where wildland vegetation meets urban developments or where forest fuel meet urban fuel such as houses. The WUI encompasses not only the interface (areas immediately adjacent to urban development), but also the surrounding vegetation and topography. Reducing the hazard in the WUI requires the efforts of federal, state, and local agencies, as well as private individuals. Structural fire protection during a wildfire in the wildland-urban interface is largely the responsibility of Tribal, state, and local governments. Property owners share a responsibility to protect their residences and businesses and

minimize danger to firefighters by creating defensible areas around them as well as by taking other measures to minimize the risks to their structures. With treatment, a wildland-urban interface can provide firefighters a defensible area from which to suppress wildland fires or defend communities against other hazard risks. In addition, a wildland-urban interface that is properly treated will be less likely to sustain a crown fire that enters or originates within it.

By reducing hazardous fuel loads, ladder fuel, and tree densities, and creating new and reinforcing existing defensible space, landowners can protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- Minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- Improving defensible space in the immediate areas for suppression efforts in the event of wildland fire;

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- Reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that firebrands from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior.

Three wildland-urban interface conditions have been identified (Federal Register 66(3), January 4, 2001) for use in wildfire control efforts. These include the Interface Condition, Intermix Condition, and Occluded Condition.

- **Interface Condition** – a situation where structures abut wildland fuel. There is a clear line of demarcation between the structures and the wildland fuel along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;
- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation; the wildland fuel are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres;
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuel (park or open space). There is a clear line of demarcation between the structures and the wildland fuel along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size

In addition to these classifications detailed in the Federal Register, Meagher County has two additional classifications to augment these categories:

- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuel. There may be miles between these clusters.
- **Non-WUI Condition** – a situation where the above definitions do not apply because of a lack of structures in an area or the absence of critical infrastructure. This classification is not considered part of the wildland urban interface.

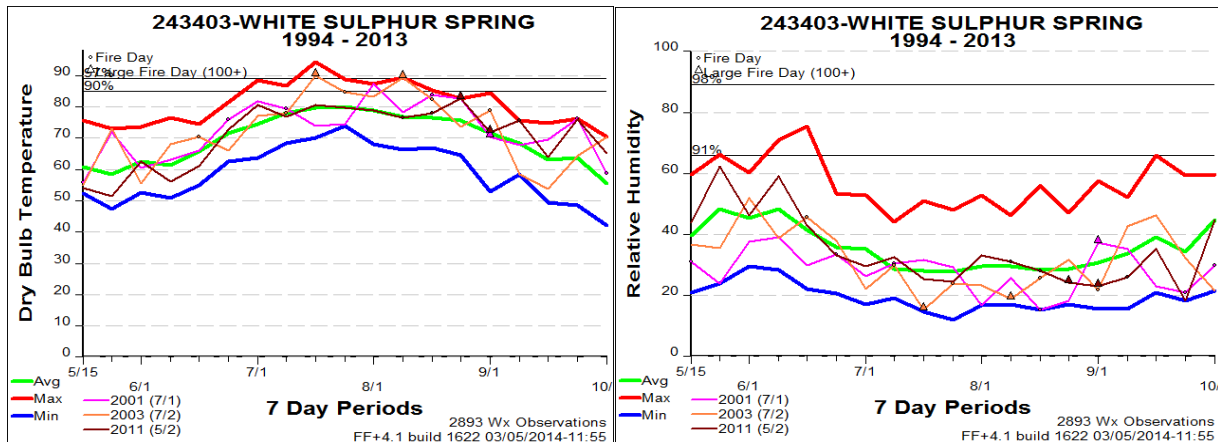
Areas where these conditions exist in Meagher County, and where there is potential of a fire spread into areas where these conditions exist, have been defined. The evacuation of the effected population and the ingress time of emergency response personal was considered when defining these areas.

5. h. Fire Weather and its Relation to Wildfires

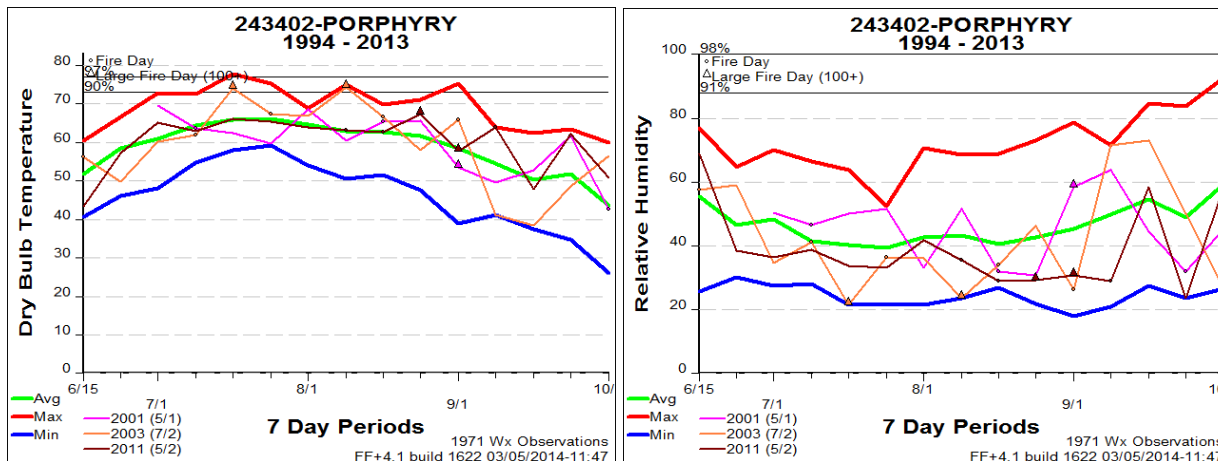
Weather directly affects fire behavior, with wind and low humidity values being the major influencing factors due to their ability to dry fuel and allow fires to grow rapidly. Generally, steering winds at the surface and aloft over Montana in the spring and summer prevail out of the south to west. Southwest and west facing slopes are more exposed to the prevailing winds and

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solar radiation and have drier fuel, which correlates to increased fire behavior activity. Wind-driven fires in Meagher County generally spread from west-southwest to east-northeast. Correlating the temperature and relative humidity data for the last twenty years with the occurrence of large fires helps predict when another large fire may occur. Two weather stations were used: one at a low elevation, (White Sulphur Springs #243403, located in White Sulphur Springs at 5060 feet), and one at a high elevation (Porphyry Lookout #243402, located on top of Porphyry Peak west of Kings Hill at 8232 feet).



These graphs display the temperature and relative humidity for the White Sulphur Springs weather station for the past 20 years. The yearly time frame displayed is from May 15th to Oct 1st. The maximum, minimum and averages are graphed in addition the data for the years of 2001 (Lost Fork Fire 2,338 acres, start date 9-3-01), 2003 (Ant Park Fire 2106 acres, start date 8-13-03) and 2011(Elk Park Fire 600 acres, start date 8-25-11). The triangles located along the graph lines for the years 2001, 2003 and 2011 indicate when there was a wildfire larger than 100 acres.



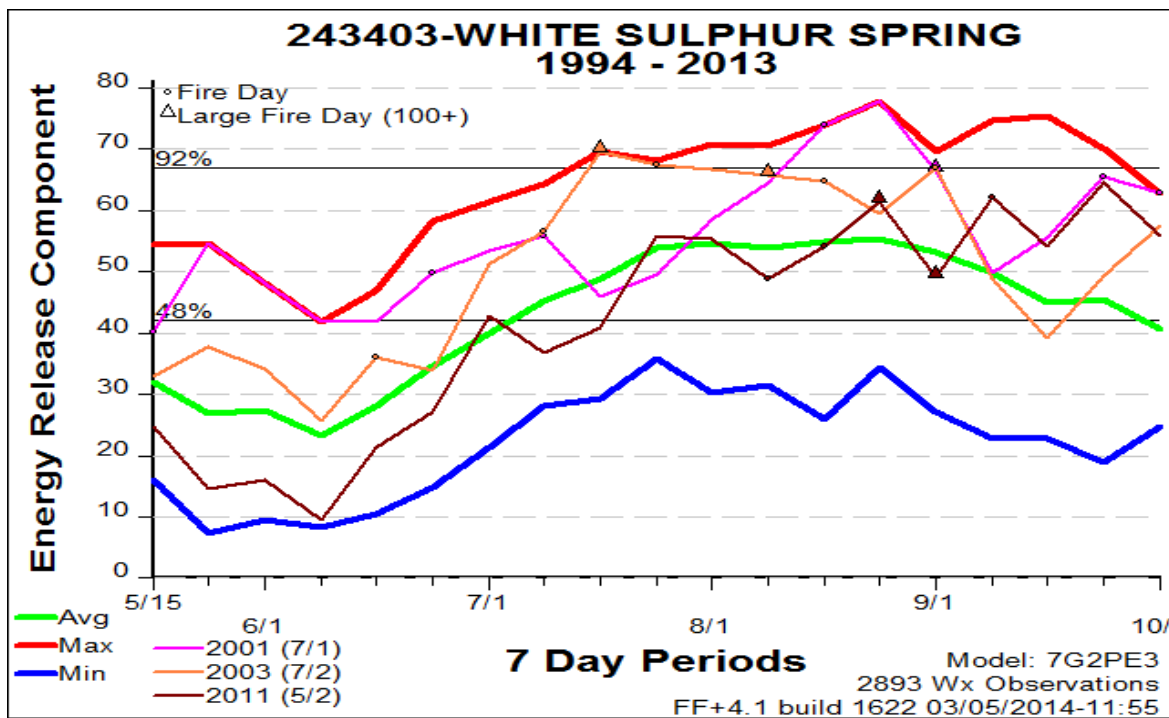
These graphs display the temperature and relative humidity for the Porphyry Lookout weather station for the past 20 years. The yearly time frame displayed is from June 15th to Oct 1st. The maximum, minimum and averages are graphed in addition to the data for the years of 2001 (Lost Fork Fire 2,338 acres, start date 9-3-01), 2003 (Ant Park Fire 2106 acres, start date 8-13-03) and

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2011(Elk Park Fire 600 acres, start date 8-25-11). The triangles located along the graph lines for the years 2001, 2003 and 2011 indicate when there was a wildfire larger than 100 acres.

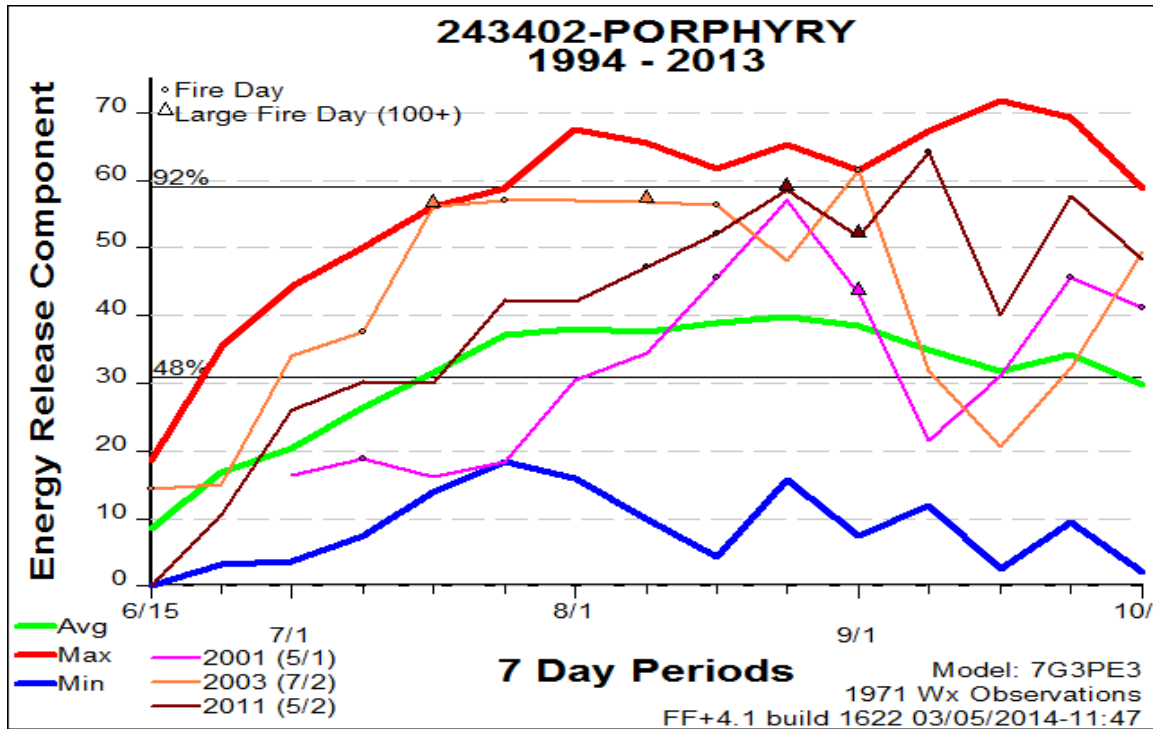
In timbered areas, tracking the dryness of large dead and downed fuel in relation to weather data is helpful in predicting fire danger. The National Fire Danger Rating System (NFDRS) uses weather and fuel moisture data to do this. An output (index) of NFDRS is Energy Release Component (ERC), which is a good way to track seasonal wildfire danger. The Energy Release Component (ERC) index is related to how hot a fire could burn. It is directly related to the 24-hour, potential worst case, total available energy (BTUs) per unit area (in square feet) within the flaming front at the head of a fire.

The ERC can serve as a good characterization of fire season, as it tracks seasonal fire danger trends well. The ERC is a function of the fuel model and live and dead fuel moistures. Fuel loading, woody fuel moistures, and larger fuel moistures all have an influence on the ERC, while the lighter fuel have less influence and wind speed has none. ERC has low variability, and is the best fire danger component for indicating the effects of intermediate to long-term drying on fire behavior (if it is a significant factor), although it is not intended for use as a drought index.



This graph displays the NFDRS Energy Release Component for the White Sulphur Springs weather station for the past 20 years. The yearly time frame displayed is from May 15th to Oct 1st. The maximum, minimum and averages are graphed in addition the data for the years of 2001 (Lost Fork Fire 2,338 acres, start date 9-3-01), 2003 (Ant Park Fire 2106 acres, start date 8-13-03) and 2011(Elk Park Fire 600 acres, start date 8-25-11). The triangles located along the graph lines for the years 2001, 2003 and 2011 indicate when there was a wildfire larger than 100 acres.

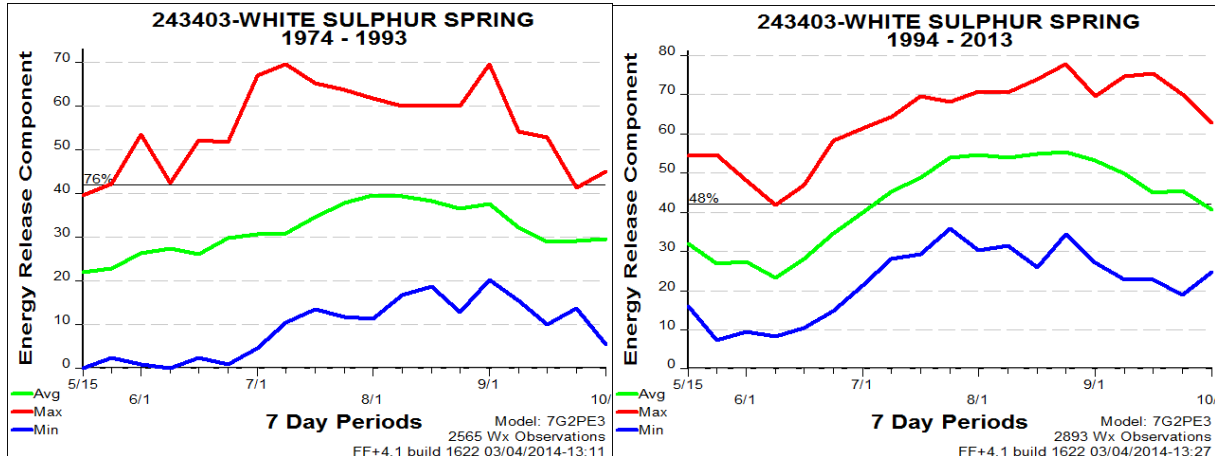
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This graph displays the NFDRS Energy Release Component for the Porphyry Lookout weather station for the past 20 years. The yearly time frame displayed is from June 15th to Oct 1st. The maximum, minimum and averages are graphed in addition the data for the years of 2001 (Lost Fork Fire 2,338 acres, start date 9-3-01), 2003 (Ant Park Fire 2106 acres, start date 8-13-03) and 2011(Elk Park Fire 600 acres, start date 8-25-11). The triangles located along the graph lines for the years 2001, 2003 and 2011 indicate when there was a wildfire larger than 100 acres. When correlated to wildfire activity, the NFDRS Energy Release Component shows that most large fires happen when the ERC is high (if not the highest) for that date.

According to the weather data for the past 40 years, the average temperature has increased slightly and the average relative humidity has decreased slightly. This has caused an increase in the ERC indices in the past 20 years compared to the 20 years prior. In 2012, for example, the ERC was at or near the maximum level for an extended part of the fire season.

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These graphs looking at the NFDRS Energy Release Component for the White Sulphur Springs stations years 1974 to 1993 and 1994 to 2013. The ERC has increased significantly in the past 20 years when compared to the 20 year prior.

Conclusion: When correlated to wildfire activity, the weather data, shows that most large fires happen when the temperature is closest to its highest point and the relative humidity is at its closest to its lowest point for that day in the past 40 years. With the general trend to hotter and dryer weather, and with a corresponding increase in the ERC index, large fires will continue to occur and increase in the future. Tracking the weather and NFDRS indexes is and will be important when predicting if and when large fires will occur.

Links to the weather stations and NFDRS data.

