BIGHORN NATIONAL FOREST

FIRE MANAGEMENT PLAN

2014

2012 Gilead Fire

Prepared and Updated by:

_/s/ Jon Warder_____2/11/2014_____
Forest Fire Management Officer Date

Note: There were changes to the 2010/2011 version of this plan, primarily with regard to aerial retardant, cultural resources, and aquatic invasive species; and in 2012, 2013 regarding cultural resource inventory done/needed.

Introduction

Interagency Federal fire policy requires that every area with burnable vegetation must have a Fire Management Plan (FMP). This FMP provides information about the fire management planning process for the Bighorn National Forest and compiles guidance from existing sources such as, but not limited to, the Bighorn National Forest Land and Resource Management Plan (LRMP) (2005), national policy, and national and regional directives.

The potential consequences to firefighter and public safety and welfare, natural and cultural resources, and values to be protected help determine the appropriate management response (AMR) during a fire. Firefighter and public safety are the first consideration and are always the priority during every fire.

The following chapters discuss broad Forest and specific Fire Management Unit (FMU) characteristics and guidance:

Chapter 1 introduces the area covered by the FMP, addresses the agencies involved, and states why the Forest is developing the FMP.

Chapter 2 establishes the link between higher-level planning documents, legislation, and policies and the actions described in the FMP.

Chapter 3 articulates specific goals, objectives, standards, guidelines, and/or desired future conditions, as established in the Forest's LRMP, which apply to all the FMUs.

Chapter 1 – Setting/Purpose

The Bighorn National Forest developed this FMP as a decision support tool to help fire personnel and decision makers determine the appropriate response to a wildfire. FMPs do not make decisions. Instead, they provide information, organized by FMUs, which provides a finer scale summary of information than is possible at the Forest level. These descriptions bring specific detail about the identifiable areas on the ground. FMPs are not static documents. They will be revised as conditions change on the ground and as modifications are made to the LRMP or other policy.

The Bighorn National Forest has few private in-holdings within its boundary, simplifying fire management and other resource decisions. The Forest's main human use is for recreation purposes, originating primarily from the four counties that surround the Forest. More unique to the Bighorn National Forest are the 265 summer homes that are located on the Forest, which are private structures on national forest land. There are several other lodges, recreational facilities, and administrative sites on the Forest as well as widespread dispersed recreation use. The southern half of the Forest has the Cloud Peak Wilderness at the center. Roads access most of the rest of the Forest, with the exception of the Rock Creek proposed wilderness area and Walker Prairie on the east side, and the Little Horn Canyon area in the north. The vegetation is comprised of approximately 60% forested types, and 40% shrub or grassland types, as determined by soil types. Timber harvest is the main human use of the forested vegetation, while livestock grazing is the main human use of the non-forested vegetation. There are four municipal watersheds that occur on the Forest, used for public consumption of water downstream. Many other resource values including wildlife and fisheries habitat and cultural resources occur throughout the Forest.

The Forest's fire management program is built around providing the appropriate fire response to protect and enhance these values as part of an integrated resource organization.

The Bighorn National Forest collaborates with county, state, and federal partners, including the Bureau of Land Management, and the Bighorn Canyon National Recreation Area. **The goals of these partnership efforts are to:**

- provide for safety of firefighters,
- provide for the safety of people and homes within and adjacent to the Forest,
- maintain healthy watersheds,
- restore the ecological role of fire to ecosystems,
- increase the cost efficiency of fire suppression.

Chapter 2 - Policy, Land Management Planning, and Partnerships

Wildland fire is managed according to the prescription parameters in the Forest Plan, which are reflected in the appropriate management response. Core principles of A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment (August 2001) are adopted in the local fire management strategies as well as the policy implementing strategies put forth by the Wildland Fire Leadership Council in the Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy.

Priority setting is accomplished at all levels within the Forest, the Forest level, interagency dispatch level, regional, inter-regional, and national. The protection of human life is the single, overriding priority.

Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.

The regulations and policy in the following documents guide the fire management as outlined in this FMP.

2.1 National and Regional Fire Management Policy

Forest Service policy and direction that are relevant to this plan include:

- 1995 Federal Wildland Fire Management Policy and Program Review (January 2001)
- National Fire Plan
- 2009 Guidance for Implementation of Federal Fire Policy
- Forest Service Manual 5100
- Forest Service Handbook 5109
- Wyoming State Master Agreement and associated annual operating plans
- Wyoming DEQ Air Quality Standards and Regulations – Chapter 10 – Smoke Management

The **2001 Federal Wildland Fire Management Policy** directs federal agencies to achieve a balance between suppression to protect life, property, and resources, and fire use to regulate fuels and maintain healthy ecosystems. The policy provides seventeen guiding principles that are fundamental to the success of the federal wildland fire management program:

1. Safety
Firefighter and public safety is the first priority. All fire management plans and activities must reflect this commitment.
2. Fire Management and Ecosystem Sustainability
The full range of fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components.
3. Response to Wildland Fire
Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the appropriate management response to the fire.
4. Use of Wildland Fire
Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved fire management plans and will follow specific prescriptions contained in operational plans.
5. Rehabilitation and Restoration
Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health and safety, and to help communities protect infrastructure.
6. Protection Priorities
The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.
7. Wildland Urban Interface
The operational roles of federal agencies as partners in the Wildland Urban Interface are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, state, or local governments. Federal agencies may assist with exterior structural protection activities under formal Fire Protection Agreements that specify the mutual responsibilities of the partners, including funding.
8. Planning
Every area with burnable vegetation must have an approved fire management plan. Fire management plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. Fire management plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.
9. Science
Fire management plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, fire management plans, and implementation plans.
10. Preparedness
Agencies will ensure their capabilities to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight.

11. Suppression
Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.
12. Prevention
Agencies will work together and with their partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.
13. Standardization
Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, value-to-be-protected methodologies, and public education programs for all fire management activities.
14. Interagency Cooperation and Coordination
Fire management planning, preparedness, prevention, suppression, fire use, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.
15. Communication and Education
Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.
16. Agency Administrators and Employee Roles
Agency administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary. Agency administrators are responsible and will be held accountable for making employees available.
17. Evaluation
Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects through implementation of the 2001 Federal Fire Policy. The evaluation will ensure accountability, facilitate resolution of areas of conflict, and identify resource shortages and agency priorities.

Implementation direction for the Federal Wildland Fire Management Policy was updated in June of 2003 and documented in the Interagency *Strategy for the Implementation of Federal Wildland Fire Management Policy*. In February 2009, the Fire Executive Council issued updated implementation direction in a new document titled, ***Guidance for Implementation of Federal Wildland Fire Management Policy***. This updated guidance consolidates and clarifies changes that have occurred since the 2003 strategy document was issued, and provides revised direction for consistent implementation of the *Review and Update of the 1995 Federal Wildland Fire Management Policy (January 2001)*. The new implementation document provides the following guidelines for consistent implementation of federal wildland fire management policy:

1. Wildland fire management agencies will use common standards for all aspects of their fire management programs to facilitate effective collaboration among cooperating agencies.

2. Agencies and bureaus will review, update, and develop agreements that clarify the jurisdictional inter-relationships and define the roles and responsibilities among local, state, tribal and federal fire protection entities.

3. Responses to wildland fire will be coordinated across levels of government regardless of the jurisdiction at the ignition source.

4. Fire management planning will be intergovernmental in scope and developed on a landscape scale.

5. Wildland fire is a general term describing any non-structure fire that occurs in the wildland. Wildland fires are categorized into two distinct types:

a. Wildfires – Unplanned ignitions or prescribed fires that are declared wildfires
b. Prescribed Fires - Planned ignitions.

6. A wildland fire may be concurrently managed for one or more objectives and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in fuels, weather, topography; varying social understanding and tolerance; and involvement of other governmental jurisdictions having different missions and objectives.

7. Management response to a wildland fire on federal land is based on objectives established in the applicable Land/ Resource Management Plan and/or the Fire Management Plan.

8. Initial action on human-caused wildfire will be to suppress the fire at the lowest cost with the fewest negative consequences with respect to firefighter and public safety.

9. Managers will use a decision support process to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

2.2 Bighorn National Forest Land and Resource Management Plan (2005)

The Bighorn NF Forest Plan was revised in 2005 with extensive public involvement. Plan direction concerning fire management was provided in several sections as addressed in Chapter 3 of this document. Since the revision, terminology has changed with publication of the *Guidance for Implementation of Federal Wildland Fire Management Policy (February 2009)*, and may continue to change. However, the core direction contained in the Forest Plan is applicable regardless of terminology changes, and it is not anticipated that the Forest Plan will be amended just to reflect these changes in terms.