White Sulphur Springs #243403 weather station

<http://www.wrh.noaa.gov/mesowest/getobext.php?wfo=mso&sid=WSRM8&num=48&raw=0&dn=m>

Porphyry Lookout #243402 weather station

<http://www.wrh.noaa.gov/mesowest/getobext.php?wfo=mso&sid=PHYM8&num=48&raw=0&dn=m>

White Sulphur Springs ERC Chart

<http://gacc.nifc.gov/nrcc/dc/mtgdc/DOCS/Graphs/243403.jpg>

Daily NFDRS indexes for Montana can be obtained from

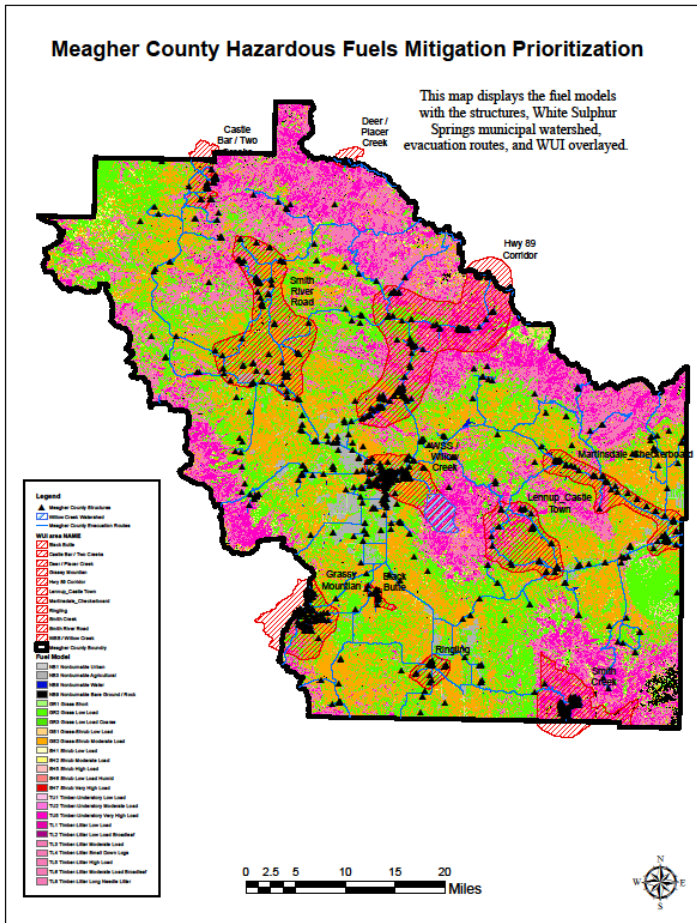
http://gacc.nifc.gov/sacc/predictive/fuels_fire_danger/FD/Montana.txt

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5. i. Prioritization of Hazardous Fuel Mitigation Areas

Fire history, fuel models, fire regime and condition classes, values at risk, evacuation routes, and Meagher County's WUI area are used in conjunction with each other to determine where hazardous fuel mitigation projects need to take place. Starting with values at risk and evacuation routes, and analyzing their location within or adjacent to fuel models of concern, areas are

defined as WUI in most situations. (See "Meagher County Hazardous Fuel Mitigation Prioritization Map" Appendix-Maps for page size map).



Areas that are in fire regime 1 or 2 of a 0-35 year fire frequency and are in fire regime condition class 2 or 3 with a moderate to high departure from the natural (historical) regime of vegetation may also be areas to look at.

The WUI areas were prioritized using these factors.

The exact hazardous fuel mitigation treatments and placement of these treatments within an area requires site-specific knowledge.

WUI Area Prioritization	
WUI AREA NAME	Priority
WSS / Willow Creek	1
Smith Creek	2
Grassy Mountain	3
Castle Bar / Two Creeks	4
Lennup_Castle Town	5
Hwy 89 Corridor	6
Deer / Placer Creek	7
Martinsdale_Checkerboard	8
Smith River Road	9
Ringling	10

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6. Hazardous Fuel Mitigation Projects

Meagher County is located in a fire-prone ecosystem. While the occurrence of wildfire is inevitable, hazardous fuel mitigation treatments can reduce a fire's spreading capability, decrease its intensity, and reduce its spotting capability. The ultimate goal of any fuel treatment is to have every value at risk in such a state that when it is eventually subjected to wildfire, the results will be acceptable. By working with partners (BLM, DNRC, USFS and private landowners) to identify, coordinate and implement fuel reduction projects, Meagher County can significantly reduce the harmful effects of a wildfire on values at risk.

This section of the Meagher County CWPP identifies by WUI area fuel treatments projects that can be implemented in the next five years to work toward this goal.

WUI areas 1-5 have projects in the identification of need, planning or implementation stage. For these projects to be effective in reducing the fire hazard, they all need to enter the implementation (or, preferably, completion) phase within the next five years. The agencies responsible for them will need to focus on giving them a greater priority if they are to achieve maximum effectiveness.

WUI areas 6 & 7 should have work done by individual property owners, and national forest projects need to be planned and ready to implement within the next five years. WUI areas 8-10 are of the least priority but still need assessment and work by individual property owners.

Fuel treatments will be of one of the three project types: structure defensible space, roadside fuel treatments, and fuel reduction. Specific projects may include areas of more than one project type.

Structure Defensible Space Projects: Treatments will be site specific, but will likely include homeowner education, structure triage, creation of a wildfire-defensible space around structures, and access corridor improvements. Specific site conditions may call for other types of fuels reduction and fire mitigation techniques as well. The estimated project cost was calculated by assuming an average treatment cost of \$400 per structure in rangeland/agricultural areas and \$1,000 - 4000 per structure in forested areas.

Roadside Fuel Treatment Projects: Treatment projects are access corridors identified by the county as being potentially unsafe for both ingress by emergency responders and egress in the event of an emergency evacuation due to wildfire. Treatments within the project areas will be site specific, but will likely include precommercial or commercial thinning within 200 feet of each side of the road, herbicide applications, and brush removal with the intent to create a fuel break along the road corridor. Prescriptions may include more intense removal of trees and other vegetation within 5 to 100 feet of the road and reduced intensity removal farther out. This technique will help lessen the intensity of a wildfire and may bring a crown fire to the ground before it reaches the road. Specific site conditions may call for other types of fuel reduction and fire mitigation techniques as well. The estimated project cost was calculated by assuming an average treatment cost of \$700 - 1200 per acre of treatment.

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The planning and implementation of the identified roadside fuel projects does not alter, diminish, or expand the existing jurisdiction, statutory and regulatory responsibilities and authorities or budget processes of federal state, and tribal agencies. All planning in relation to wildfire mitigation must be taken in light of the existing regulatory and environmental laws. This will be determined by the owner of the parcel implementing the treatment. Thus, if proposed activities are to occur on federal lands, then the National Environmental Policy Act (NEPA) will determine environmental protection measures.

Fuel Reduction Projects: Projects have been identified to treat specific areas at high risk to wildfire due not only to the forest fuel, but also due to increased likelihood of an ignition. High use recreational areas or industrial operations in or near forestland fuel have an increased likelihood of an ignition from human or mechanical sources. The proposed fuel reduction projects will likely include more general fuel treatments such as forest health improvements in the surrounding area in conjunction with enhanced fire safety precautions. Installation of escape resistant fire pits, barbeque stands, designated trails, and restricted use of fireworks can help reduce the ignition risk in recreational areas, while having fire extinguishers on site and creating a maintained fuel break between mechanical operations and forestlands can decrease the ignition risk in industrialized areas. The estimated project cost was based on \$250 - 1000 per acre of treatment. Cost estimates assume that no revenue was generated by the removal of timber or other product.

Meagher County, U.S. Forest Service, Bureau of Land Management, and/or the Montana Resource Conservation and Development (RC&D) may take the lead on implementation of many of these projects; however, project boundaries were purposely drawn without regard to land ownership in order to capture the full breadth of the potential wildfire risk. Coordination and participation by numerous landowners may be required for the successful implementation of the identified projects.

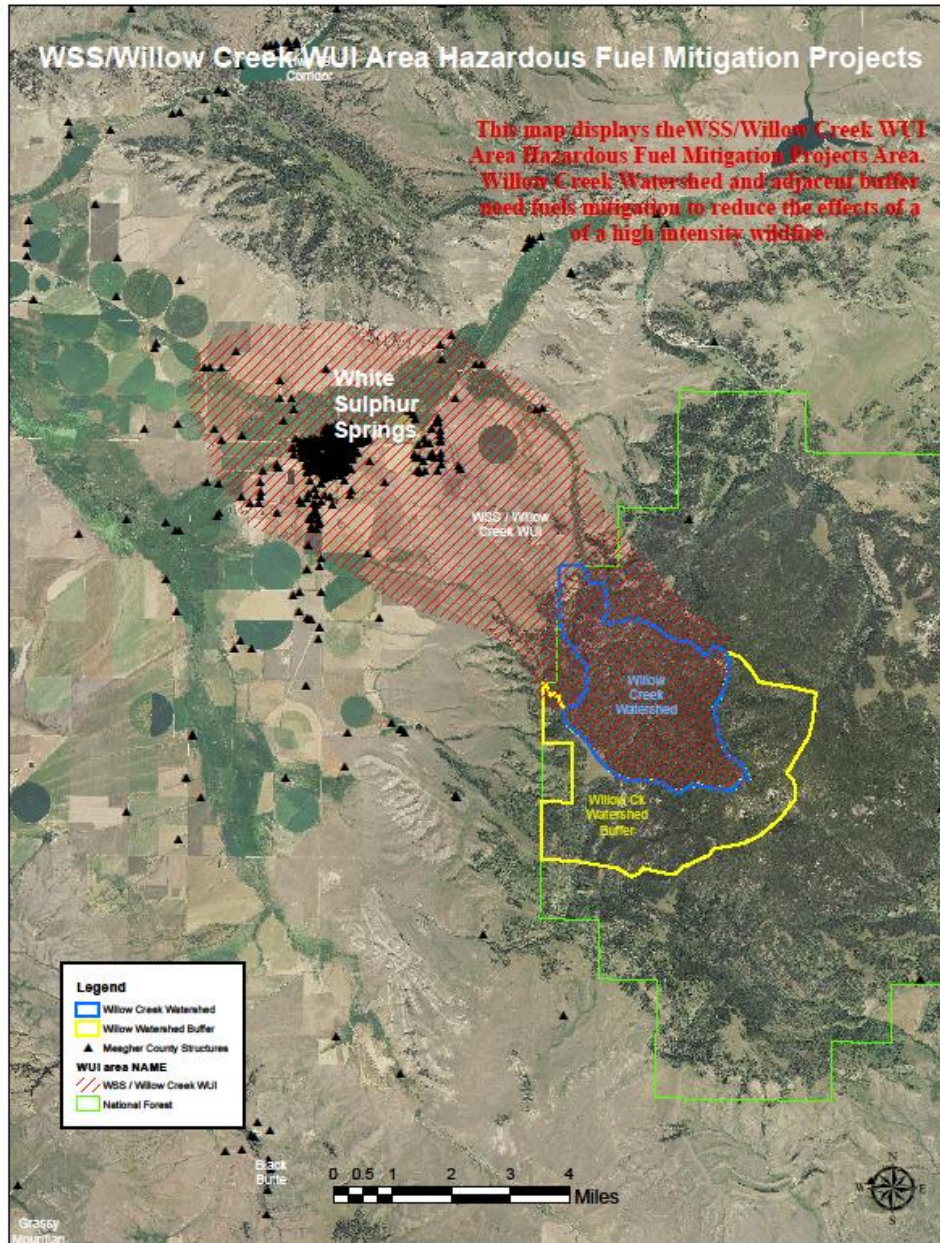
WUI areas are used to define where hazardous fuel mitigation projects need to take place. Maps and descriptions of the projects, along with a discussion of project intent for each will be included. This section is the first step in the project planning process. A number of additional steps are required before any project can be implemented.

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6. a. WSS/Willow Creek WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the Willow Creek watershed, which is the municipal watershed for White Sulphur Springs. The watershed is mostly Lodgepole Pine timber which has experienced a high mortality rate due to infestation by Mountain Pine beetle. Treatments need to include 30-40 % of the watershed and areas adjacent to the watershed (buffer) to limit the effects of a high

intensity wildfire. The project is on the Lewis & Clark National Forest and is within the proposed Castle Mountain Restoration Project.

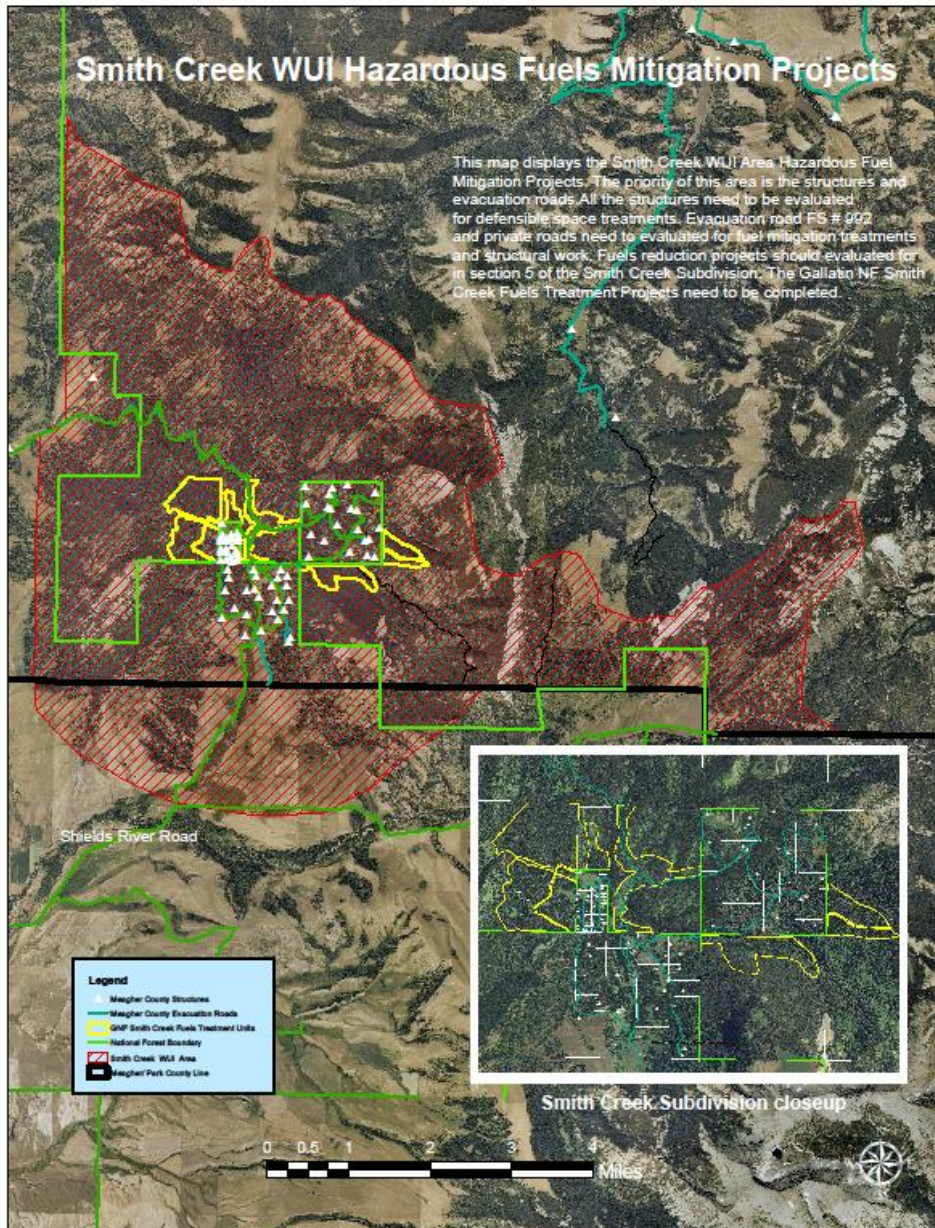


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6. b. Smith Creek WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures and evacuation roads. Two of the structures have had defensible space treatments financed through the RC&D fuel mitigation program. All the structures need to be evaluated for defensible space treatments. Evacuation road FS # 992 and private roads need to be evaluated for fuel mitigation treatments and structural work. Two ways

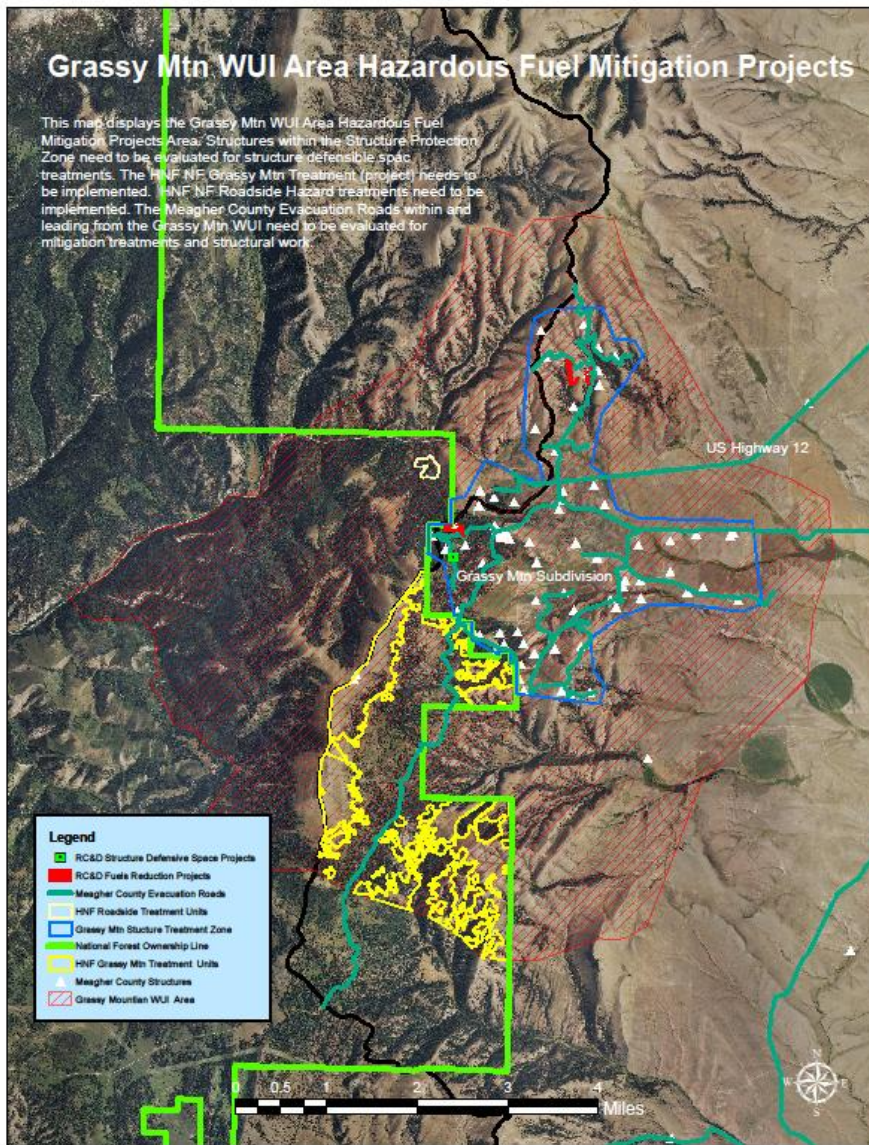
of evacuation for all structure locations should be maintained if possible. FS #992 road, north through private land, needs to be kept passable for emergency use. Fuel reduction projects should be evaluated for in section 5 on private land of the Smith Creek Subdivision. The Gallatin NF Smith Creek Fuel Treatment Projects need to be completed.



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6. c. Grassy Mtn WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures that make up the Grassy Mtn Subdivision, including the Grassy Mtn Lodge. A structure within the Grassy Mtn Subdivision has had Structure Defensible Space work completed and several property owners have completed Fuel Reduction Projects with assistance through the RC&D hazardous fuel mitigation program. Structure Defensible



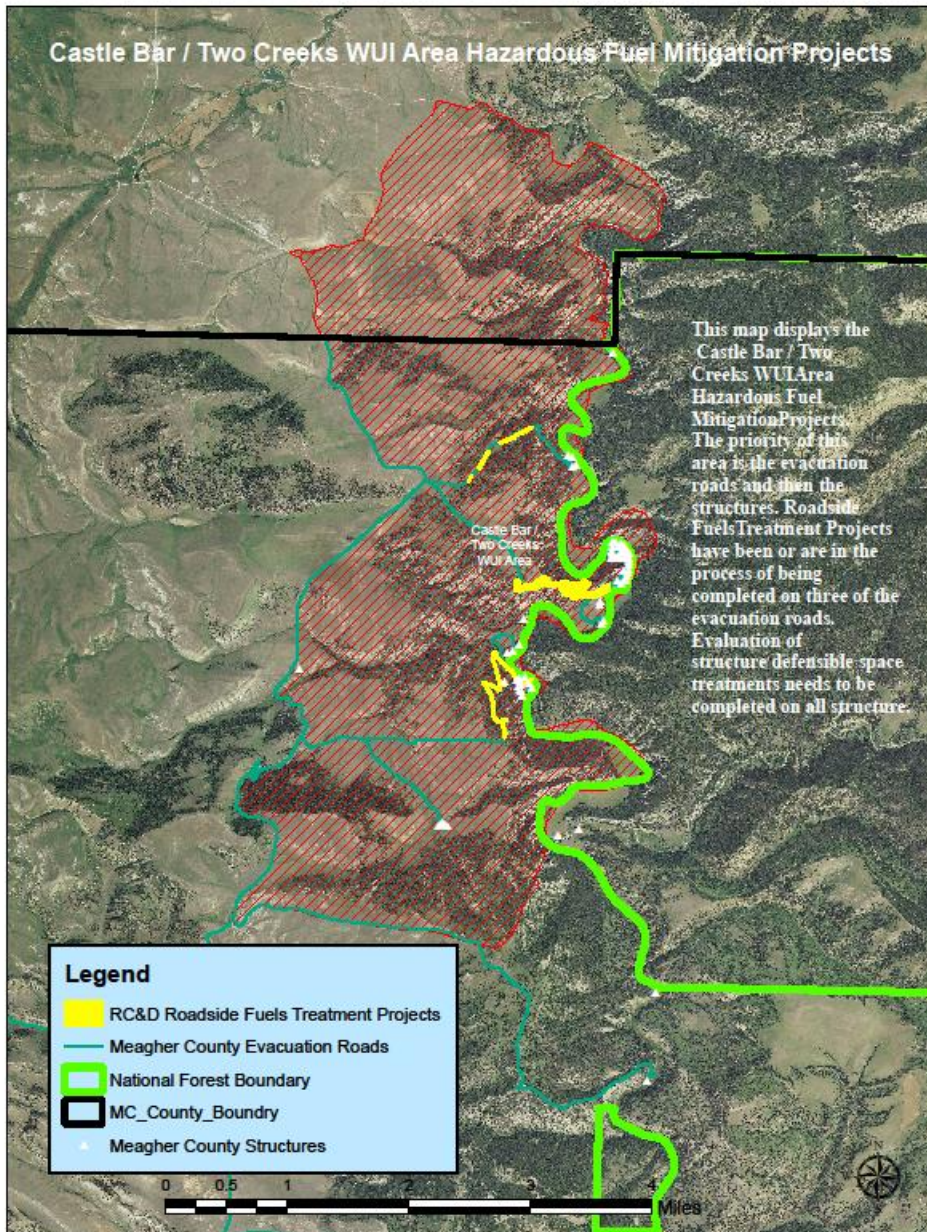
Space assessments and work needs to be done on all structures. Structures within grass/sagebrush /junipers environment need mitigation of these flashy fuel. Landowners should be encouraged to sustain grass ecosystems through grazing and to control tree encroachment. The evacuation roads need to be assessed for fuel mitigation and structural improvements. There needs to be several ways to evacuate if possible. The Helena National Forest Roadside Hazard project in the Skidway campground area needs to be completed. The Helena National Forest Grassy Mtn Project needs to be accomplished. This project will provide fuel mitigation to the west

and southwest which is the most likely direction for a wildfire to spread into the subdivision. The Grassy Mtn Rural Fire District needs to have a fire plan. This plan should cover: 1) Access, ingress, egress, and evacuation; 2) Fuel modification; 3) Water Supply; 4) Construction, location, and design of structures; 5) Ignition potential of structures; 6) Asset Protection Zones (Defensible Space); 7) Adequate fire protection facilities for the project; 8) Adequate signage for location by fire personnel; and 9) Response agency and approximate response time.

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6. d. Castle Bar / Two Creeks WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the evacuation roads. The majority of the structures within the Castle Bar / Two Creeks WUI are located in the Smith River canyon. The evacuation roads from the canyon are steep and one-way in and out. These roads have areas of fuel models TU5 Douglas Fir with Juniper understory or TL8 Ponderosa Pine. Three of the main evacuation roads, Sunset Lane, Castle Bar Road and the Two Creeks Road, have completed or are in the process of

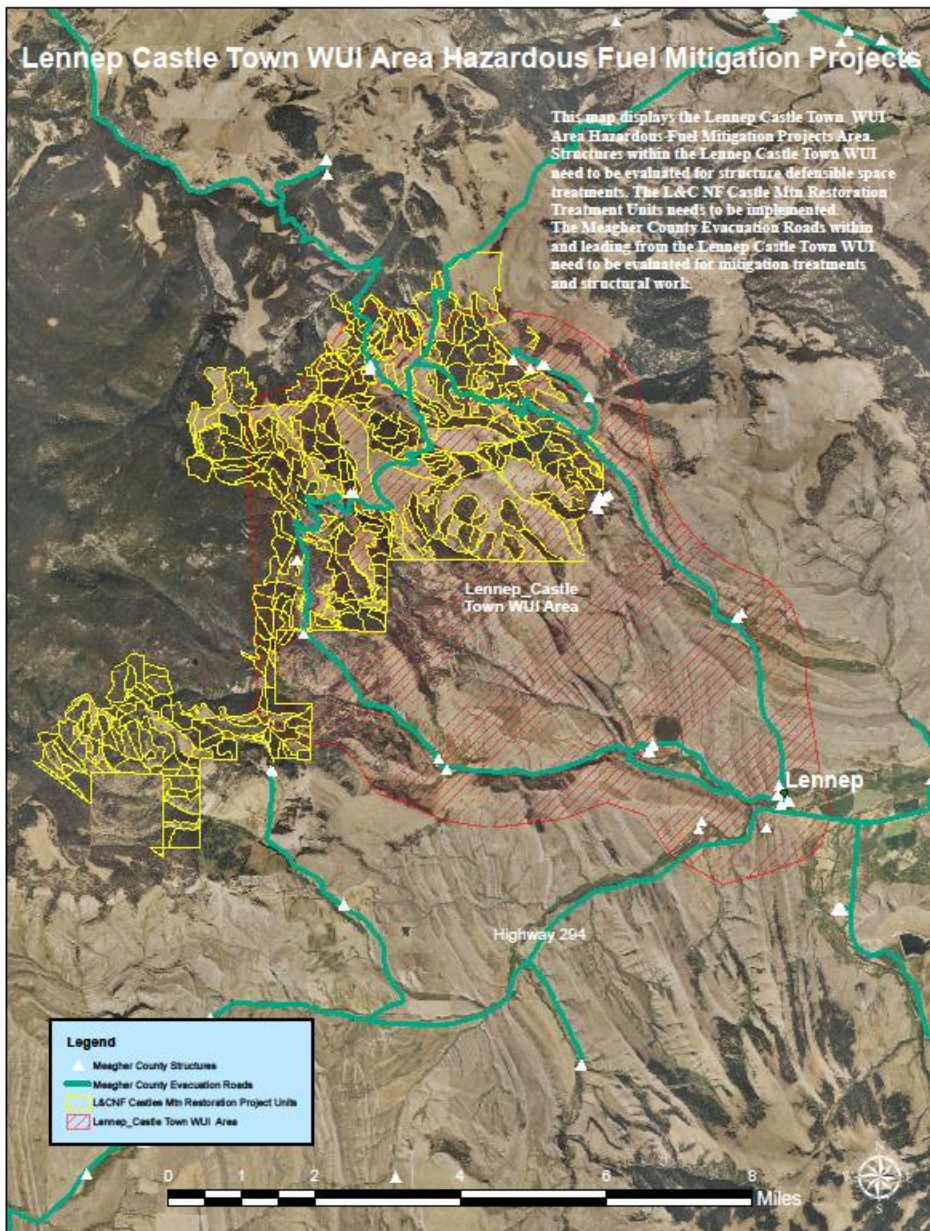


completing roadside fuel treatment projects with assistance through the RC&D hazardous fuel mitigation program. The evacuation roads need to be assessed for structural improvements. Structure Defensible Space assessments and work needs to be done on all structures. Structures within grass / sagebrush / Ponderosa Pine Needle / juniper environment need mitigation of these light flashy fuel.

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6. e. Lennep / Castle Town WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures and the evacuation roads. Many of the structures are set out from the timber, but still need to have structure defensible space assessment and work done. Structures within grass/ sagebrush /junipers environment need mitigation of these light flashy fuel. The evacuation roads within and leading from the area need to be evaluated for hazardous

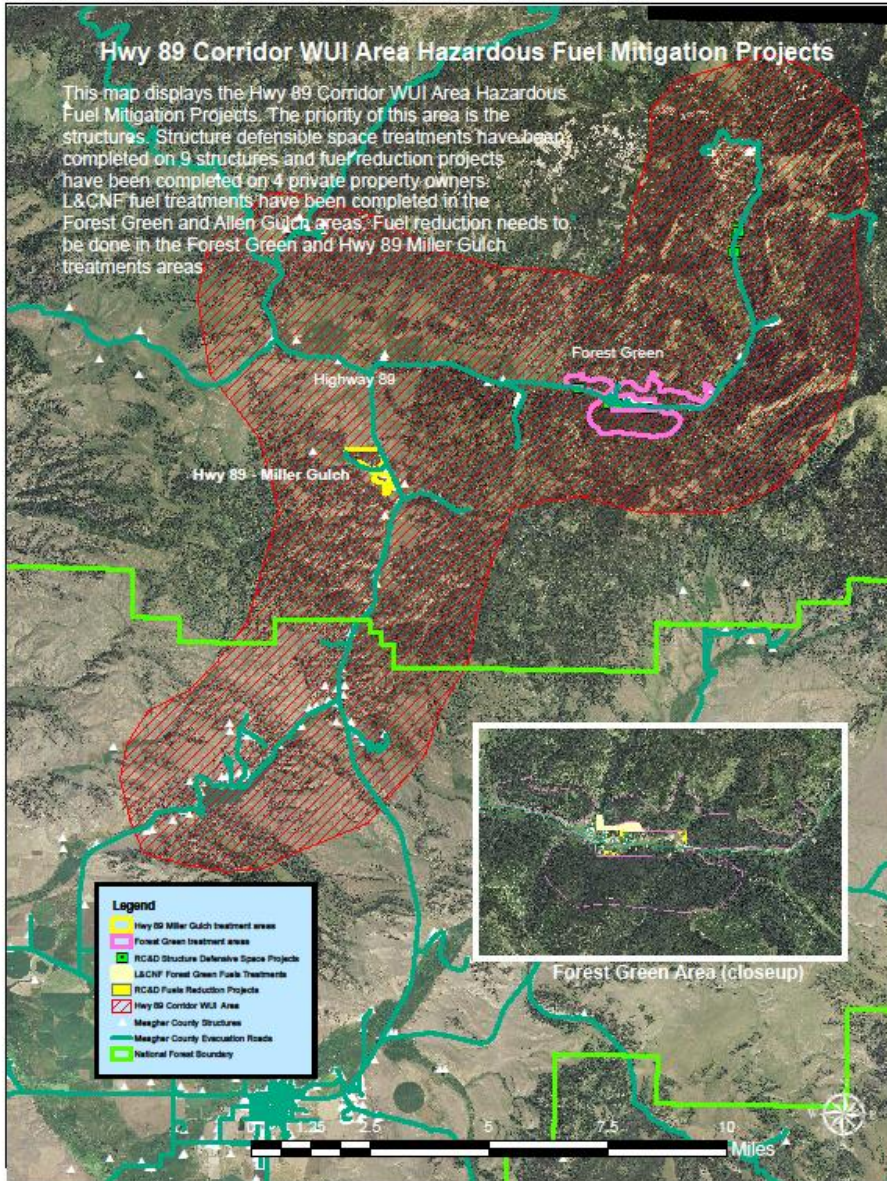


fuel mitigation and structural improvements. The Lewis & Clark National Forest Castle Mtn Restoration Project needs to be accomplished. This project will provide fuel mitigation to the west and southwest which is the most likely direction for a wildfire to spread into the area where the structures are located. This project provides fuel mitigation around and adjacent to the private property and structures.

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6. f. Hwy 89 Corridor WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures. The Forest Green and Hwy 89 / Miller Gulch areas are of the most concern. The Forest Green area has multiple structures that have had structure defensible space treatments and four of the land owners have completed fuel reduction projects.

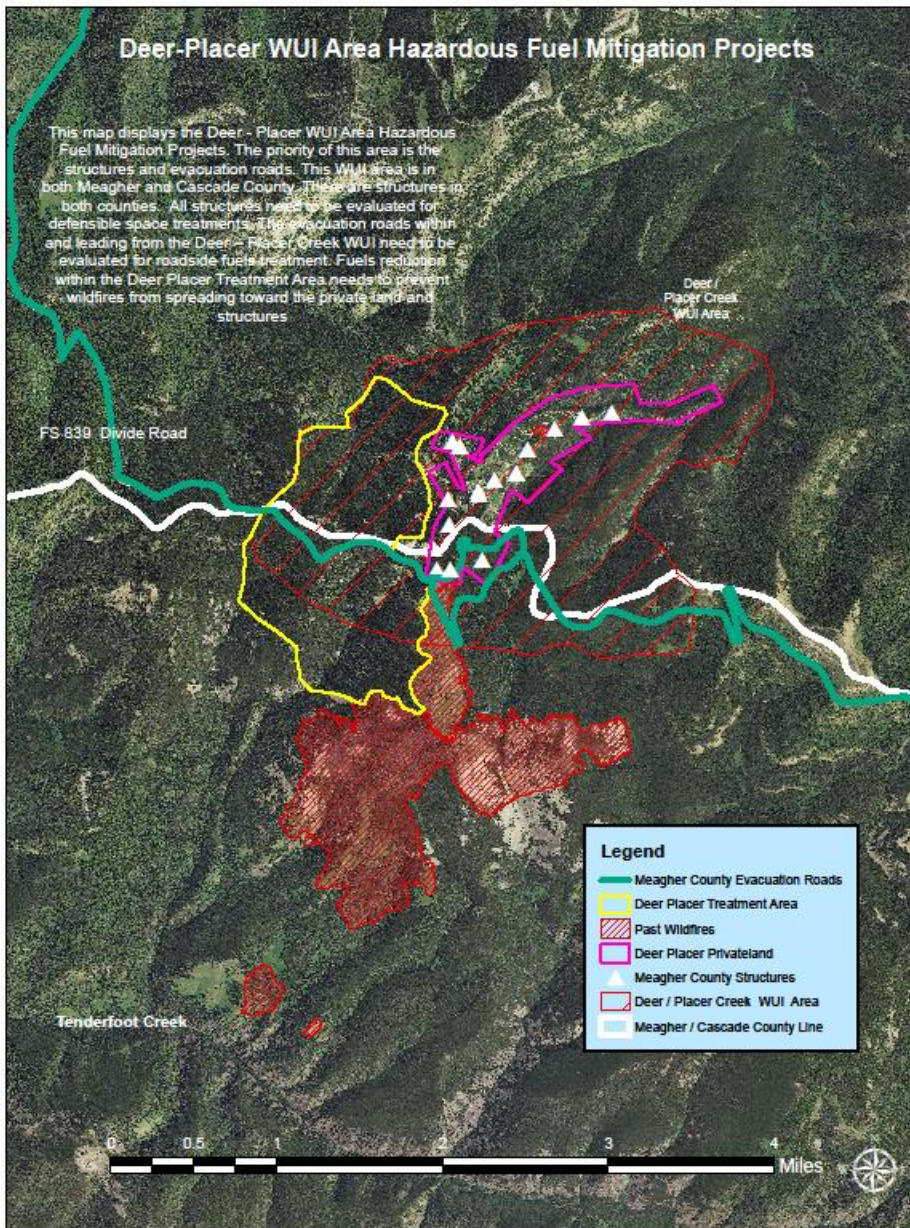


The L&CNF has completed fuel treatments adjacent to this area. Additional structures need to have defensible space treatments and the L&CNF needs to do fuel reductions in the Forest Green treatment areas. The Hwy 89 / Miller Gulch area has had fuel reduction treatments to reduce the surface fuel, including juniper, adjacent to the structures. Post-treatment, most of the Lodgepole Pine trees within and adjacent to the treatments have been killed by Mountain Pine Beetle. The dead Lodgepole Pine needs to be removed from L&C NF lands adjacent to private structures.

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6. g. Deer / Placer Creek WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures and evacuation roads. This WUI area is in both Meagher County and Cascade County. There are structures in both counties. This area has been threatened several times in the past from wildfires. Some of the structures are non-defendable due to the wildland fuel adjacent to the structures and the structures themselves. All the



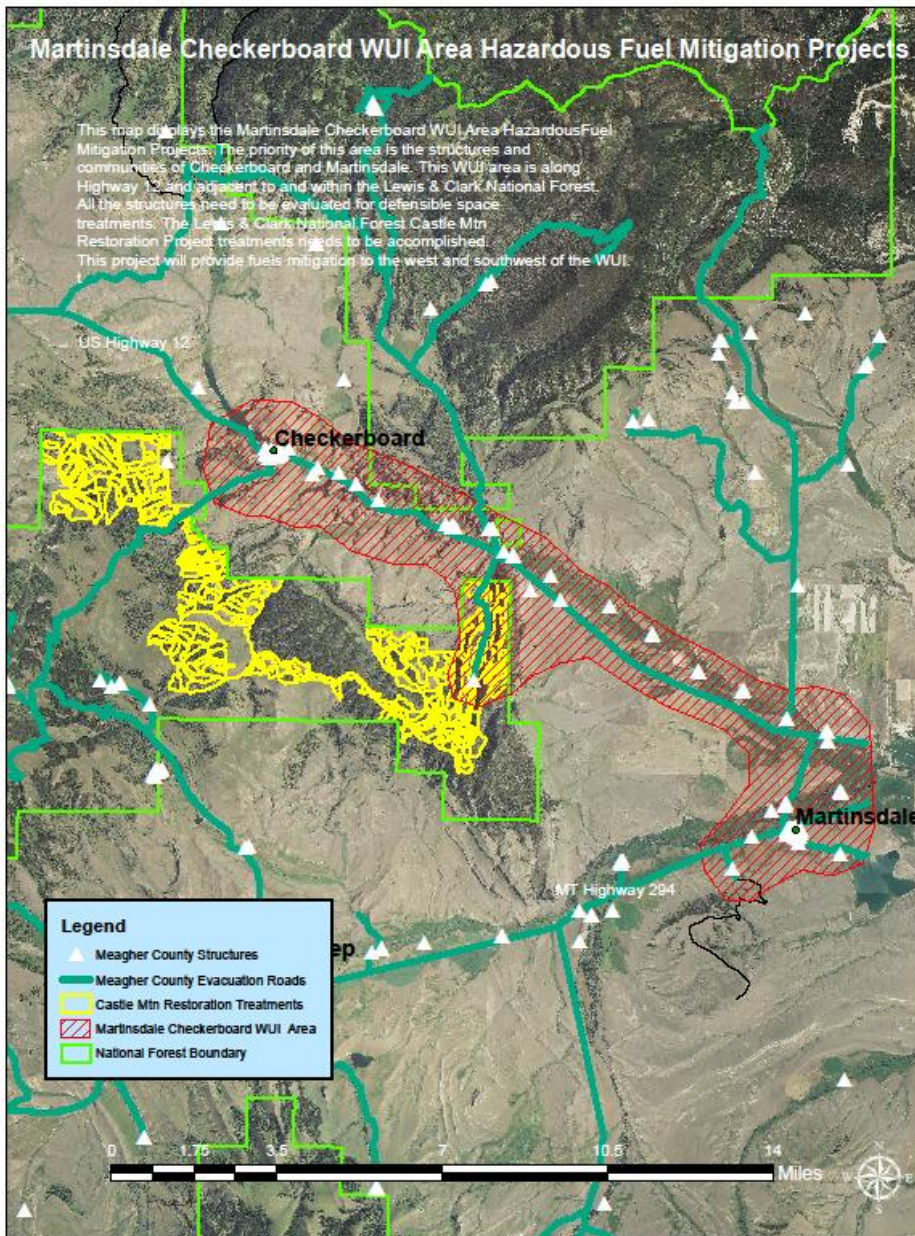
structures need to be evaluated for defensible space treatments. The wildland fuel adjacent to the evacuation roads in areas will cause the road to be unusable during wildfires. The evacuation roads within and leading from the Deer / Placer Creek WUI need to be evaluated for roadside fuel treatment. Due the topography and predominate winds, wildfires from the Tenderfoot Creek and Logging Creek drainages will spread toward the private land and structures. Fuel reduction within the Deer / Placer Treatment Area needs to aim at preventing crowning wildfires from

spreading toward the private land and structures. Wildfires need to be prevented from crowning at a considerable distance from the structures to reduce the amount of embers that reach the private land and structures.