2.3 Partnerships

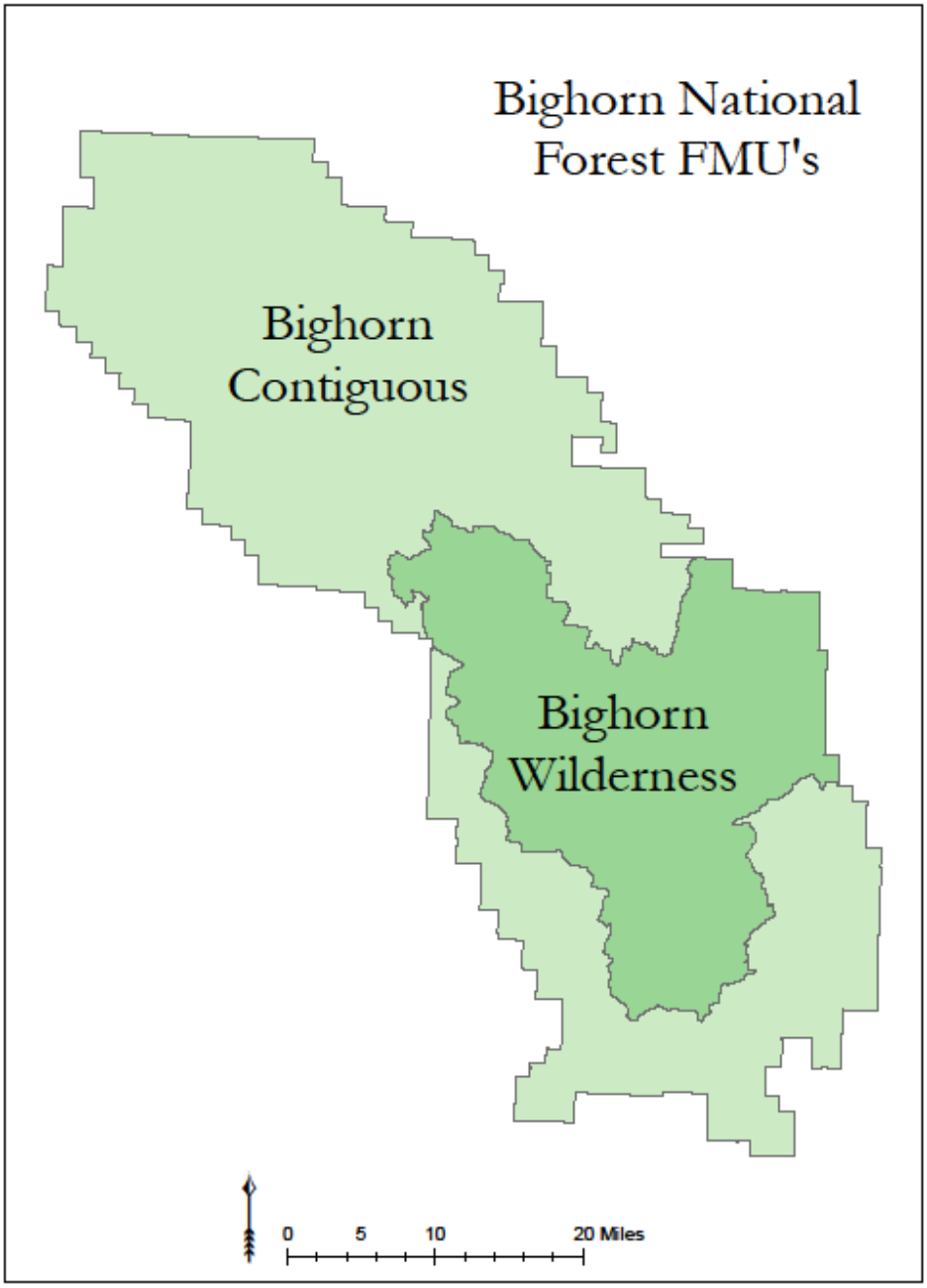
The Bighorn National Forest collaborates with interagency partners in developing the Wyoming Interagency Cooperative Fire Protection Agreement and the Wyoming Interagency Fire Restriction Plan. Four Counties in Wyoming are the primary partners in this effort, including Sheridan, Johnson, Big Horn, and Washakie for which Annual Operating Plans are signed. The Forest participates in the Cody Interagency Dispatch Zone Coordination Group, and the Rocky Mountain Region Coordinating Group. The Forest also holds agreements directly with Johnson County and Big Horn County for fire resource assistance on prescribed burns, and with three BLM Districts for assistance with prescribed fire and fuels projects. The NPS Bighorn Canyon NRA has an agreement with the Forest to cover fire management assistance to the NPS lands. **Agreements and annual operating plans** are available in the electronic file with this FMP.

Chapter 3 – Fire Management Unit (FMU) Descriptions

The primary purpose of developing FMUs in fire management planning is to assist in organizing information in complex landscapes. Fire management units divide the landscape into smaller geographic areas to easily describe safety considerations, physical, biological, social characteristics, and to frame associated planning guidance based on these characteristics. The following information, including the summaries of fuel conditions, weather and burning patterns, and other conditions in specific FMUs, helps determine the wildfire management strategy to an unplanned ignition and provides a quick reference to the strategic goals in the Bighorn National Forest Land and Resource Management Plan (LRMP).

Prior to this Fire Management Plan, the Forest had developed Fire Management Zones, similar to FMUs, with implementation of the National Fire Management Analysis System (NFMAS). There were numerous FMZ's grouped by slope and vegetation characteristics that influenced fire behavior, and these may still be referenced in some documents on the Forest. Then, beginning in 2005 with the Fire Program Analysis (FPA) effort, three FMUs were identified on the Forest. Two of these FMUs (Bighorn North and Bighorn South) were combined into one for the purpose of this revised Fire Management Plan, as responses to fires based on management considerations are largely similar in these areas. The Rock Creek proposed wilderness and the Cloud Peak Wilderness remain as a second FMU, due to the specific management considerations in these areas. Refer to Figure 1.

Figure 1. Bighorn NF Fire Management Units



3.1 Fire Management Considerations Applicable to All Forest Fire Management Units

With the revised Forest Plan (2005), there were revisions made to reflect fire management practices and considerations to incorporate new federal policy since the previous Forest Plan was written (1985). These are summarized in the following section.

The overarching need to inform the public of fire management activities is addressed through a **media contact list**, contained in the electronic reference file for this FMP. Fire prevention activities are coordinated at the Forest and District level with local communities as part of collateral duties for existing fire management personnel. Current fire management positions on the Forest are displayed in the electronic reference file in an **organization chart**.

3.1.1 Land and Resource Management Plan Guidance

As mentioned above, in 2009 the Forest Service and the other Federal Fire Agencies implemented changes to the Implementation Guidance for the Federal Wildland Fire Management Policy and wildland fire decision processes. The Forest is in the process of updating its Forest Plan with regards to this change through a non-significant amendment.

The primary changes in the revised implementation guidance were:

- Changes in Terminology - Wildland fire is a term describing any non-structure fire that occurs in the wildland. Wildland fires are categorized into two distinct types[1]:
    - Wildfires – Unplanned ignitions and planned ignitions that are declared wildfires. The wildfire term is to be applied to all unplanned ignitions, including events formally termed wildland fire use.
    - Prescribed fires – Planned ignitions.

- A wildland fire may be concurrently managed for one or more objectives and those objectives can change as the fire spreads across the landscape, encountering new fuels, weather, social conditions, and governmental jurisdictions.

The Wildland Fire Decision Support System (WFDSS) is a web based decision support system, which replaces the Wildland Fire Situation Analysis (WFSA), Wildland Fire Implementation plan (WFIP), Long Term Implementation Plan (LTIP) and Strategic

[1] The 2003 implementation guidance recognized three (3) kinds of wildland fire: **wildfire, wildland fire use** and **prescribed fire.**

Wildfire. An unplanned, unwanted wildland fire, including unauthorized human-caused fires, escaped wildland fire use events, escaped prescribed fire projects, and all other wildland fires where the objective is to put the fire out.

Wildland Fire Use. The application of the appropriate management response to naturally ignited wildland fires to accomplish specific resource management objectives in predefined designated areas outlined in Fire Management Plans.

Prescribed Fire. Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements (where applicable) must be met, prior to ignition.

Implementation Plan (SIP). Use of WFDSS was required for all federal agencies beginning in 2010.

The Guidance in the Forest Plan and other planning documents relevant to fire management may utilize what are now obsolete terms. Until the source documents are amended, updated, revised or superseded the following table should be used to when reading the Forest Plan Guidance in Section 3.1.1 and 3.2 to crosswalk between the outdated and current terminology. This implementation of the revised terminology is for clarification purposes only and is not a change in the guidance from the parent documents. Consistent terminology will assist in all communication across geographic areas and between units; it does not change the Forest Plan Guidance or how it will be implementation on the ground. Forest Plan guidance may be updated in 2012 to correct this.

Obsolete or Outdated Term	Current Terminology
Appropriate Management Response (AMR)	Response to Wildland Fire - The mobilization of the necessary services and responders to a fire based on ecological, social, and legal consequences, the circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected.
AMR Strategies	Wildfire Strategies
Fire Use	Response to Wildland Fire (see above)
Fire Use Plan	Fire Management Plan – This plan that identifies and integrates all wildland fire management related activities within the context of approved land management plans.
Suppression	Response to Wildland Fire (see above)
Wildland Fire Implementation plan (WFIP) (Operational Fire Use Plan)	Wildland Fire Decision Support System (WFDSS)
Wildland Fire Situation Analysis (WFSA)	Wildland Fire Decision Support System (WFDSS)
Wildland Fire Use	Wildfire - Wildfire can be managed for multiple objectives, and portions of a wildfire can be managed concurrently for one or more objectives, such as cost, safety, resource, protection, air quality, etc. See Response to Wildland Fire
Wildland Fire Use Implementation Guidance Supplements	Fire Management Plan – This plan that identifies and integrates all wildland fire management related activities within the context of approved land management plans.