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6. h. Martinsdale / Checkerboard WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures and communities of Checkerboard and Martinsdale. This WUI area is along Highway 12, and adjacent to and within the Lewis & Clark National Forest. Structures within grass/ sagebrush /junipers environment need mitigation of these flashy fuels. All the structures need to be evaluated for defensible space treatments. Forest road #694, Pasture Gulch, needs to be evaluated for roadside fuel treatment. The Lewis & Clark National Forest Castle Mountain Restoration Project treatments need to be accomplished. This project will provide fuels mitigation to the west and southwest of the WUI.

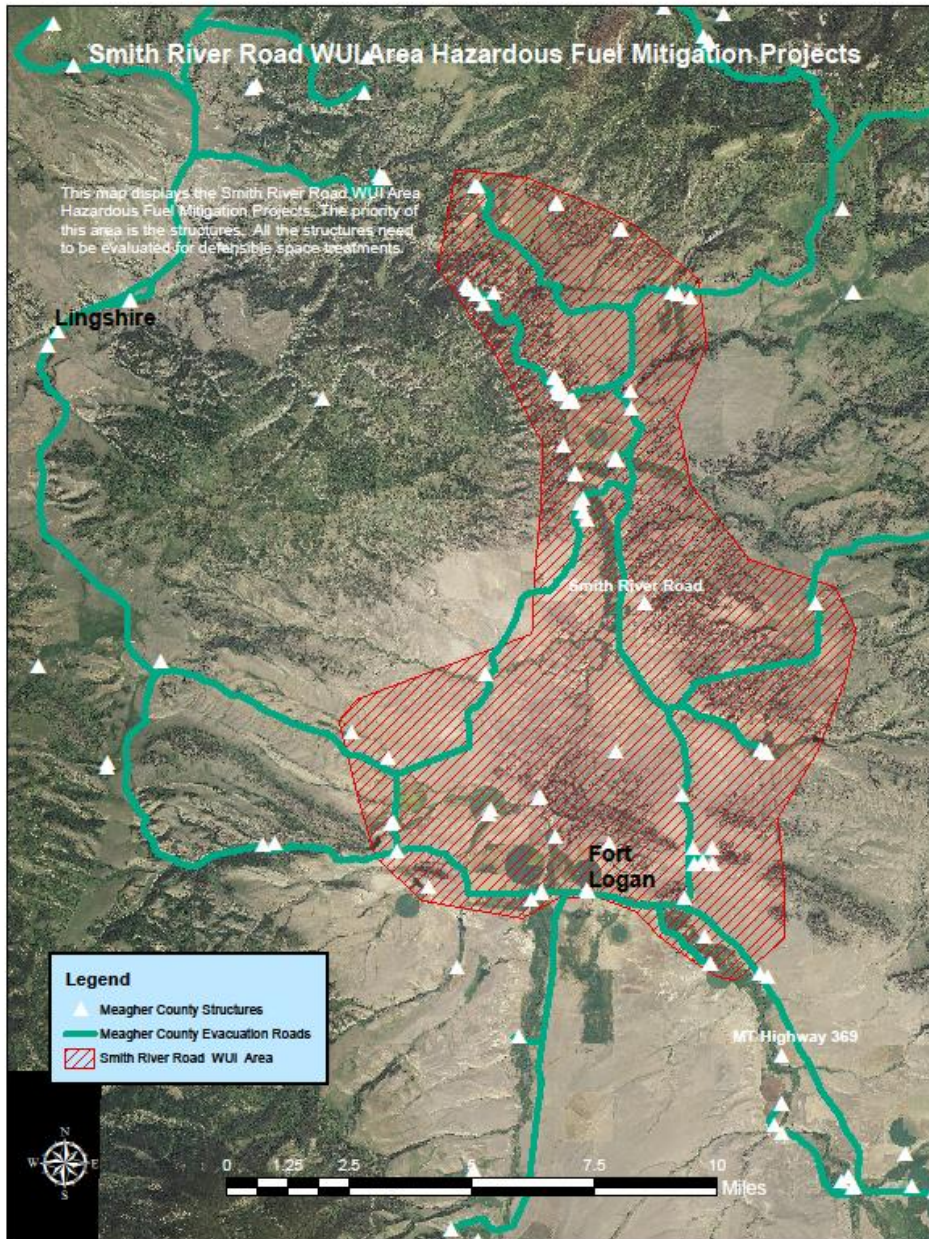


Pasture Gulch, needs to be evaluated for roadside fuel treatment. The Lewis & Clark National Forest Castle Mountain Restoration Project treatments need to be accomplished. This project will provide fuel mitigation to the west and southwest, which is the most likely direction from which a wildfire could spread into this WUI area.

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6. i. Smith River Road WUI Area Hazardous Fuel Mitigation Projects

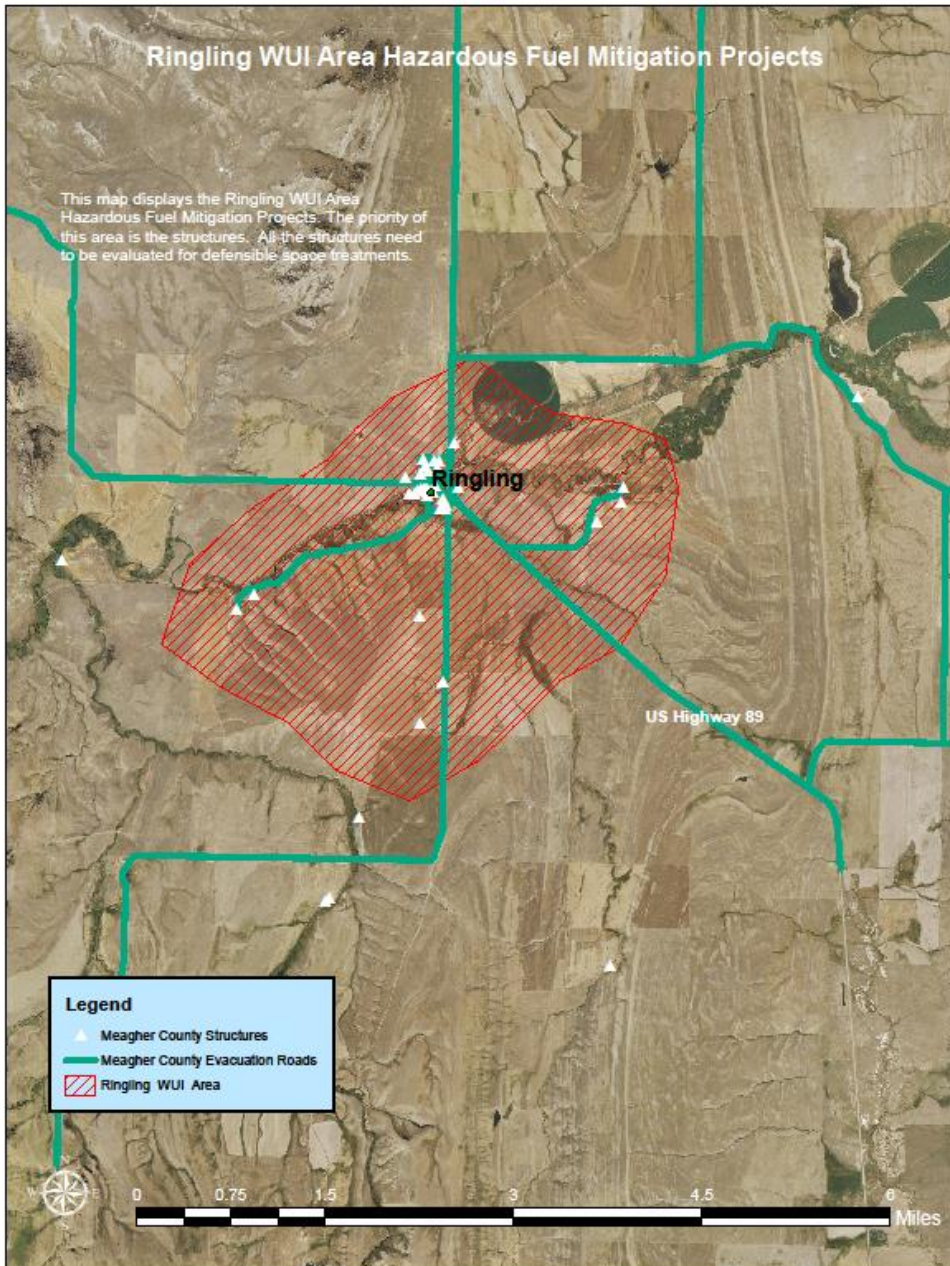
The priority of this area is the structures. The majority of the structures in this area are ranches with several buildings at each site. Structures within grass/ sagebrush /junipers environment need mitigation of these flashy fuels. All the structures need to be evaluated for defensible space treatments



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6. j. Ringling WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures. The structures within this area include ranches as well as the town of Ringling. Structures within grass/ sagebrush /junipers environment need mitigation of these flashy fuels. All the structures need to be evaluated for defensible space treatments

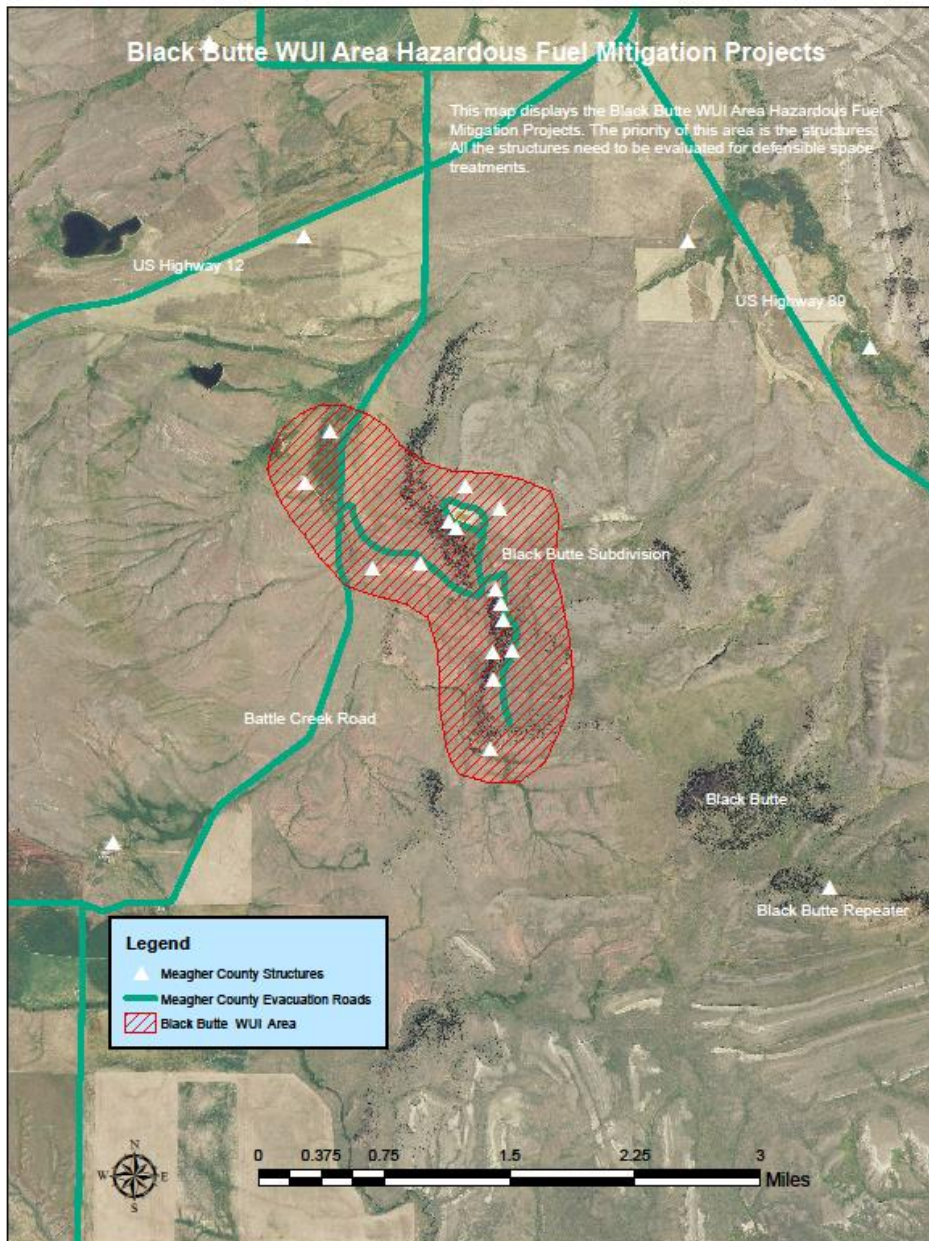


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6. k. Black Butte WUI Area Hazardous Fuel Mitigation Projects

The priority of this area is the structures. The majority of the structures in this area are in the Black Butte Subdivision. The water source in the center of the north lots needs to be developed for use in the event of a wildfire. Structures within grass/ sagebrush /junipers environment need mitigation of these flashy fuels. Landowners should be encouraged to sustain grass ecosystems

through grazing. All the structures need to be evaluated for defensible space treatments



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7. Reducing Structural Ignitability and Strengthening Homeowner Fire Preparedness

This section provides strategies to help identify and implement approaches to reduce structural ignitability. An approach to reduce structural ignitability and overall community vulnerability depends on citizens to engage in fuel reduction efforts around the home and reduce the ignitability of the components of the home.

7. a. Public Education

Public education and outreach to residents about how homes ignite and how to reduce ignition potential is the first step toward enabling property owners to modify their homes and surrounding landscapes most effectively. During extreme wildland–urban fires, homes ignite in two principal ways: 1) directly from flame heating, and 2) from direct firebrand ignition (burning ember spot ignitions). If a homeowner modifies both the structure itself and its immediate surroundings, the home is much less likely to ignite during a wildfire, and thus has a much greater chance of surviving a wildfire.

Public education can be furthered with the use of the “Ready Set Go Montana program: Your Personal Wildland Fire Action Guide,” available at:

<http://dnrc.mt.gov/Forestry/Fire/Prevention/Documents/Final%20Montana%20RSG%20Guide.pdf>.

This program and the associated link to Fire Safe Montana <http://firesafemt.org/> provide resources to display to the public. Education programs should include a spring time display in the K-12 schools and spring/summer programs designed for adults at venues such as the Meagher County Community Expo. Ready Set Go Action Guides can be distributed to individuals in high risk areas through mailings or during site visits. Education efforts should target homeowners, contractors, realtors, and insurance companies, emphasizing the homeowners’ responsibility to protect their homes.

7. b. Individual Responsibility

Individual responsibility is paramount in reducing structural ignitability. As stated in Montana State Policies 76-13-115, State fire policy (6), “all private property owners and federal and state public land management agencies have a responsibility to manage resources, mitigate fire hazards, and otherwise prevent fires on their property.”

Fire science research has demonstrated that the ignition potential of structures, including homes, can be minimized by modifying the home itself and the area within 100 to 200 feet around the structure. A home should be examined for its vulnerabilities to firebrands and flames. Firebrand ignition factors include structure locations for firebrand accumulations on flammable surfaces and unscreened openings allowing firebrand entry.

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Homeowners have control over the structural components of their homes and the “home ignition zone.” The effectiveness of fire suppression/protection is subordinate to the individual’s responsibility for ignition resistance of their home. Replacing flammable or highly ignitable components of the home and removing fuel from around the home minimizes the ignition potential of the home. The Ready Set Go Montana program provides information for homeowners to make decisions on mitigation efforts.

Most Effective Changes to Home Ignition Zone

- Class A roofs: any roof covering that does not self-sustain an ignition and spread fire is an appropriate 'non-ignitable' roof covering
- Screen openings to prevent ember intrusion
- Install non-flammable siding
- Install double-paned windows
- Reduce fuel around structures
- Maintain vegetation modifications

For additional information, refer to Fire Safe Montana (Living with Fire - HOMEOWNERS' FIRESAFE GUIDE FOR MONTANA)

<http://firesafemt.townsquareinteractive.com/files/2012/05/Living-w-Fire-FSM-2009-1.pdf>.

Technical assistance and advice can be accessed through the Meagher County Fire Warden and/or the RC&D Hazardous Fuel Reduction Grant Program to develop and implement (funding) a hazardous fuel mitigation plan or a forest stewardship plan. Contact Brad Bauer phone 1-406-388-3213, brad.bauer@montana.edu

<http://www.msuextension.org/gallatin/naturalresourcesfire.html>

8. Plan Monitoring and Review:

The Disaster Mitigation Act of 2000 requires that this plan be updated every five years. This does not mean rewriting the plan or redoing this entire process, but rather to review your mitigation plan. The hazardous fuel mitigation projects should be updated as the keeper of the plan becomes aware of new projects that might be implemented to mitigate a wildfire problem. The prioritized project list should be revised every year based on new data and available dollars. The entire plan should be reviewed and updated every five years.

9. Summary and Conclusions

The complexity of the wildfire environment has changed in Meagher County over the last 20 years, due to the increase of homes built in the WUI, changes in the wildland ecosystems and global climate changes. The leadership and the level of fire preparedness within Meagher County have been able to keep pace with this changing environment through the efforts of the Meagher County Fire Warden and the White Sulphur Springs Fire Chief.

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All the fire departments in the county are volunteer organizations. Recruiting, training and retaining volunteers is a continual process and becoming more of a challenge. Volunteerism nationwide for all emergency response organizations is on the decline, and Meagher County is no exception.

The Meagher County Board of Commissioners needs to recognize this effort and also needs to support the future needs of Meagher County's fire forces to further respond to a changing fire environment and the associated public safety risks.

10. References

References

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- Hardy, C.C., Schmidt, K.M., Menakis, J.M., Samson, N.R. 2001. Spatial data for national fire planning and fuel management. *International Journal of Wildland Fire* 10:353-372.
- Schmidt, K.M.; 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen.Tech. Rep., RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

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11. Appendices

Incident Complexity Analysis

Guidelines:

One check in each of the five major elements would indicate a complexity level suggesting consideration of a Type 2 or 1 IMT. If some elements are not involved, use the following ranges:

- 1—3: Current management should be able to handle the incident. The local organization fills positions as needed. Continue to monitor objectives and accomplishments; consider a type 3 organization.
- 4—6: Indicates complexity level suggesting a type 3 team.
- 7—10: Scrutinize overall complexity and safety concerns, consider past fire history and current and expected situation, and review WFSA. This complexity suggests the need for a type 2 team.

The Incident Complexity Analysis should be reviewed periodically to determine the level of management required.

Extended Attack Complexity Analysis

	Yes	No
Safety		
Exposure of personnel to unusually hazardous conditions.....	_____	_____
Accidents / injuries have occurred.....	_____	_____
Multiple fixed wing aircraft and helicopters involved or anticipated.....	_____	_____
Potential for public evacuations.....	_____	_____
Terrain adversely affects performance of tactical resources, limits safety zones.....	_____	_____
Performance of firefighting resources affected by cumulative fatigue.....	_____	_____
External / Political Factors		
Potential for numerous damage claims.....	_____	_____
More than one jurisdiction involved.....	_____	_____
Controversial fire policy.....	_____	_____
Sensitive public/ media relationships.....	_____	_____
Smoke management problems.....	_____	_____
Lack of cohesive organizational structure.....	_____	_____
Resource Issues		
Structures.....	_____	_____
Cultural values.....	_____	_____
Recreational developments.....	_____	_____

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Urban interface.....	___	___
Critical municipal watershed.....	___	___
T & E species.....	___	___

Yes No

Fire Behavior

Current or predicted fire behavior dictates indirect control strategy.....	___	___
Fuel extremely dry and susceptible to rapid and explosive spread.....	___	___
Extreme fire behavior / blow-up potential exhibited.....	___	___
Current or predicted winds above 20 mph.....	___	___
Fuel moisture of 8 percent or below (10 hour fuel).....	___	___
Severe fire weather predicted for next two operational periods.....	___	___

Personnel / Equipment

Yes No

100 or more personnel assigned to the incident.....	___	___
Variety of special support personnel or equipment.....	___	___
Resources unfamiliar with local conditions and accepted tactics	___	___
Heavy commitment of local resources to logistics support	___	___
Existing forces worked two operational periods without success	___	___
Communications ineffective with tactical resources or dispatch	___	___

Total number of elements checked:

Extended Attack Complexity Rating:

- 1—3 Current management sufficient. Type 3 team should be considered.

- 4—6 Complexity level suggest Type 3 team.
- 7—10 Consider ordering Type 2 team.

Remarks:

Prepared By: _____ **Date** _____ **Time** _____

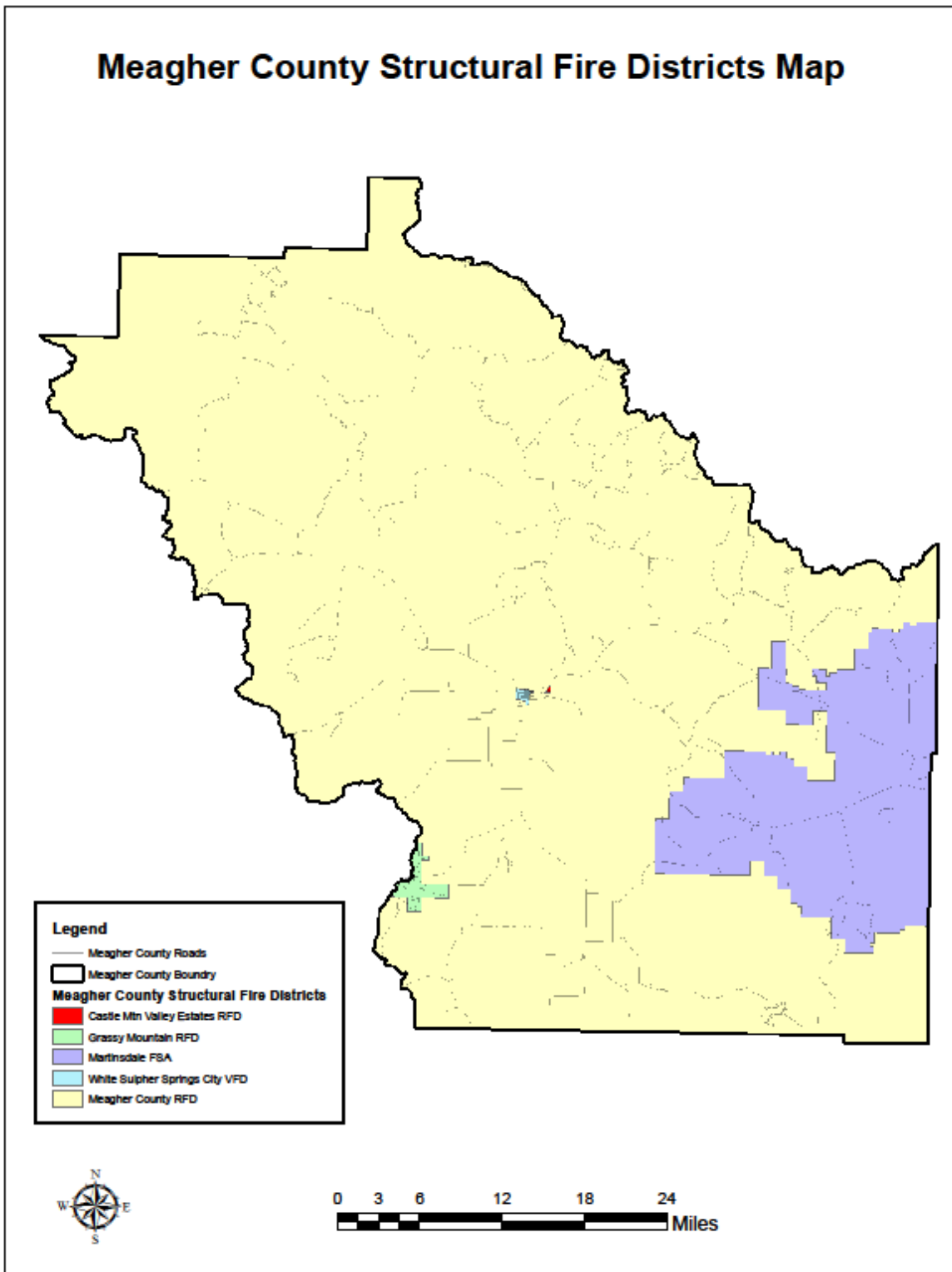
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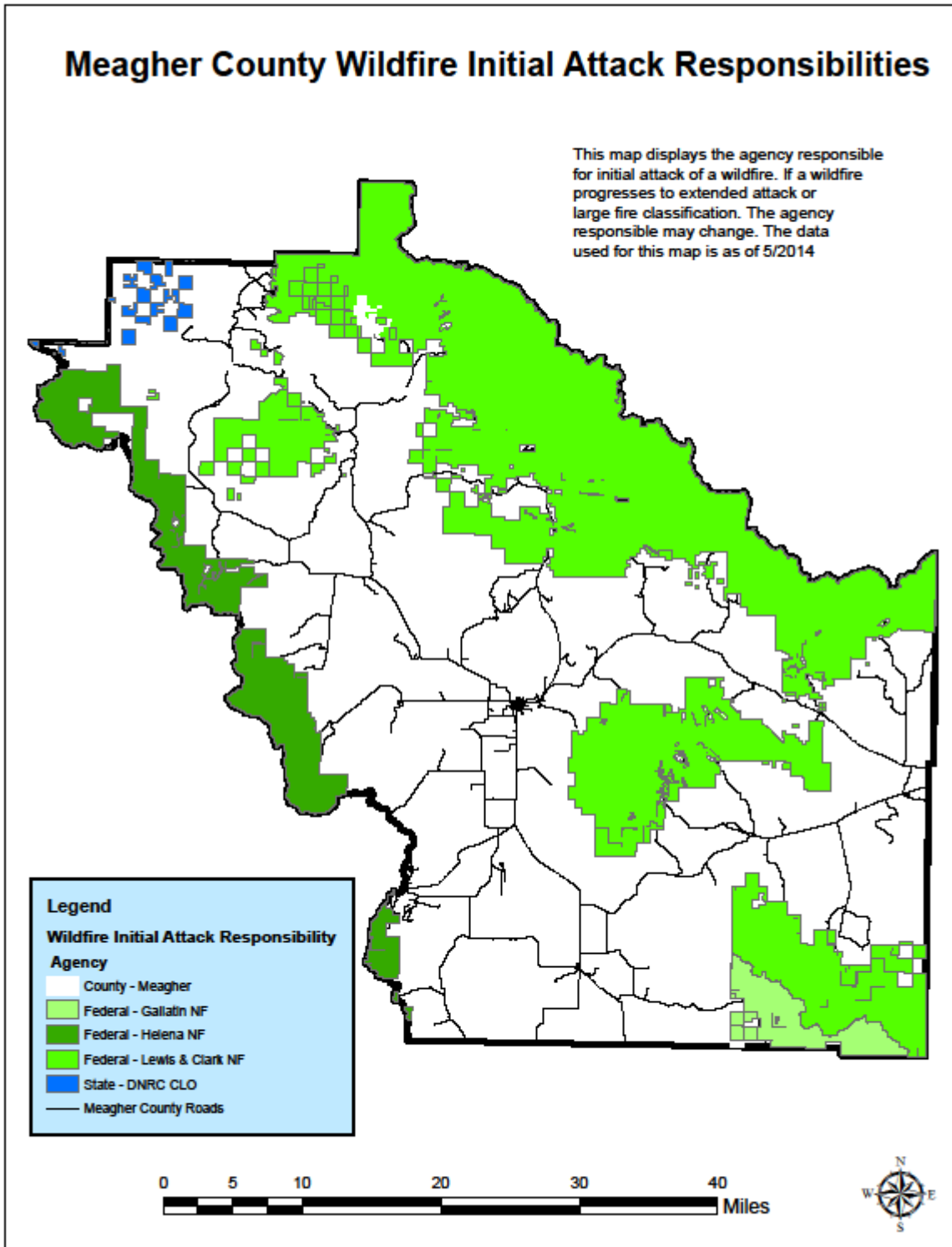
Maps

Meagher County Structural Fire Districts Map



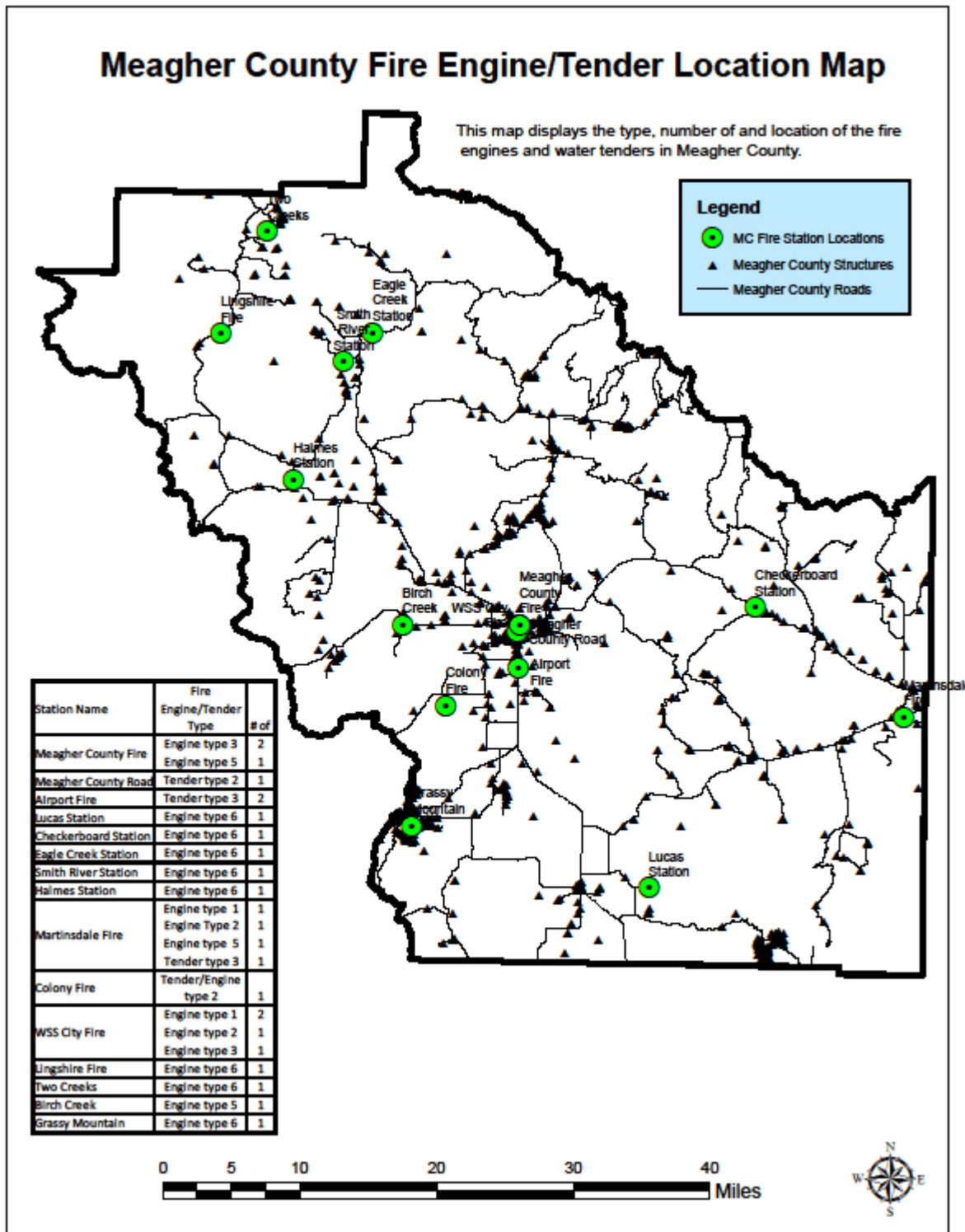
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Meagher County Wildland Fire Protection Map



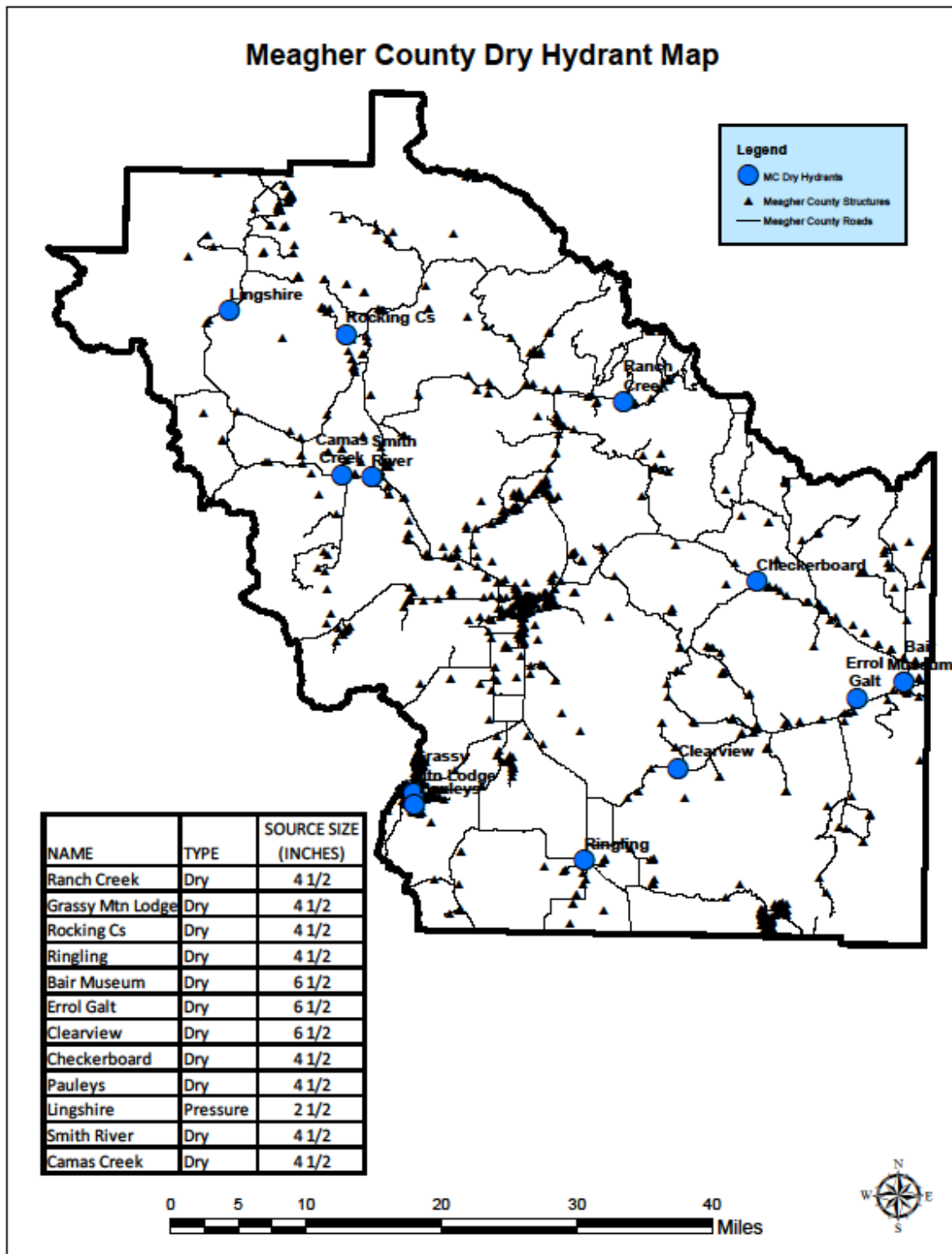
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Meagher County Fire Engine / Tender Map