Guidance in the Forest Plan relative to fire management is contained in the forest-wide goals and objectives, the desired future conditions, forest-wide standards and guidelines (all in Chapter 1), management area prescriptions (Chapter 2), geographic areas (Chapter 3), in the monitoring and evaluation portion (Chapter 4), and in Appendix A. **A summary of all of this Forest Plan direction was prepared for the WFDSS application and is contained at the end of this section**.

The geographic areas portion (Ch. 3) and the monitoring section (Ch. 4) of the Forest Plan were not summarized in this FMP. Geographic area descriptions (Ch. 3) describe desired future conditions of vegetation and other resources of each large watershed on the Forest, and how fire should be responded to in a management context, which was summarized in the map in Appendix A of the Forest Plan. As fire is recognized as a natural disturbance agent throughout the Forest, these descriptions were not included in this FMP as the Chapter 3 wording is very broad in allowing for fire as a resource objective, except where other values such as structures or suitable timber base need considered. Similarly, the monitoring described in Ch. 4 of the Forest Plan was developed to track the outputs prescribed from the forestwide goals and objectives. Since the monitoring aspects are summarized in a yearly report for the Forest Plan, this portion of plan guidance was not repeated in the FMP.

The excerpts below are taken from Chapter 1 of the Forest Plan, as they pertain directly to fire management. Also included below is the Appropriate Management Response map, which was included in the Forest Plan as Appendix A.

Forestwide Goals and Objectives (Forest Plan, Pgs. 1-2 thru 1-12)
Only those objectives and strategies that most directly relate to fire management are included here. Other objectives and strategies also relate to fire or fuels management, but are more indirect.

Objective 1.c: Increase the amount of forests and rangelands restored to or maintained in a healthy condition with reduced risk and damage from fires, insects and diseases, and invasive species.

Strategy 1: Within 15 years, implement 447, 052 acres of vegetation management practices that will move all affected landscapes toward desired vegetation composition and structure. Vegetation management practices may include prescribed fire, wildland fire use… Design management practices that maintain a mosaic of vegetative composition and structure emulating natural processes, patterns, scale, effect, and distribution of community types, age, and structure classes. Implement practices that attain the Desired Future Condition for forested age-class diversity as described in Chapters 1 and 3 of the Revised Plan. Emphasize the use of mechanical treatments on suited forested lands (Management Areas 5.11, 5.12, 5.13, 5.4 and 5.5).

Strategy 5: Continue to strengthen interagency relationships to increase wildland fire protection capabilities to provide for firefighter and public safety.

Strategy 6: Place high priority on fuel reduction activities in Fire Regimes I, II and III and other strategic areas where high fire hazards exist, such as communities identified in the Healthy Forest Restoration Act or as identified in community wildfire protection plans. Treatments should emphasize condition classes with one or more missed fire cycles and urban/wildland interface areas.

Strategy 7: Within 15 years, complete wildland fire use implementation guidance supplements to the Fire Management Plan for all areas where wildland fire use is permitted, to allow the natural role of fire to be restored in the ecosystem. FMP ***Note:*** Although the Forest

completed the preparation of this supplemental information in 2007, this strategy is no longer relative with the 2009 *Guidance for Implementation of Federal Wildland Fire Management Policy* document that defines the two types of fire to be managed.

Objective 3.a: Provide assistance in building the capacity of Tribal governments, rural communities, landowners, and private citizens to adapt to economic, environmental, and social change related to natural resources.

Strategy 2: Provide support and assistance to communities to reduce wildfire risk, to communicate grant programs, and to enhance efforts to improve/protect watersheds.

Forestwide Desired Future Conditions (Forest Plan, Pgs. 1-13 thru 1-19)

The following are excerpts copied from this section of the Forest Plan:

Management changes to the landscape will use various tools including commercial timber harvest, and non-commercial vegetation treatments such as fuels treatment, prescribed fire, and wildland fire use. Larger changes are anticipated from natural events such as insects, diseases, wind, and wildfires.

Although areas that are outside the Historic Range of Variability in regard to fire condition class may increase slightly on a forestwide basis, there will be an improvement in condition class in some areas identified as priorities in community wildfire protection plans and areas of high resource values which will make these areas less susceptible to damage due to uncharacteristically severe fires.

Human safety and community and property protection from wildfire will be improved through coordination of community wildfire protection plans with Forest projects. Personnel from all affected agencies, governments, tribal interests, and the public will address community wildfire protection needs.

In managed forested areas (suited lands), more active management is planned to provide a more even distribution of structural stages. In other areas, successional pattern and habitats will be mainly dictated by natural events, including insects, disease, and fire. Natural processes (e.g. wildfire, etc) will continue to be the dominant forces shaping patterns of forested vegetation regardless of management emphasis.

Forestwide Standards and Guidelines (Forest Plan, Pgs. 1-48, 1-49, and others)

The following guidelines (there were no standards) occur in the Disturbance Processes section of the Forestwide Direction, under the Fire heading:

Guidelines 1. Apply an appropriate management response[2] (suppression or fire use) to all ignitions, according to the Forest Fire Management Plan and the Appropriate Management Response (AMR) map in Appendix A of the Revised Plan. Refer to the following table for tactical options and prescribed fire direction.

FMP Note: Per the 2009 Guidance document, wildfires that are caused by human ignition sources will be suppressed at the lowest cost with the fewest negative consequences with respect to firefighter and public safety. Also, a wildland fire may be concurrently managed for one or more objectives. Areas identified on the AMR map as "prescription" represent the most likely areas where resource management goals may be included as objectives in incident management. Areas identified as "perimeter" may contain resource management goals, while areas identified as "direct" would not contain resource management goals due to the high concentration of structures in these areas. However, the "direct" areas do not represent all the structures on the Forest, just higher concentrations. Refer to **Figure 2** below for the map that was developed by fire managers and line officers for the Forest Plan.

Table 1. Fire management direction for the Bighorn National Forest.

	Unplanned Ignitions Wildland Fire Must be managed as unwanted wildland fires if human-caused, if approved fire use plan does not exist, or when fire presents unacceptable threat to human safety or values to be protected.		**Planned ignitions** May be implemented by mgmt action authorized by approved plans
	Tactical Options		
Management Area	**Mechanized Equipment**	**Aerial Retardant Application**	**Prescribed fire**
1.11, 1.13	X[3]	X	
1.2	X[13 b]	X	X
1.31	X[4]	X	X
1.32, 1.33	X[3a]	X	X
1.5	X[5]	X	X

[2] Appropriate Management Response – The response to a wildland fire is based on an evaluation of risks to firefighter and public safety, the circumstances under which the fire occurs, including weather and fuel conditions, natural and cultural resource management objectives, protection priorities and the values to be protected. (Review and Update of the 1995 Federal Wildland Fire Management Policy, January 2001)

[3] Dozers are prohibited except with Regional Forester approval. Use of helicopters, motorized equipment, and mechanical transport is prohibited except with Forest Supervisor approval.

[13 b] Dozers and engines are prohibited except with Forest Supervisor approval. Chainsaws, ATVs, and pumps are allowed without Forest Supervisor approval.

[3]a Dozers are prohibited except with Forest Supervisor approval. Chainsaws, engines, ATVs and pumps are allowed without Forest Supervisor approval.

	Unplanned Ignitions Wildland Fire Must be managed as unwanted wildland fires if human-caused, if approved fire use plan does not exist, or when fire presents unacceptable threat to human safety or values to be protected.		**Planned ignitions** May be implemented by mgmt action authorized by approved plans
	Tactical Options		
Management Area	**Mechanized Equipment**	**Aerial Retardant Application**	**Prescribed fire**
MW	X[6]	X	X
2.2	X[4]	X	X
3.31	X	X	X
3.4	X[4]	X	X
3.5	X	X	X
4.2	X	X	X
4.3	X	X	X
4.4	X	X	X
5.11, 5.12, 5.13, 5.4, 5.5	X	X	X
5.41	X	X	X
8.22	X	X	X

X – allowed
X# – allowed with line officer approval for specific incident.

2. In areas where wildland fire use is the AMR, as designated on the on the AMR map, use natural ignitions to accomplish resource management objectives.

   FMP Note: This is interpreted to mean that this direction applies to areas identified as **perimeter or prescription** on the AMR map. See note on #1 for further details.

3. Reduce the threat of wildfire to public and private developments by following guidelines in the National Fire Protection Association Publication 1144, *Standards for Protection of Life and Property from Wildfire*.

4. Reduce activity fuels resulting from all projects/activities to acceptable levels in a cost effective manner.

5. Avoid aerial application of retardant in wetlands and riparian areas unless necessitated by human safety or property loss considerations.