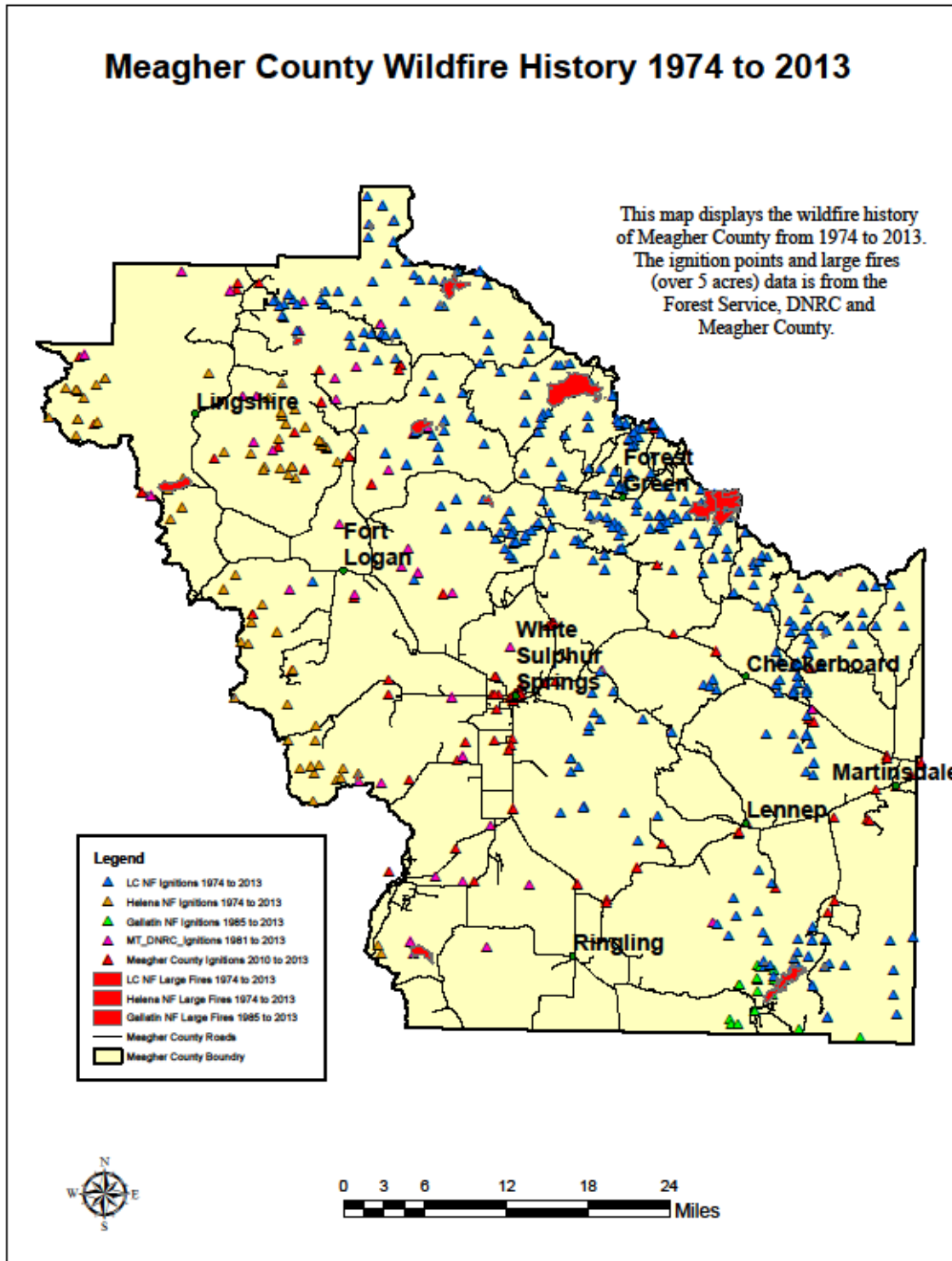
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Meagher County Dry Hydrant Map



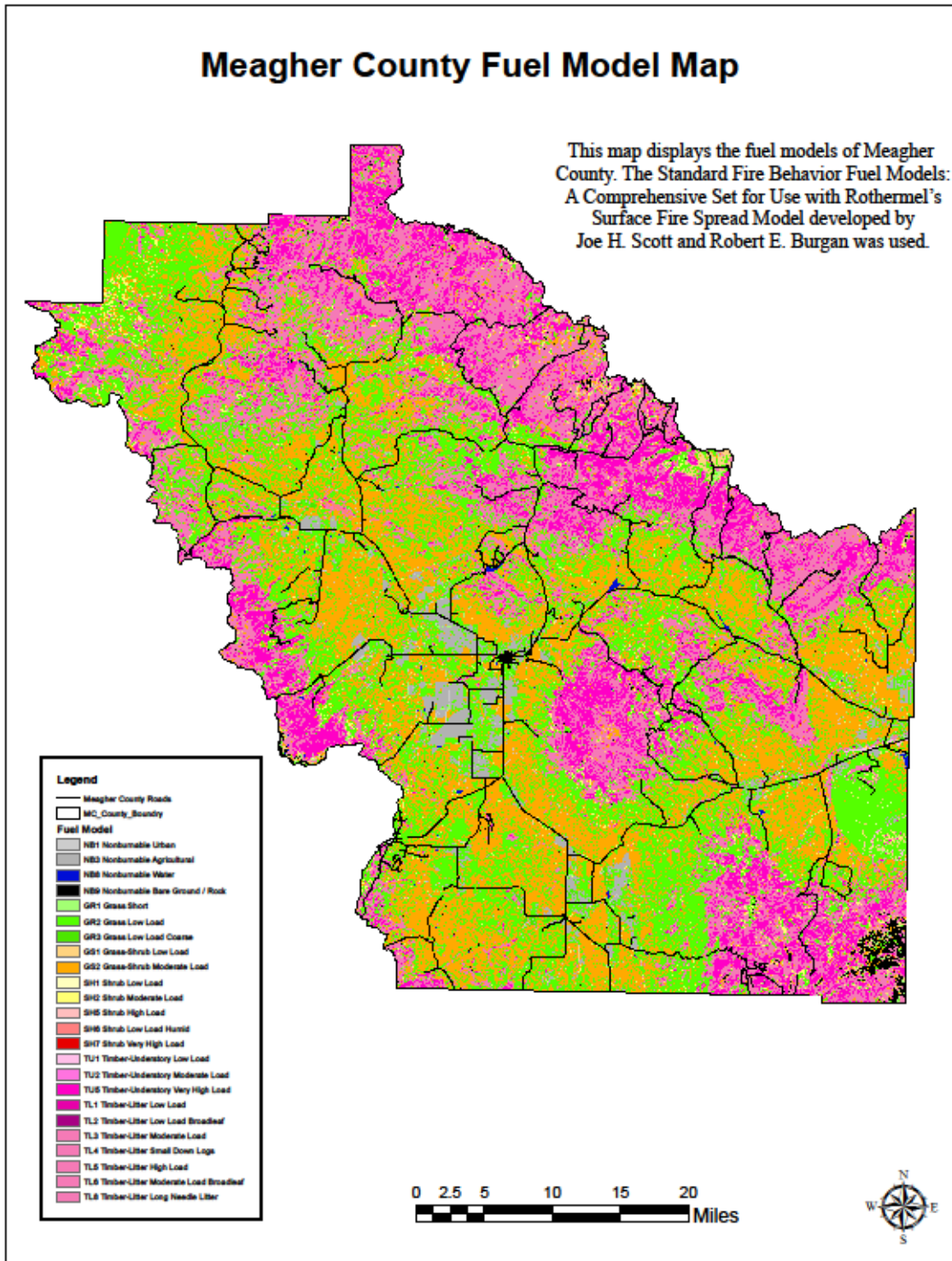
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Meagher County Wildfire History Map



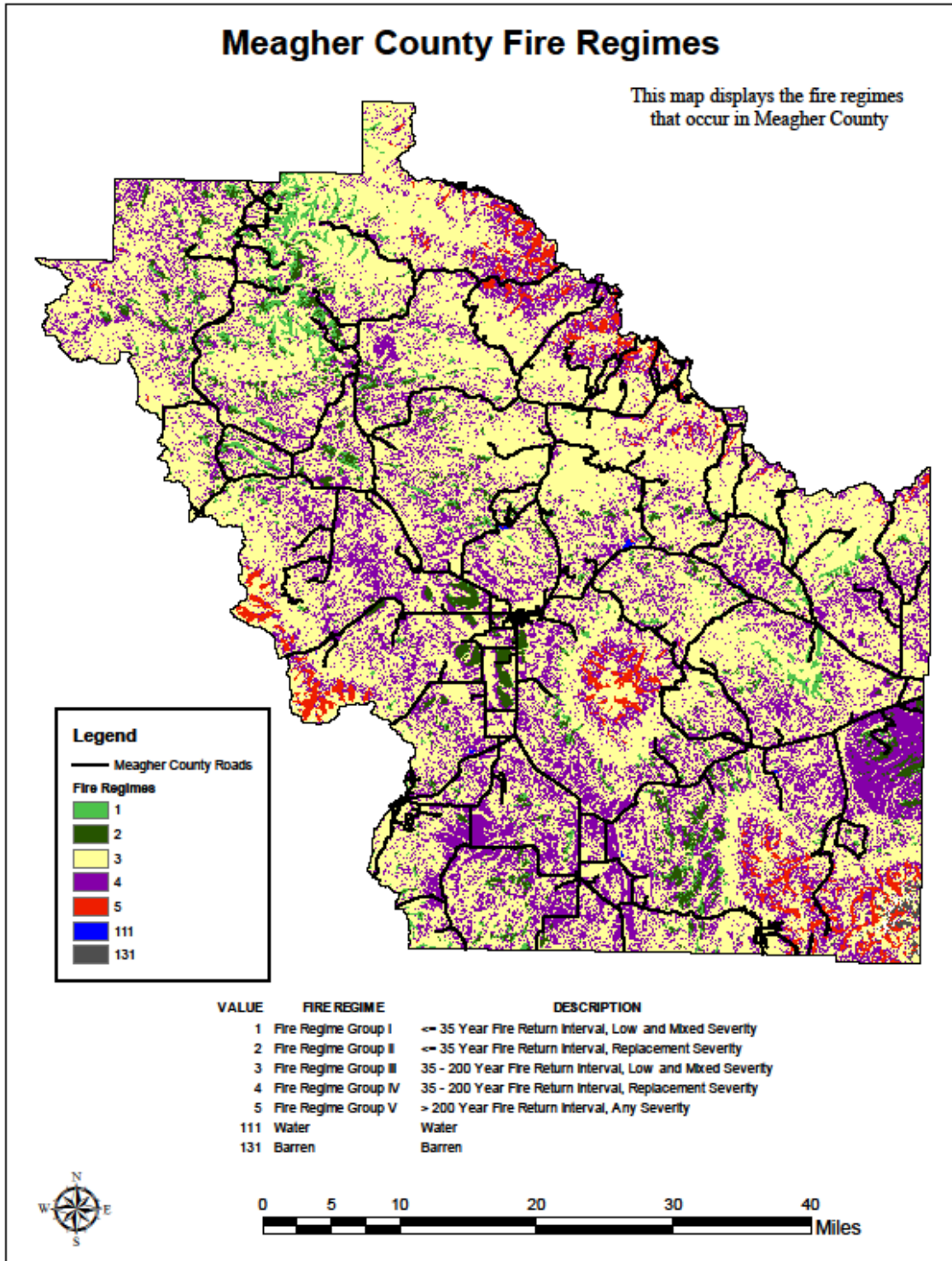
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Meagher County Fuel Model Map



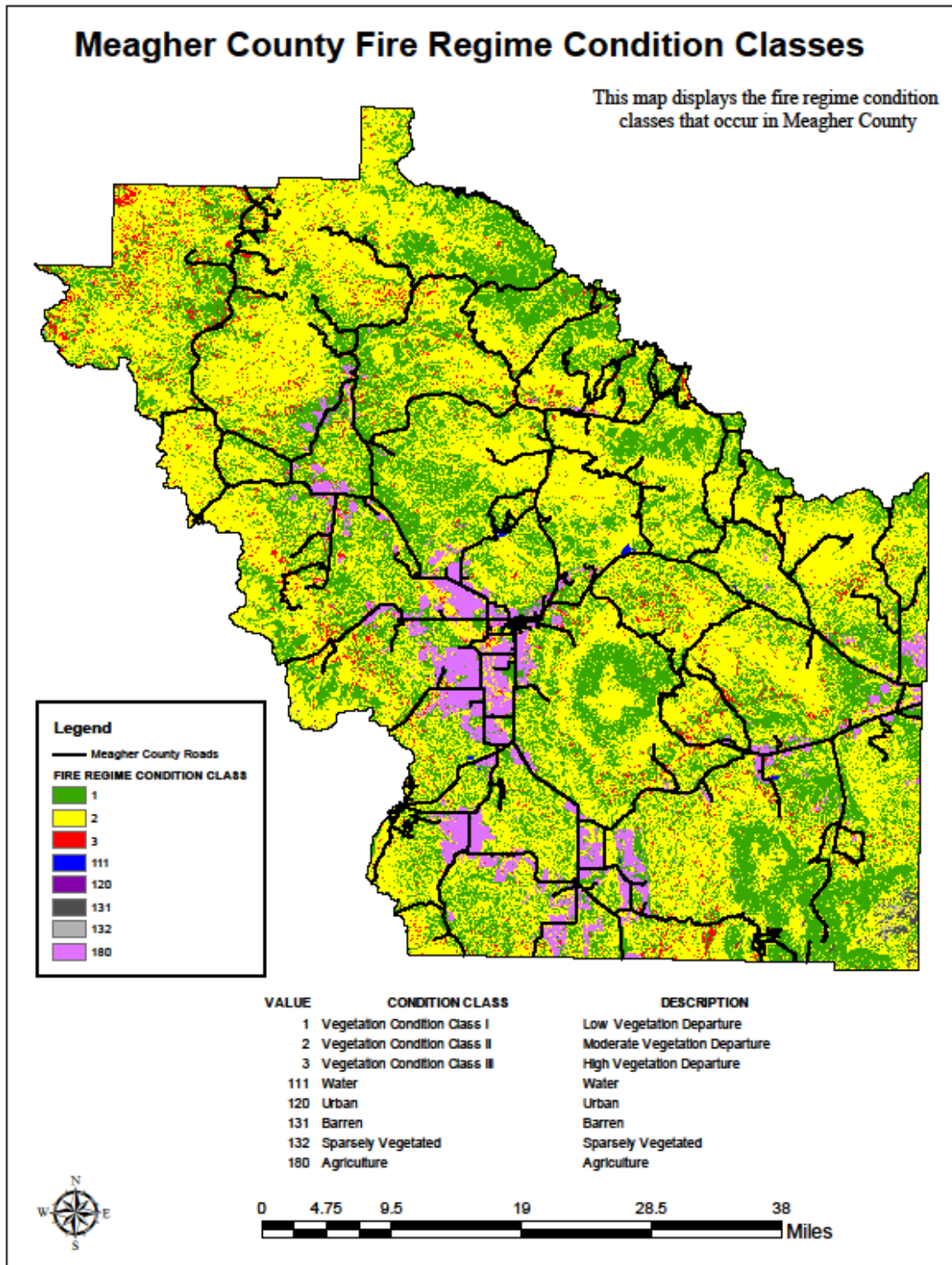
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Meagher County Fire Regime Map



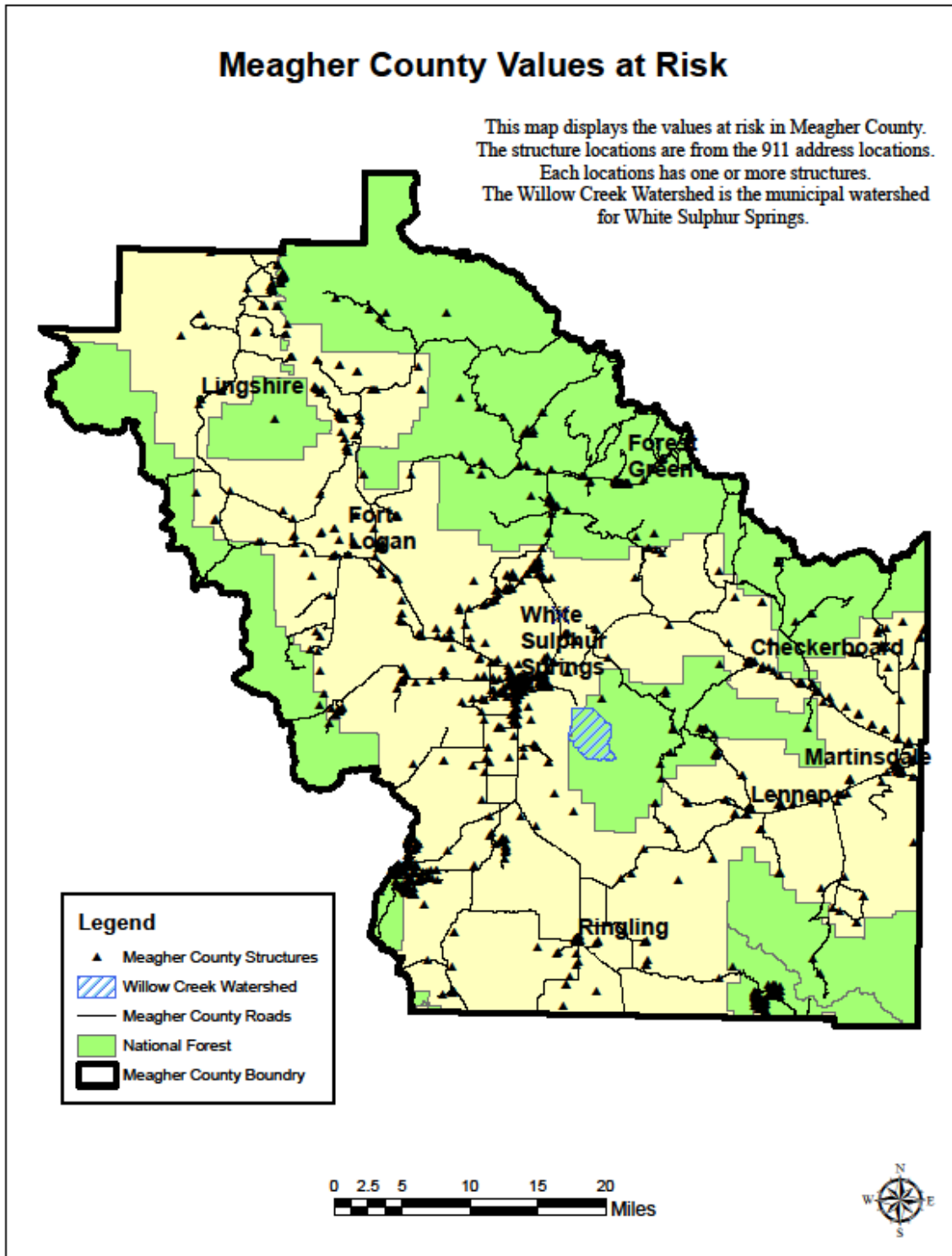
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Meagher County Fire Regime Condition Classes Map