[4]Dozers and motorized vehicles are prohibited except with Forest Supervisor approval. The prohibition of dozers and motorized vehicles does not apply in T58N, R89W, Sections 19 and 30 in the Little Bighorn River. Chainsaws and pumps are allowed without Forest Supervisor approval.

[6] Subject to consultation with appropriate parties and/or Historic Preservation Plan (HPP).

> ***FMP Note***: This direction (#5) was superseded in 2011 with the issuance of the national ROD and FEIS pertaining to aerial retardant use. Property loss is no longer a consideration in this guideline, but life and safety remain. Maps delineating the perennial and intermittent streams with a 300' buffer to be avoided with retardant application have been generated and are included in the electronic reference file. Aerial retardant applied in these areas must have accompanying reporting and monitoring and are defined as a "misapplication". However, retardant applied in or near intermittent streams, with no live water, are not considered a misapplication. There are no TES habitat areas identified on the Forest for excluding retardant. Additional information is available at http://www.fs.fed.us/fire/retardant/index.html. The Forest has successfully used SEATS loaded with water only for some fires to avoid the potential impacts of retardant.

While **noxious weed** infestations remain small on the Forest, the Forest specified a guideline in the Forest Plan pertaining to fire activities. Current locations of noxious weeds are maintained in the Forest's GIS database and are generally known to District resource advisors (range management specialists). The following is the Forest Plan direction for noxious weeds for fire (Forest Plan Pg. 1-51, Non-native and Invasive Species, Guideline 4):

> 4. To reduce transport or establishment of noxious weed seeds, wash all equipment used in ground-disturbing or fire suppression operations (except for initial attack) prior to arrival on the Forest.

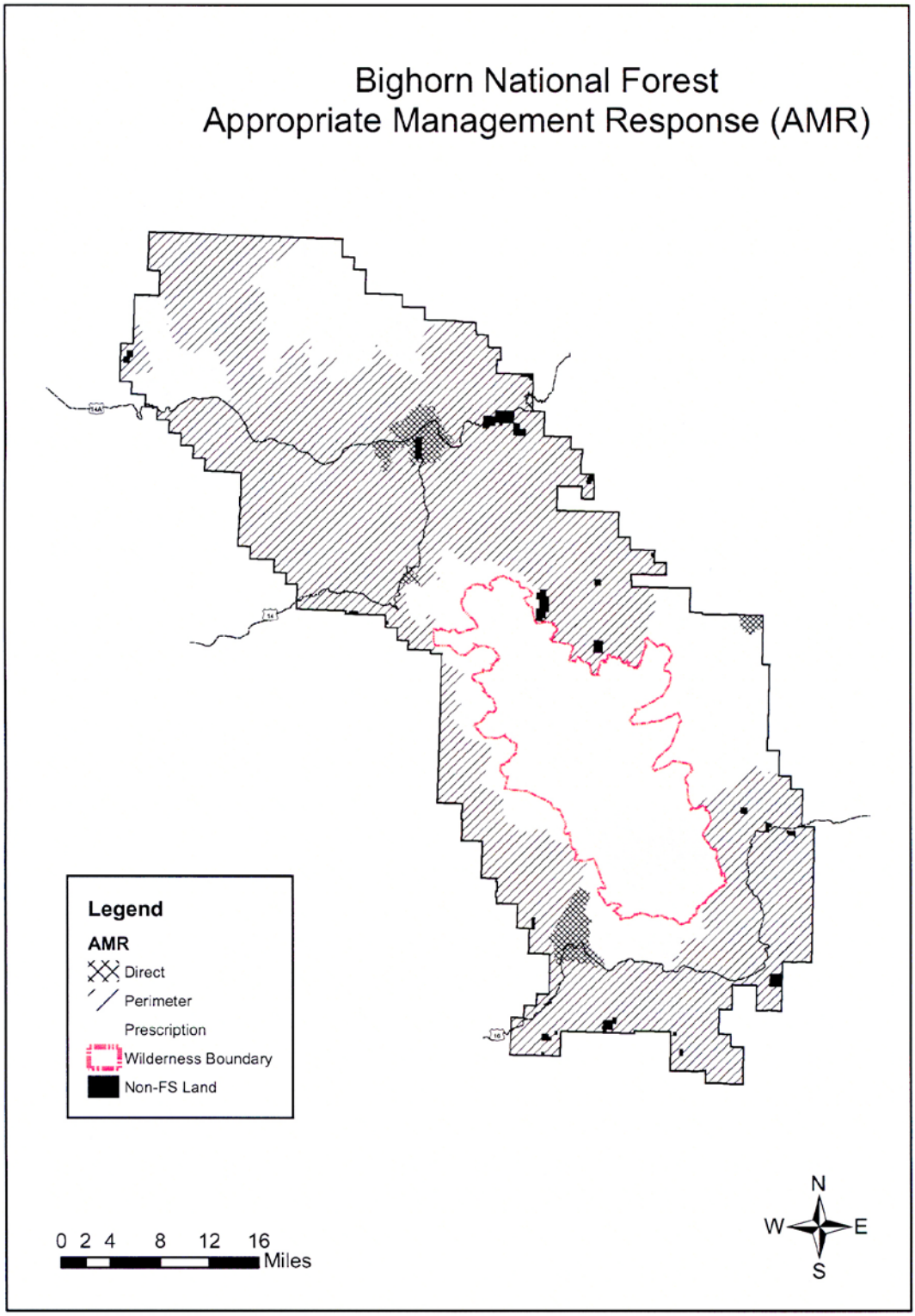
There are **no threatened or endangered species** that currently reside on the Bighorn NF, and thus there is no Forest Plan management direction specific to them for consideration in fire management. Riparian dependent Forest Service **sensitive species** do occur on the Forest, and the Yellowstone cutthroat trout is the most often considered in fire management decisions. Protection of sensitive species is Forest Plan direction in TES Standard 3 (Pg. 1-40, Forest Plan) and is most often managed by the use of a resource advisor during larger fire events, to implement standard measures to avoid riparian impacts (e.g. fireline location and construction and reclamation methods, use of dams for temporary water sources, etc).

> 3. Avoid actions that would result in a trend toward federal listing or loss of population viability of sensitive species. The protection will vary depending on the species, potential for disturbance, topography, location of important habitat components and other pertinent factors. Give special attention during breeding, young rearing, and other times that are critical to survival of both flora and fauna.

The extent of **aquatic invasive species** (AIS) is currently limited on the Bighorn National Forest. To continue to prevent the spread of invasive species onto the BNF, several measures are warranted. These measures were not specified in the Forest Plan as AIS was not identified as an issue during plan preparation due to lack of information. The following guidelines are incorporated into fire management operations as Best Management Practices that would fit under Forest Plan Objective 1.a: Strategy 7, and Objective 1.b: Strategy 2. The following recommended actions were developed for the FMP in 2012 in consultation with aquatic program managers, and would be included for incidents regardless of size, and included for larger fires as referenced under Table 3 below, and as referenced in the electronic reference file. There is also an interagency effort within Wyoming to establish AIS direction within WY to meet the intent of new legislation passed within Wyoming, though this may not be final until 2015.

- Avoid using known contaminated water sources for suppression efforts. Consult resource advisor/fisheries personnel for sources to avoid. Of greatest concern, currently, are sources of low elevation water (such as east side of Bighorns on private, and the Big Horn River on west side). Avoid dumping water from unknown source on a fire location that may directly runoff back into a riparian area. If contaminated and uncontaminated sites are within the fire area have 2 buckets and duplicate equipment for use in each respective water body and avoid interchanging equipment or water.
- If a resource (engine, tender, helicopter bucket) has been off Forest, or has been using a known infected site on Forest, clean and disinfect prior to next assignment. Equipment may be either cleaned on site, or back in town. Refer to the electronic reference file for disinfecting process options (quat and hot water), that can be set up as part of check-in and demob for incidents, similar to noxious weeds. Note that the above direction would be desired for fixed wing aircraft (tankers) as well, though incidents would not be able to regulate that on site.
- Avoid back flushing pumps and charged hose into riparian areas to ensure water sources are not contaminated with chemicals and aquatic invasive species.
- Whirling disease is not currently counted as a target species for mitigation by the WGFD.

Figure 2. Bighorn NF Appropriate Management Response Map (Forest Plan Appendix A)

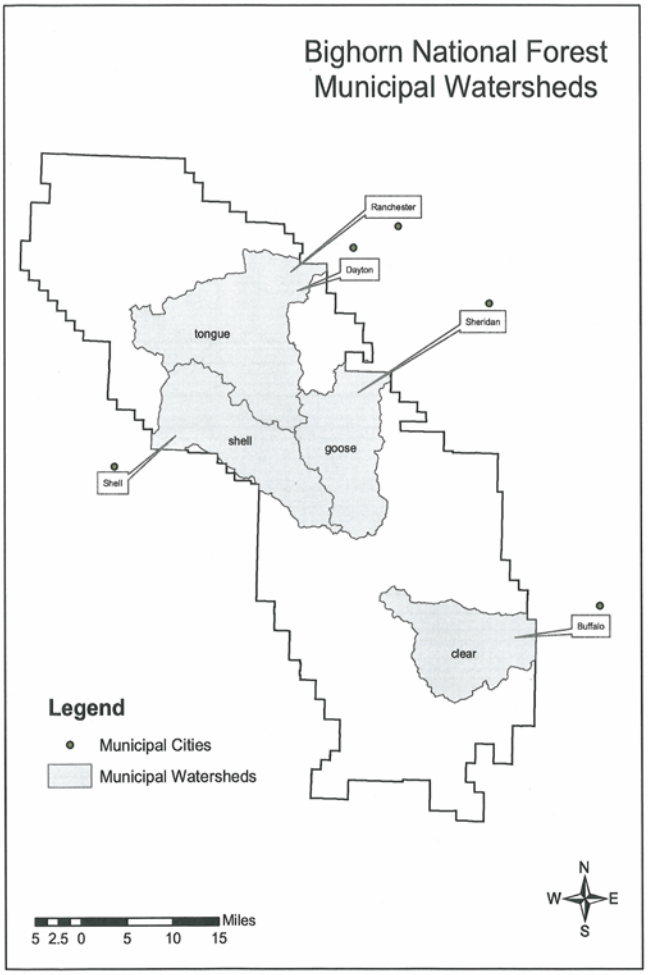


Appendix A *A-12*

Another underlying factor that may influence decisions in fire management are municipal watersheds on the Forest. The following Figure 3 is a map of the four **municipal watersheds** identified on the Bighorn NF, which was included in the Forest Plan in Appendix A. These watersheds justify additional consideration in fire management response considering likely burn severity, extent, and rehabilitation measures. Forest-wide watershed protection measures were included in the Forest Plan (Soil, Water, Riparian Standards and Guidelines; and Fisheries Guidelines pg. 1-26 and 1-30 of Forest Plan). These incorporate by reference the Watershed Conservation Practices Handbook (FSH 2509.25). Specific direction for fire from this reference includes:

> 2509.25.12.4 (f.):
> Do not build firelines in or around wetlands unless needed to protect life, property, or wetlands. Use hand lines with minimum feasible soil disturbance. Use wetland features as firelines if practicable.
> 2509.25.13.2 (e.):
> Build firelines outside filter strips unless tied into a stream, lake, or wetland as a firebreak with minimal disturbed soil. Retain organic ground cover in filter strips during prescribed fires.
> 2509.25.13.2 (e.):
> Build firelines with rolling grades and minimum downhill convergence. Outslope or backblade, permanently drain, and revegetate firelines immediately after the burn. Use certified local native plants as practicable; avoid persistent or invasive exotic plants.
> 2509.25.14.1:
> Manage land treatments to limit the sum of severly burned soil and detrimentally compacted, eroded, and displaced soil to no more than 15% of any activity area.
> 2509.25.15.1(b.):
> Locate vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas on gentle upland sites. Dispose of chemicals and containers in State-certified disposal area.
> 2509.25.15.1(c.):
> Locate…fire camps such that surface and subsurface water resources are protected. Consideration should be given to disposal of human waste, wastewater and garbage and other solid wastes.
> 2509.25.15.2.1(a.):
> Install…berms....and use liners to prevent seepage of fuels to ground water. (e.g. pump locations in riparian areas).
>
> And, FSM 2523 directs Burned Area Emergency Response (BAER) activities.

Figure 3. Municipal Watersheds on the Bighorn NF (Forest Plan, Appendix A).



Appendix A A-14

<u>Cultural Resource Direction:</u>

The Bighorn NF is rich with **cultural resource sites**, which need to be considered in fire management decisions, particularly with ground disturbing suppression tactics (e.g. dozer line, fire camps). Figure 4 below depicts known historic districts established during Forest Plan revision (2005). The districts have a high concentration of interrelated eligible sites within them. They were denoted to highlight potential conflicts and/or need for additional time and/or consultation during NEPA planning for implementation of site-specific program objectives through NEPA decisions. The map has been updated and adapted to display a variety of data for the management of cultural resources during implementation of fire management actions outlined

in this document, and to meet the Forest's Programmatic Agreement (PA) with the Wyoming State Historic Preservation Office and the Advisory Council.

The current PA points out a need to survey certain areas prior to allowing wildland fire to be managed for multiple objectives (PA was written for "fire use"). In general, the Forest has sufficient inventory across the majority of the Forest, with the exception of three areas noted on Figure 5. Half of the Edelman Mine area and the Shell area were inventoried in 2012, with the Tepee Pole Flats inventoried in 2013, with the remaining half of Edelman to be surveyed in 2014, and all consultation work should be completed by FY 2015. If the potential arises for an opportunity to achieve resource management goals in these areas before completion of the inventories, direct consultation with SHPO will occur to establish alternative procedures. Figure 5 also notes areas where a cultural resource staff needs to be consulted before aerial retardant can be used.

During any wildland fire management activity, a cultural resource specialist (CRS) will be consulted to carry out procedures outlined in the Forest's PA, Appendix G (*refer to* Cultural Resource folder, electronic document file). A brief summary of a CRS roles are:

- Participate on an interdisciplinary team to determine if the fire should be managed to incorporate resource management objectives,
- Prepare management response options to protect identified or unidentified historic properties,
- Implementation of site-specific protection measures that will be undertaken to prevent damage or loss,
- Re-validate protective needs for historic properties, in accordance with changes in fire behavior, and
- Conduct post-fire assessment when needed and report the findings to SHPO.

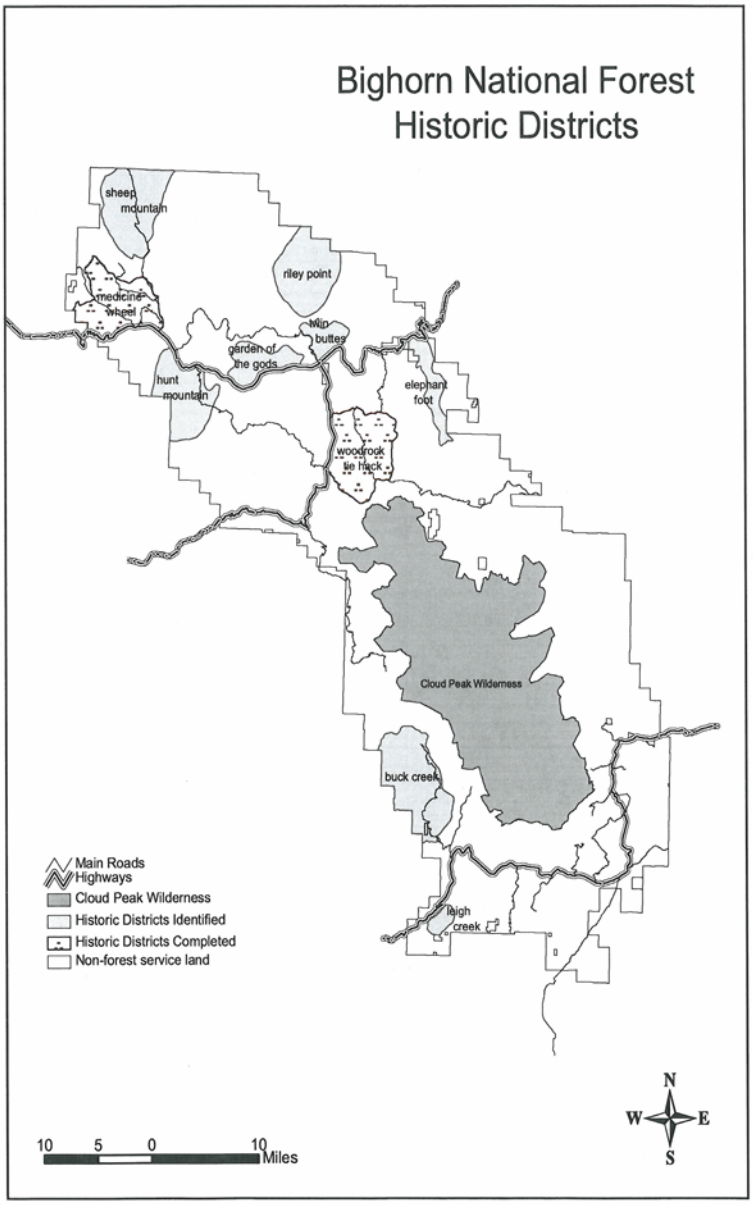
Additional direction outside the Forest's PA (Appendix G) includes:

- The Historic Preservation Plan for the **Medicine Wheel/Medicine Mountain** National Historic Landmark (NHL). The plan contains direction for wildland fire, and is included in the electronic file for this FMP (Cultural Resource folder, electronic document file).