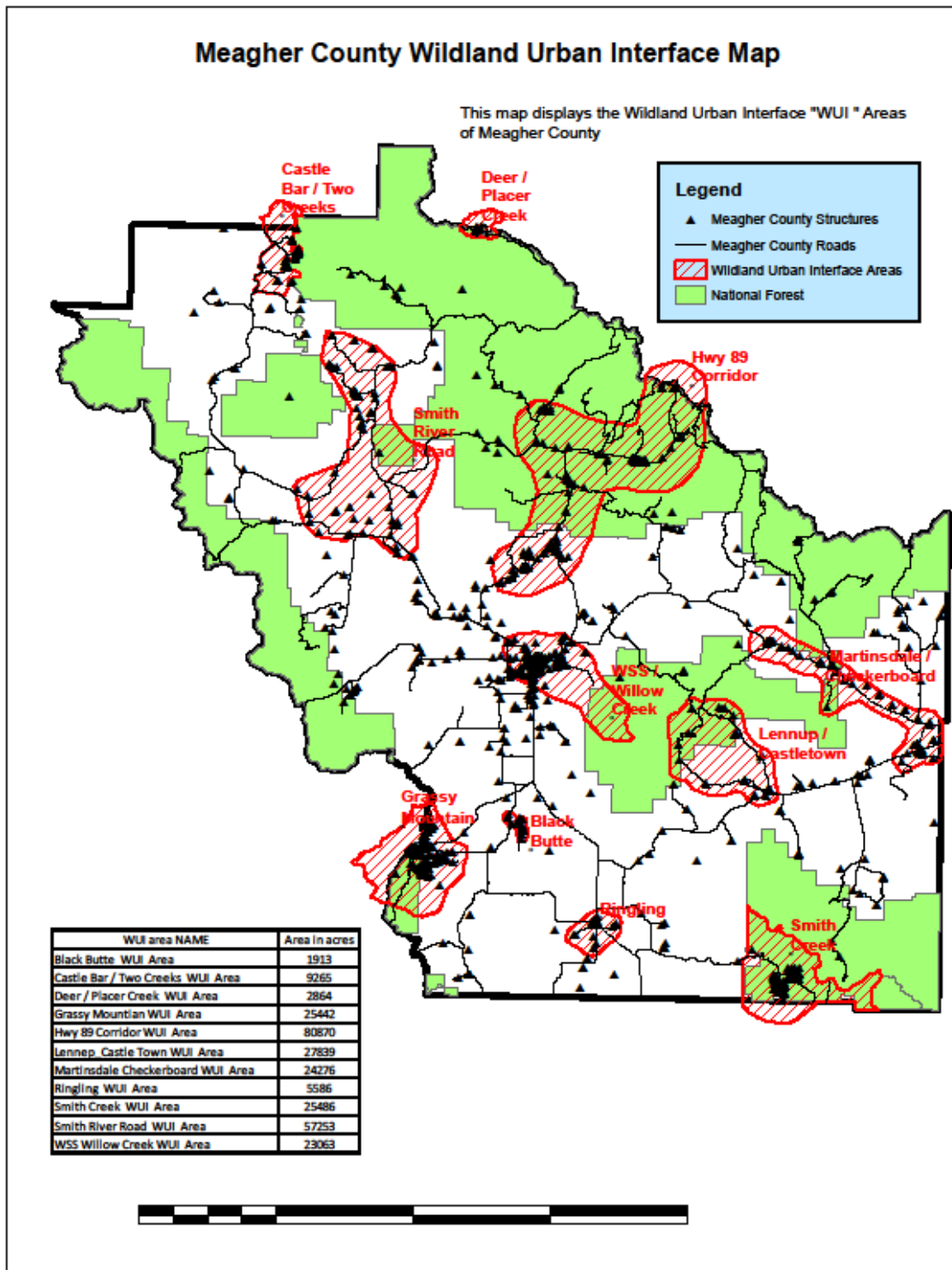
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Values at Risk Map



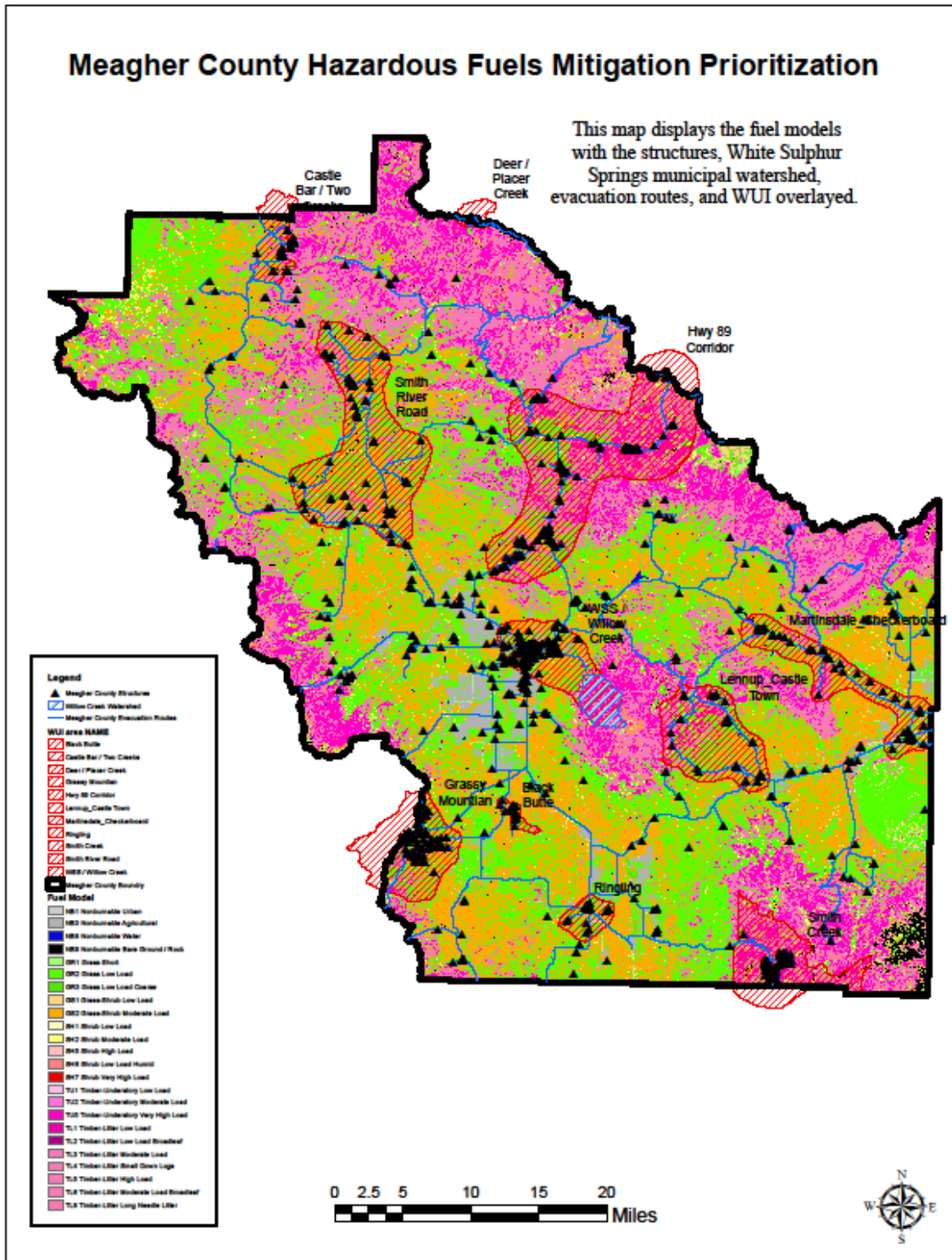
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Meagher County's Wildland Urban Interface Area "WUI" Map



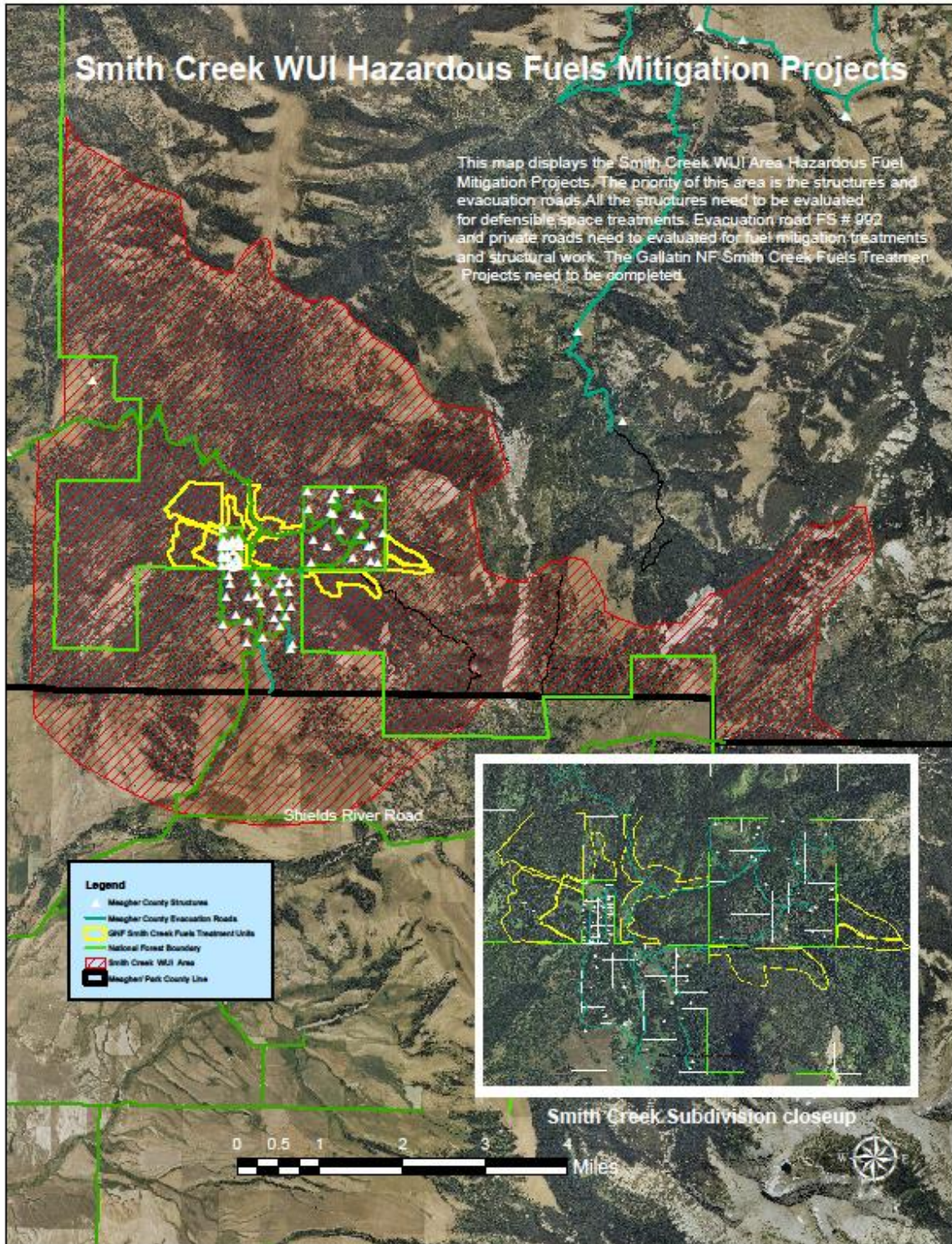
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Meagher County Hazardous Fuel Mitigation Prioritization Map



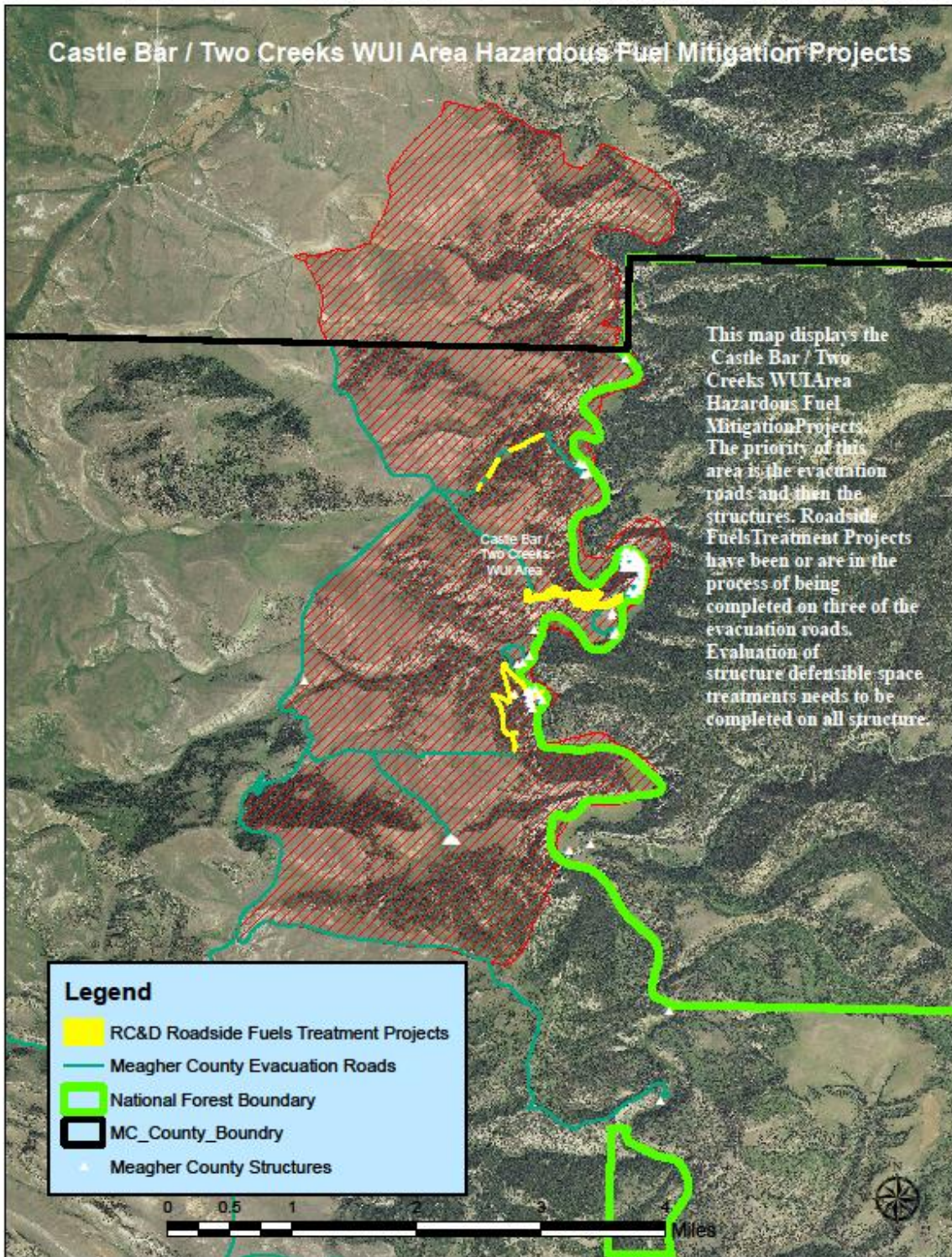
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Smith Creek WUI Area Hazardous Fuel Mitigation Projects Map



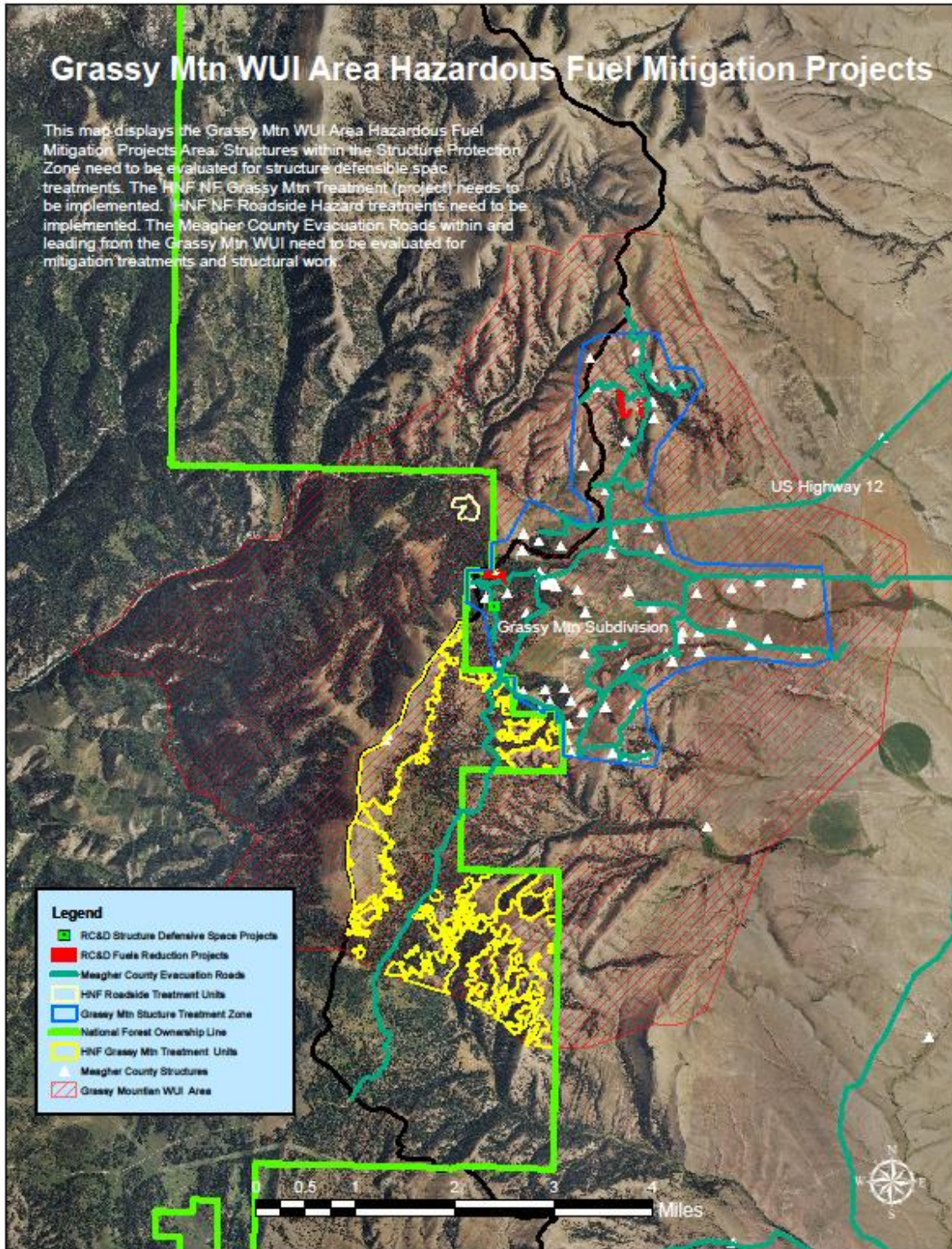
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Castle Bar / Two Creeks WUI Area Hazardous Fuel Mitigation Projects Map