- Forest wide direction for cultural resources that should be considered is within the Forest Plan (Pg. 1-52) under Social, Heritage Resources, and are:

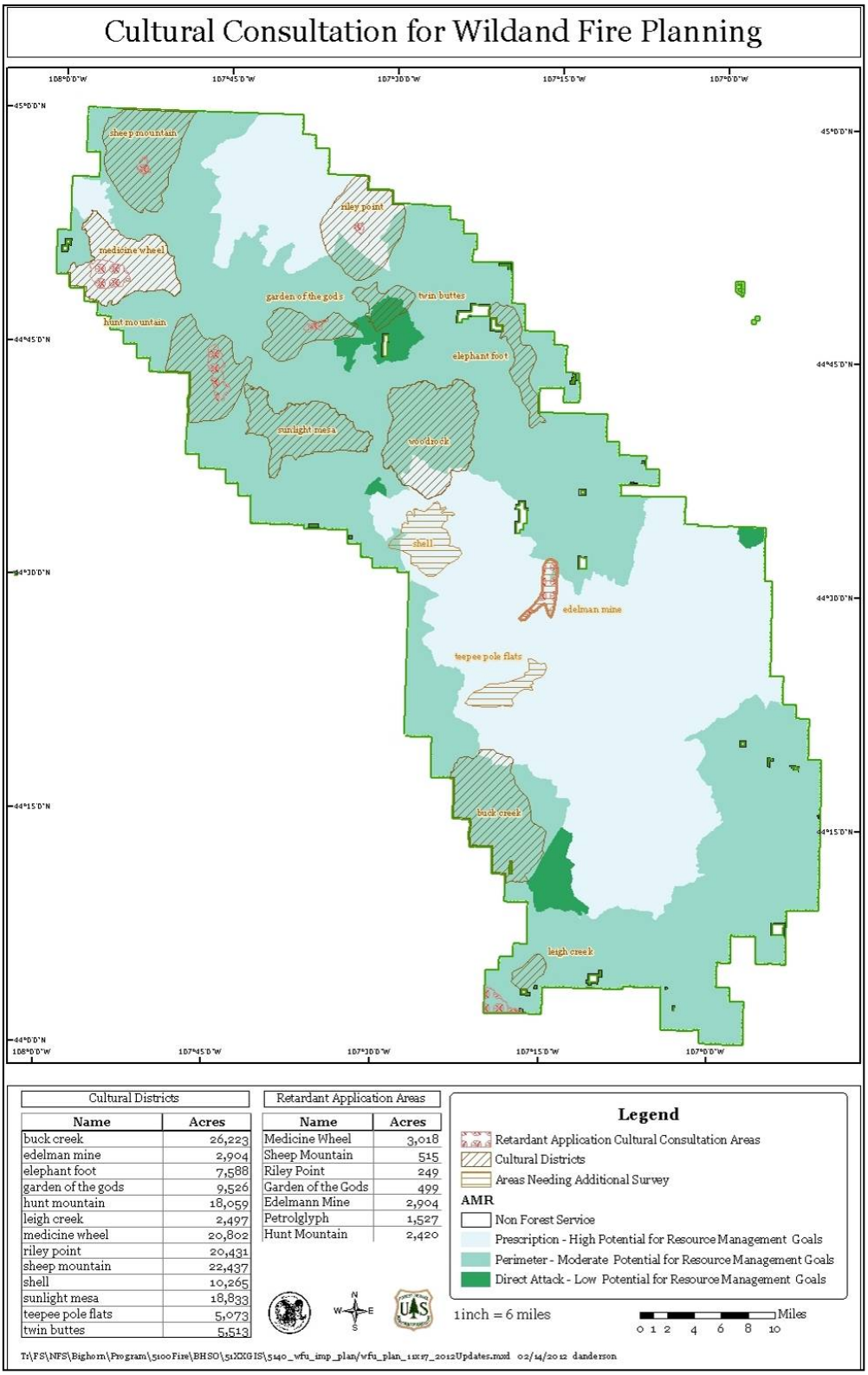
    - Guideline 2: Protect heritage resources from damage or vandalism through project design, specified protection measures, monitoring, and coordination.
    - Guideline 5: To ensure proper resource protection and to ensure that proper procedures are conducted, refer to the map of Historic Districts in Appendix A of the Plan during site-specific project planning (36 CFR 800).

Figure 4. Historical Districts on the Bighorn NF (Forest Plan, Appendix A).



Appendix A *A-13*

Figure 5. Cultural Resource Districts and Concern Areas (Adapted from the Forest Plan, Appendix A).

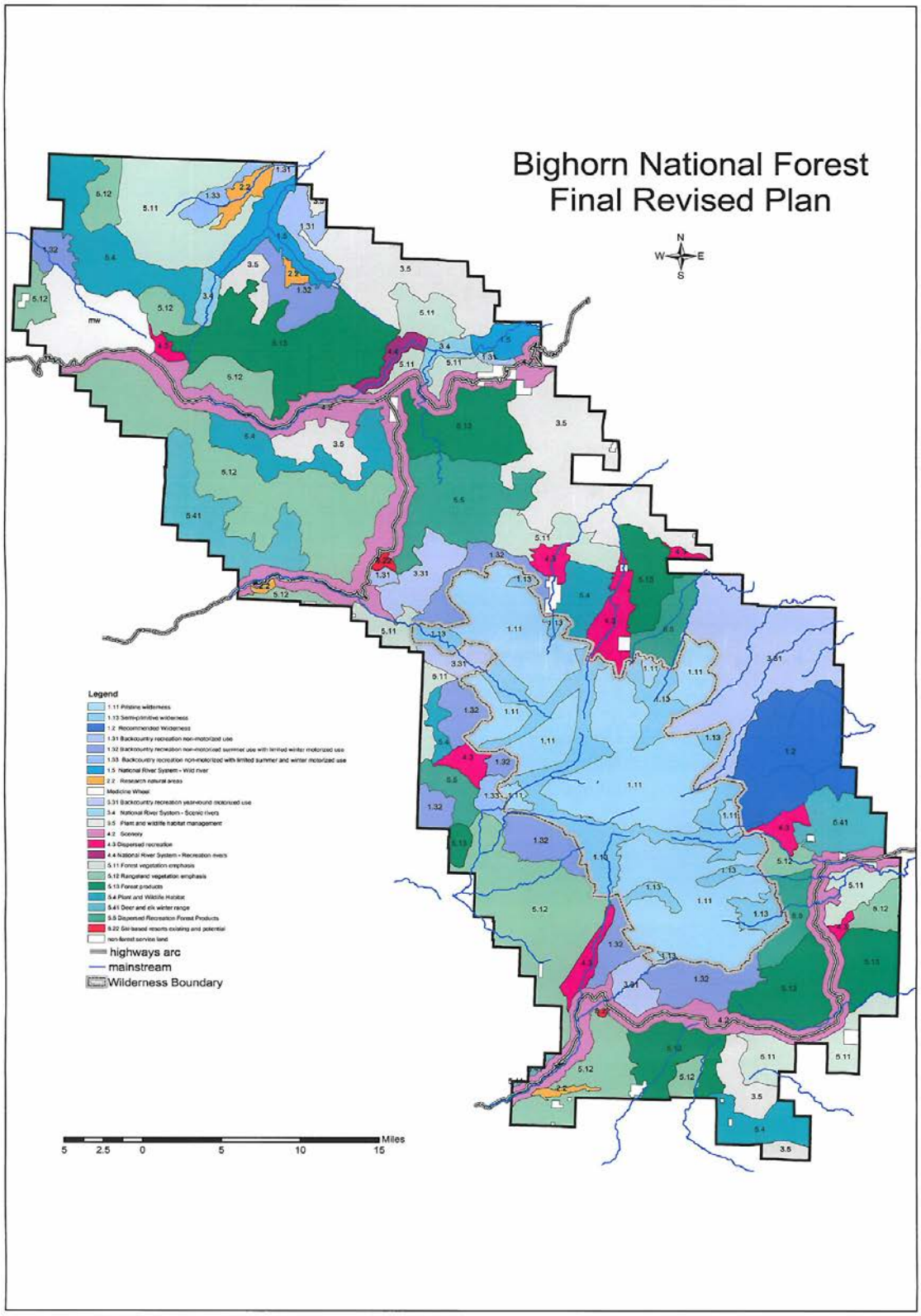


In addition to the Goals, Objectives, Desired Conditions, and Forest-wide Standards and Guidelines, the Forest Plan also establishes management areas that further guide implementation, as described in Chapter 2 of the Plan. These management areas are described by themes and desired conditions, and additional standards and guidelines that guide resource management decisions in each area. There are no standards and guidelines specifically related to fire management within these individual management areas, except as they are addressed in Table 1 above from the forest-wide guidelines. The themes and desired conditions do influence fire management, and were used in the preparation of the AMR Map. As also mentioned previously, the themes and desired conditions for these management areas were incorporated into the WFDSS guidance shown in Table 2 below.

The following is a short description of each Management Area, from Chapter 2 of the Forest Plan, to provide context for the map (Figure 6) below and Table 1 above. Further descriptions of the management areas can be viewed in Chapter 2 of the Forest Plan.

- CATEGORY 1
  - 1.11 Pristine Wilderness
  - 1.13 Semi-primitive Wilderness
  - 1.2 Recommended Wilderness
  - 1.31 Backcountry Recreation, Nonmotorized Use
  - 1.32 Backcountry Recreation, Nonmotorized Summer Use with Limited Winter Motorized Use
  - 1.33 Backcountry Recreation with Limited Summer and Winter Motorized Use
  - 1.5 National River System - Wild Rivers
- CATEGORY 2
  - 2.2 Research Natural Areas
- CATEGORY 3
  - 3.31 Backcountry Recreation, Year-round Motorized Use
  - 3.4 National River System – Scenic Rivers (Outside Wilderness)
  - 3.5 Plant and Wildlife Habitat Management
- CATEGORY 4
  - 4.2 Scenery
  - 4.3 Dispersed Recreation
  - 4.4 Recreation Rivers
- CATEGORY 5 (SUITED TIMBER)
  - 5.11 Forest Vegetation Emphasis
  - 5.12 Rangeland Vegetation Emphasis
  - 5.13 Forest Products
  - 5.4 Plant and Wildlife Habitat
  - 5.41 Deer and Elk Winter Range
  - 5.5 Dispersed Recreation and Forest Products
- CATEGORY 8
  - 8.22 Ski-based Resorts, Existing/Potential
- MEDICINE WHEEL
  - MW – Medicine Wheel National Historic Landmark and Vicinity

Figure 6. Management Areas from the Forest Plan.



In summary, during initial attack or size-up of a fire, the cause of the fire is determined which influences management response strategies and objectives. If a fire is human caused, firefighters will attempt to extinguish it with the least cost and risk of exposure to firefighters and public safety. If it is a naturally caused fire (i.e. lightning), an interdisciplinary team of resource professionals and a line officer would be assembled to evaluate if the fire should be managed for more than a suppression objective. If the fire is located in an area suitable for resource management goals in consideration of the above mentioned Forest Plan direction (standards, guidelines, management area themes), and the risk to firefighters and public safety is evaluated (including presence of people, structures, the length of season remaining including drought factors, expected fire behavior, and firefighting resources available), and interagency and local government support is established. From this information, a decision is made to either extinguish the fire or manage the fire as a long term fire event with accompanying planning and public notification and involvement of cooperators. Examples of options managers may choose include:

- Monitoring from a distance
- Monitoring on-site
- Confinement
- Monitoring with limited contingency actions
- Monitoring with mitigation actions
- Initial attack
- Suppression with multiple strategies
- Control and extinguish
- Any combination of some or all of the above as well as other options

As a means of simplifying all of this information as it pertains to fire management decision making, the following compilation of Forest Plan direction was prepared to populate the **WFDSS** (Wildland Fire Decision Support System) database. These are a compilation of Forest Plan direction and standard practices, matching the specific FMUs. There are additional Forest Plan direction statements and general standard incident objectives in Table 3 following. A WFDSS decision is prepared for any fire managed as extended attack (Type 3 or larger Incident Management Team) to identify rationale used in incident management decision making process.

Table 2. WFDSS Incident Management Objectives and Management Requirements from the Revised Forest Plan (2005) and standard incident objectives.

	FMU	Type	Activated	Deactivated	Description
●	Bighorn Contiguous	Mgmt Req			Provide for firefighter and public safety. Implement evacuations/closures as needed with County/WYDOT.
●	Bighorn Contiguous	Mgmt Req			Do not apply retardant within 300' of perennial streams, unless necessitated by human safety or property loss considerations.
●	Bighorn Contiguous	Mgmt Req			Consider management area direction from Forest Plan when implementing response strategies. Restrictions on

				mechanized equipment may apply in some areas.
●	Bighorn Contiguous	Strat Obj		Suppression strategies and costs are commensurate with values at risk. Consider safety exposure, cost efficiency, and effectiveness of air resources.
●	Bighorn Contiguous	Strat Obj		Protect structures and adjacent private land commensurate with values at risk. Coordinate with County/State resources for protection measures and cost sharing.
●	Bighorn Wilderness	Mgmt Req		Provide for firefighter and public safety. Implement evacuations/closures as needed with County.
●	Bighorn Wilderness	Mgmt Req		Do not apply retardant within 300' of perennial streams, unless necessitated by human safety.
●	Bighorn Wilderness	Mgmt Req		Suppression strategies and costs are commensurate with values at risk. Consider safety exposure, cost efficiency, and effectiveness of air resources.
●	Bighorn Wilderness	Mgmt Req		MA 1.11/1.13 Allow fire to play its ecological role within the wilderness. Maximize use of natural barriers. Dozers not allowed except by Regional Forester approval. Use of helicopters and mechanized equipment must be approved by Forest Supervisor. Refer to the Fire Management Plan for conditions to consider when approving mechanized equipment. Apply MIST techniques to suppression tactics. Assign a wilderness resource advisor to all fires within or expected to enter the Cloud Peak Wilderness.
●	Bighorn Wilderness	Mgmt Req		MA 1.2 Allow fire to play its ecological role within proposed wilderness. Maximize use of natural barriers. Dozers and engines prohibited except by Forest Supervisor approval. Chainsaws, ATVs, pumps are allowed without Forest Supervisor approval.

Table 3. WFDSS Bighorn NF Incident Specific Objectives and Management Requirements to Consider.

Management Areas 1.31/1.32/1.33	Fire encouraged to accomplish resource objectives. Dozers not allowed except with Forest Supervisor approval. All other mechanized equipment are allowed without Forest Supervisor approval.
Management Area 1.5	Fire encouraged as a natural process. Dozers and motorized vehicles prohibited except with Forest Supervisor approval. Prohibition does not apply in Sections 19 and 30 near FS Boundary in Little Bighorn River due to structures present. Chainsaws and pumps are allowed without Forest Supervisor approval.
Management Area 2.2	Fire encouraged as a natural process. Dozers prohibited except with Forest Supervisor approval. Chainsaws, engines, ATVs and pumps are allowed without Forest Supervisor approval.
Management Areas 3.31/3.5	Fire encouraged as natural process. No restrictions on mechanized equipment.
Management Area 3.4	Fire encouraged as natural process in Scenic River corridor. Dozers prohibited except with Forest Supervisor approval. Chainsaws, engines, ATVs and pumps are allowed without Forest Supervisor approval.
Management Areas 4.2/4.3/4.4	Fire encouraged as a natural process. No mechanized equipment restrictions.
Management Areas 5.11/5.12/5.13/5.4/5.41/5.5	Consider suited timber base in fire response strategy. No mechanized equipment restrictions.
Management Area 8.22	Consider ski area management needs when planning fire response. No mechanized equipment restrictions.
Management Area MW	Confine/Contain/Control options allowed - refer to Historic Preservation Plan (HPP-1996) in Fire Management Plan. Earth disturbing fireline, or landing or flyover with aircraft prohibited within National Historic Landmark (NHL) site (the Wheel). Archaeologist required to approve other line construction and camps. Minimize traffic by NHL. Consult HPP partners in strategy decisions.
Fire Size	Manage fire to stay north of X creek, South of Y road, and East/West of Forest Boundary.
Public Safety	Implement area/road closures as necessary with approval from line officer and appropriate jurisdiction if other than NFS lands or roads. Ensure evacuation of public from X area in conjunction with County Sheriff. Limit duration of closures to those necessary for public safety.
Smoke/Highways	Monitor Highway 14/16 for smoke obstruction and public/firefighter safety. Post warning signs and/or implement closures as necessary. Coordinate closures with WYDOT thru their regional office(s).
Structures	In conjunction with county/state resources, protect the structures located in X summer home group, Z campground, Q resort, FS administrative site, and isolate structures (cow camps) located in Y drainage. Track resource costs pursuant to cost share agreement.
Long Term Planning	Conduct long term fire behavior and spread analyses taking into consideration current season length and severity indicators.
Public Information	Provide information to the public in conjunction with agency administrator to include kiosks placed at X location(s), a public meeting as necessary, and internet based information linked to the Forest's website. Incident specific pictures and information updated frequently to Inciweb is desired.
Private Land	In conjunction with agency administrator or resource advisor, obtain private landowner permission (via land-use agreements) for use of water for suppression uses or for camps or staging areas.

Cultural Resources	In conjunction with resource advisor and archaeologist, protect unevaluated and eligible sites in X locations. If new or unmapped resources are discovered, consult the resource advisor and archaeologist for direction in accordance with the Forest's PA with SHPO. Camp locations and dozer lines may require specific clearance.
Livestock	In conjunction with resource advisor, keep livestock permittee(s) informed of incident progress and any evacuation needs in Z drainage/allotment.
Recreation Outfitters	In conjunction with resource advisor and/or agency administrator, keep outfitter/guides informed of incident progress and any evacuation needs in Z drainage.
Timber Harvest	There are timber harvest activities ongoing in Z drainage. Keep operators informed of incident progress and any evacuation needs. Where feasible, protect suitable timber harvest areas in X location.
Threatened, Endangered, Sensitive Riparian Species	Z drainage provides habitat for the Yellowstone cutthroat trout and/or other riparian dependent species. Implement riparian protection measures by avoiding foam or retardant contamination, other chemical contamination, and by avoiding line construction in riparian areas where possible. Avoid dam building activities (e.g. helicopter dip sites) in this drainage for other than small pump use and rehabilitate sites before site abandonment. Avoid fireline construction in riparian areas when feasible. Implement sediment/erosion rehabilitation practices for firelines, and/or severely burned areas (BAER).
Noxious Weeds and Aquatic Nuisance Species	Noxious weeds are known to Z location. Avoid or minimize fireline construction in this area. Provide for motorized vehicle (including ATV/motorcycle/UTV) washing either in X town or at camp for all vehicles arriving to or departing from the fire. Avoid contamination of waterways from aquatic nuisance species by disinfecting equipment with trained local personnel as provided through Resource Advisor. Avoid dropping water from one source into another, or using multiple dip sites with the same equipment without disinfecting. Avoid dropping water where it will discharge directly into a waterway. Disinfect non-local equipment prior to use on the Forest. *Specify other aquatic nuisance species direction from the reference file attachment.*
Hazardous Materials	Only order what is necessary to complete the task, and maintain inventory/location and MSDS sheets for items ordered. Provide spill containment for sites storing more than 55 gallons. Report any spills to resource advisor. Dispose of excess in conjunction with resource advisor prior to team departure. Avoid storing in riparian areas.
Recycling	Minimize purchase of bottled water, and consider use of 1 to 2 gallon jugs for refilling canteens if cubies are not available. Sort recycling at fire camps for plastic, cardboard, batteries, and other materials that are locally recyclable as verified with Resource Advisor.