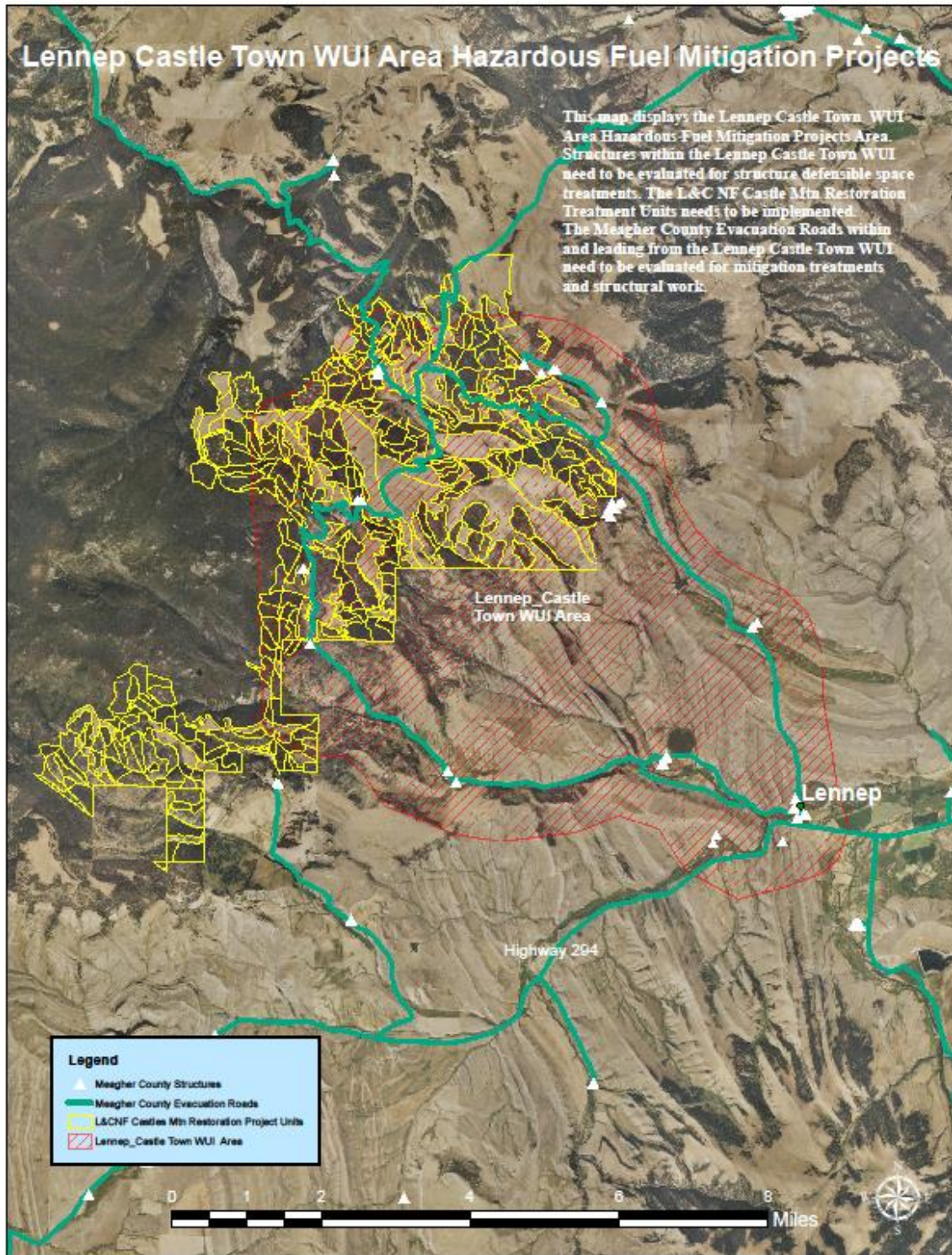
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Grassy Mtn WUI Area Hazardous Fuel Mitigation Projects Map



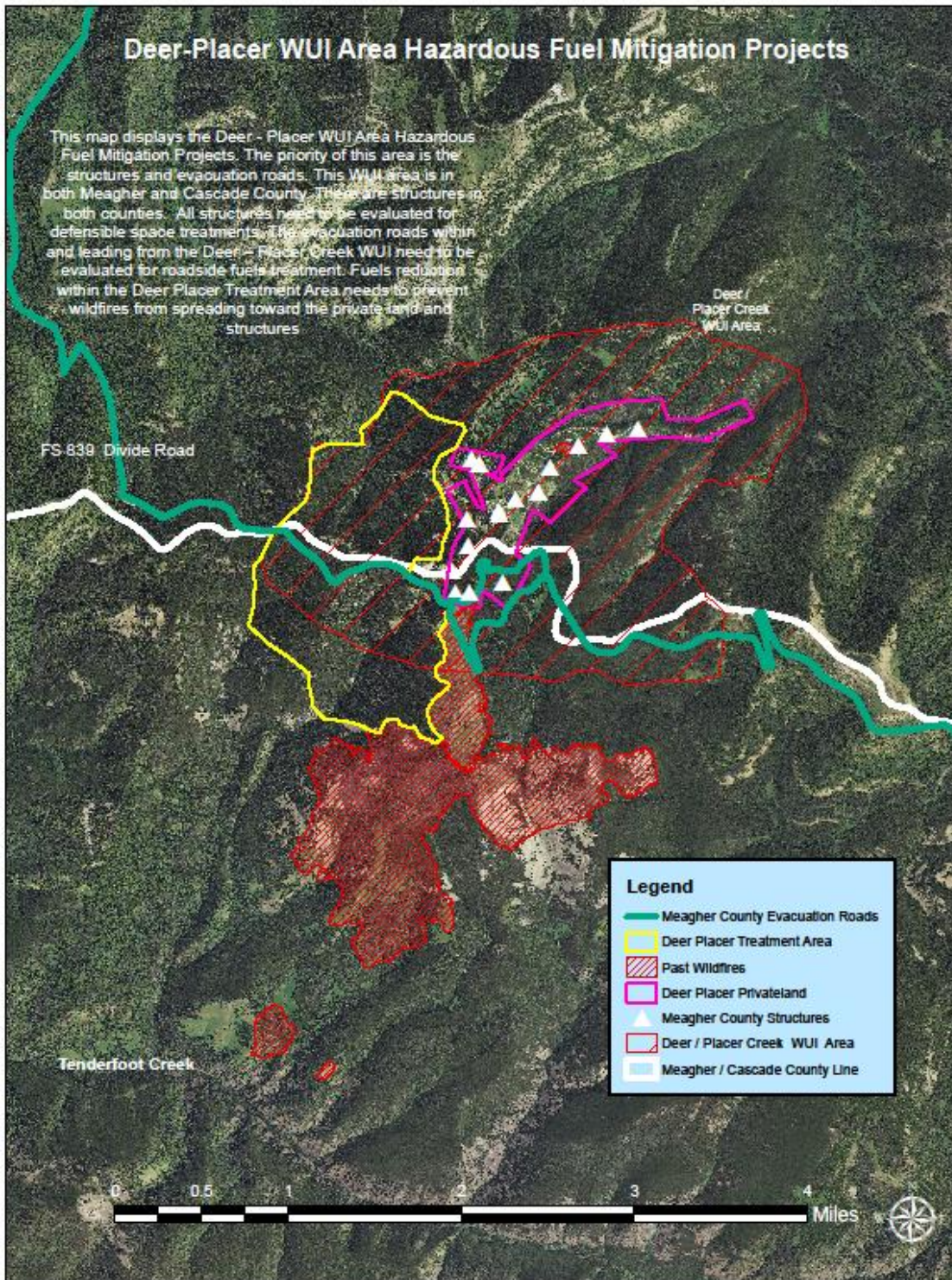
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Lennepe / Castle Town WUI Area Hazardous Fuel Mitigation Projects Map



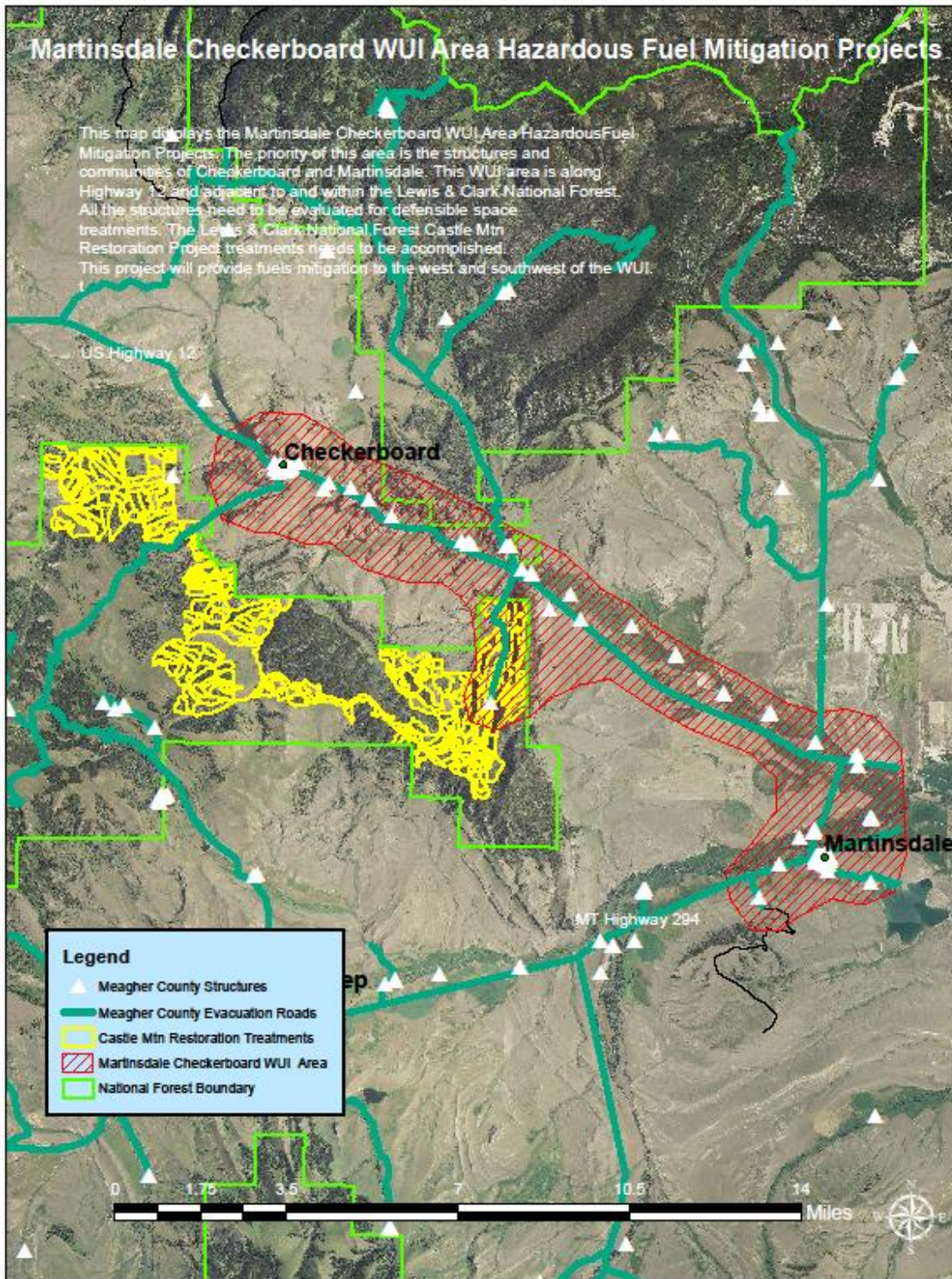
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Deer / Placer Creek WUI Area Hazardous Fuel Mitigation Projects Map



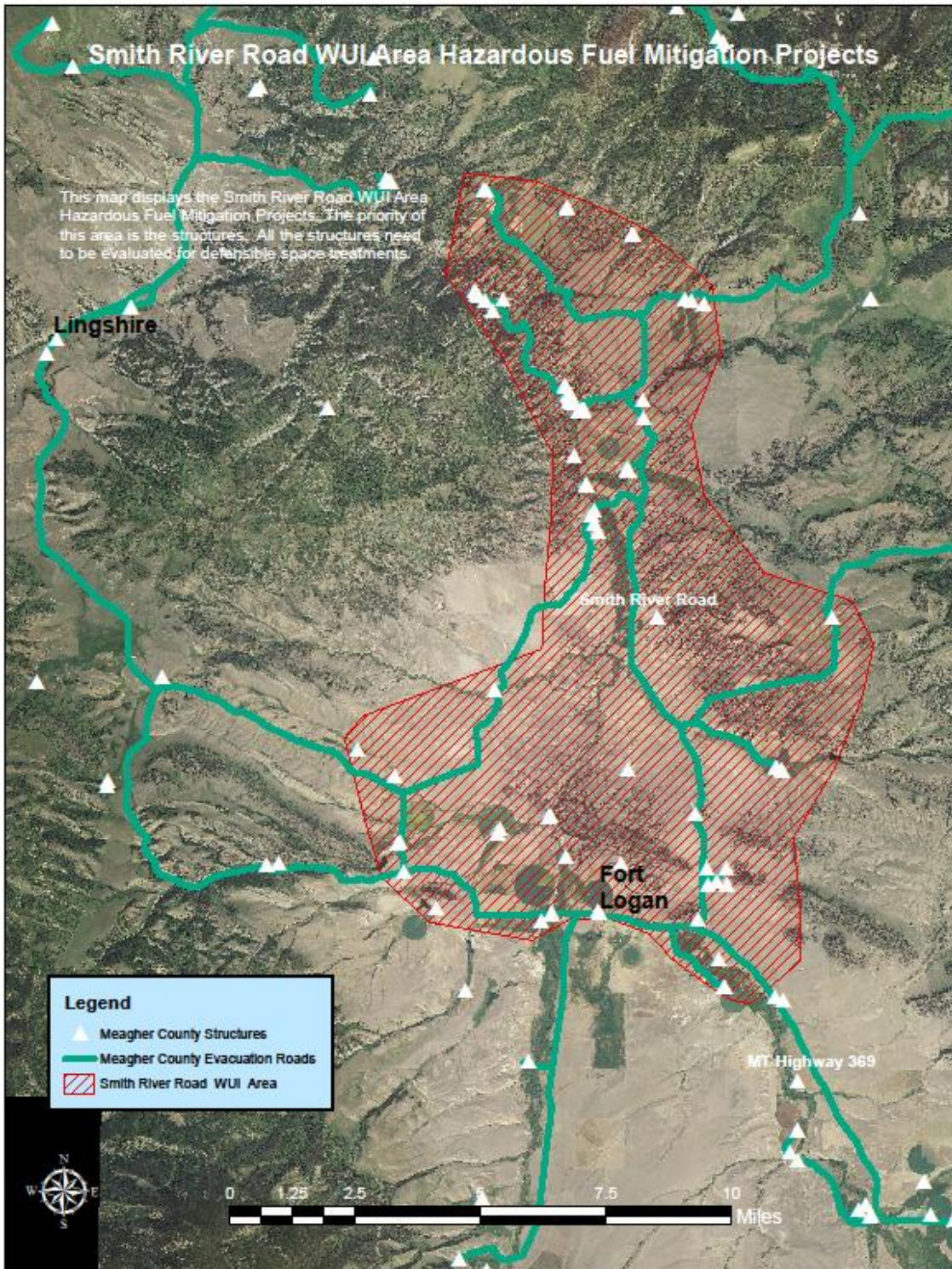
Meagher County Wildfire Protection Plan 2014

Martinsdale / Checkerboard WUI Area Hazardous Fuel Mitigation Projects Map



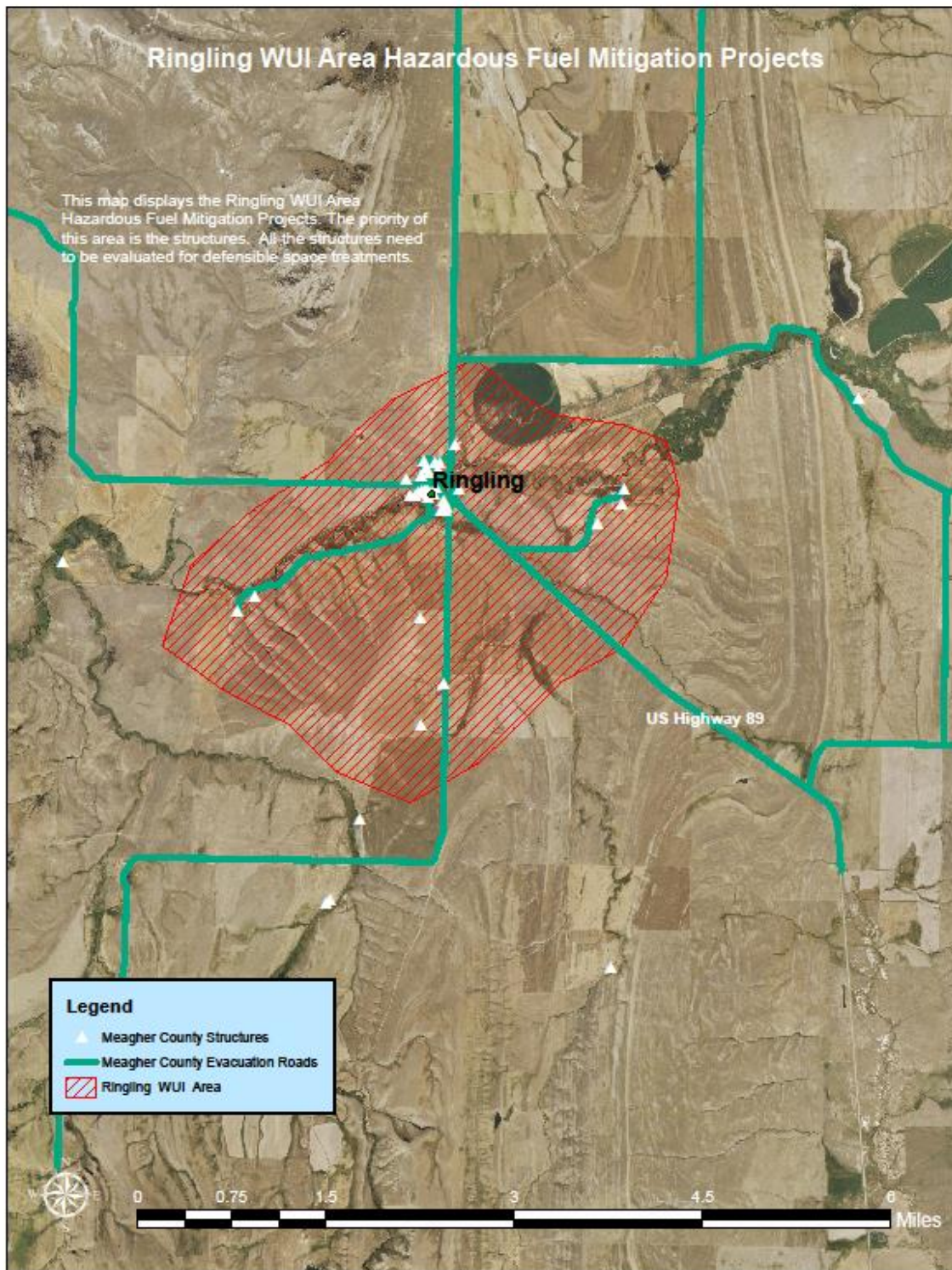
Meagher County Wildfire Protection Plan 2014

Smith River Road WUI Area Hazardous Fuel Mitigation Projects Map



Meagher County Wildfire Protection Plan 2014

Ringling WUI Area Hazardous Fuel Mitigation Projects Map



Meagher County Wildfire Protection Plan 2014

Black Butte WUI Area Hazardous Fuel Mitigation Projects Map