3.1.2 Physical Characteristics that Apply to All Fire Management Units (FMUs)

The topography of the Bighorn NF is that of an uplifted geologic island of forested land surrounded primarily by plains on adjacent lands. On the east and west faces of the Forest, topography rises steeply through canyons or rock faces, giving way to more gentle terrain that occupies the bulk of the Forest. Natural breaks in the forested vegetation occur in meadows/sage, in lakes/streams, and rock/scree. The core of the Forest is exposed granite rock outcrops, which

comprise the bulk of the Cloud Peak Wilderness. Elevation ranges from approximately 6,000' to over 13,000'.

Forested vegetation is predominantly lodgepole pine, with stringers of spruce/fir in drainages or at higher elevations. The steep canyons on the east and west faces have a predominance of Douglas-fir and ponderosa pine. Aspen is a very limited vegetation type, and is dominated by conifers in many areas.

Typical diurnal/nocturnal wind patterns influence fire weather in the drainages on the Forest. Most weather systems approach the Forest from the northwest. Strong southwest winds associated with fronts or high pressure systems may be associated with large fire days in periods of drought.

The Forest's typical fire season has been identified to be from June 15 to September 30, however it can begin earlier and extend later depending on weather conditions, particularly on the east and west faces of the Forest. The Forest averages about 20 fires per year, with approximately 50% of those being human caused (e.g. abandoned campfires). Most fires remain small after detection, however large fire events typically occur every 5-10 years, associated with drought and/or wind events that carry crown fire. Forest fire weather is monitored through five long term Remote Automated Weather Stations (RAWS), and one portable station as needed. Figure 7 below depicts where the stations are located on the Forest, and Table 4 references specific station details.

Figure 7. Bighorn NF RAWS Station Locations

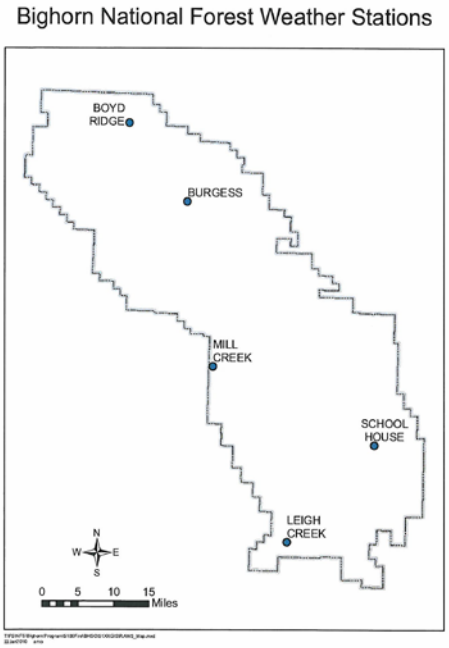
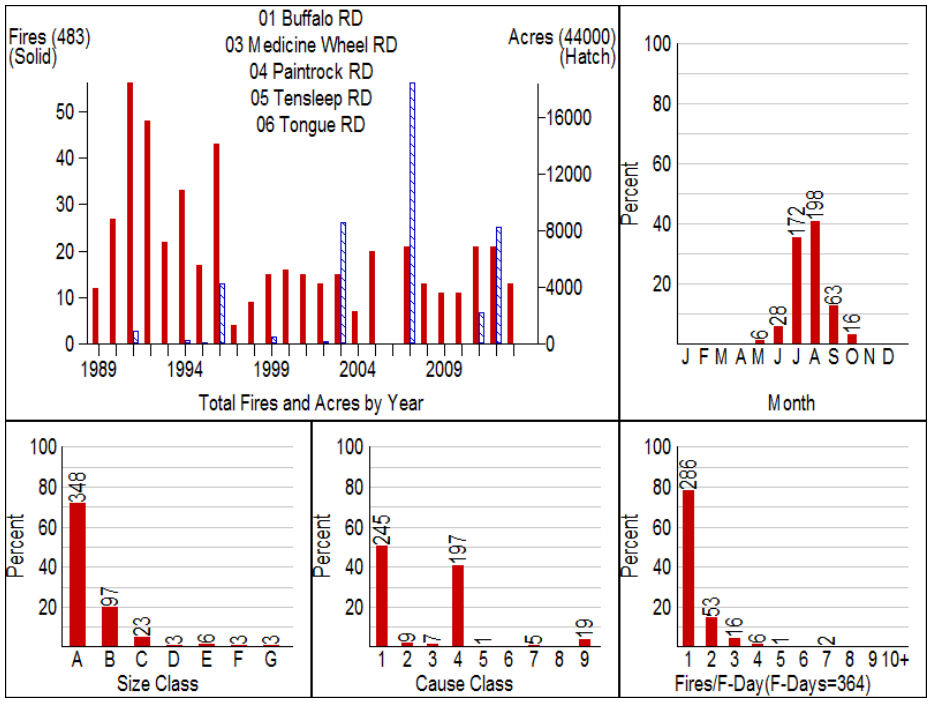


Table 4. Bighorn NF Weather Station Specifics

Bighorn National Forest Weather Stations					
Station Name:	School House Park	Mill Creek	Burgess Junction	Boyd Ridge	Leigh Creek
Station Abbr:	SCHLPK	MILLCR	BURGES	BOYDRIDG	LEIGH
Station Nbr	481002	480306	480403	480404	480906
Latitude:	44 18 23	44 27 21	44 47 10	44 56 29	44 06 24
Longitude:	106 58 55	107 26 58	107 32 09	107 42 32	107 13 26
Fire WX Zone	284	284	284	284	284
Elevation (FT.)	8069	8898	7975	7510	8202
Aspect	S	S	SW	SE	S
Site	Ridgetop	Ridgetop	Flat	Ridgetop	Mid-Slope
Slope Class	3	3	3	3	2
Fuel, Climate, & Plant	G3PEY	G3PEY	G3PEY	G3PEY	G3PEY
Fire Danger Indicator	ERC	ERC	ERC	ERC	ERC
90-97%	Refer to current NFDRS Fire Danger Rating Operating Plan in Electronic Ref File				
*Normal Green-up	6/01	6/10	6/10	6/01	6/10
County	Johnson	Bighorn	Sheridan	Sheridan	Washakie
Drainage	Mid Clear Crk	Mill Crk	Tongue River	Little Big Horn	Leigh Creek
District	Powder River	Paintrock/ Med Wheel	Tongue	Paintrock/ Med Wheel	Powder River
Raws I.D.	3239F5B2	323A0238	32304060	3249760A	32829234
1st Yr. Open.	1989	1989	1992	1998	1998

The following figure demonstrates the recent fire history on the Bighorn NF (1989-2013), applicable to all FMUs.



3.2 Fire Management Considerations for Specific Fire Management Units (FMUs)

The Forest Supervisor is responsible for establishing fire management priorities and coordinating all fire suppression activities. Management of the forest fire program has been delegated to the Resource Staff Officer, who is assisted by the Forest Fire Management Officer. District Rangers are directly responsible for all fire management activities within the District protection boundaries, and are assisted by their Fire Management Officers and the Forest FMO. The Medicine Wheel/Paintrock District retains an Assistant Fire Management Officer on staff to assist with the complexities of additional fire management areas (NPS and BLM), and a larger fire program associated with hosting the Wyoming Hotshots. In addition to District Ranger involvement in fire management activities, the Cloud Peak Wilderness area necessitates coordination with the Forest's wilderness coordinator. In **multiple fire start situations**, the Forest FMO and Resource Staff Officer, in conjunction with District Rangers and FMOs, may set priorities for incident response based on safety, threat to life or property, cost, resource values, current and predicted weather, and resource availability. Similarly, multiple fires within the Cody Interagency Dispatch zone would be prioritized by Forest FMOs in conjunction with line officers, as described in the Annual Operating Plan for CDC (see electronic reference file).

Sample delegations of authority and other **large fire planning documents** to assist in hosting an Incident Management Team are contained in the electronic file for this FMP. This also includes **WFDSS** guides and documents, and **resource advisor** planning tools.

To provide for **firefighter and public safety**, this is the first objective of every fire management activity. The 30 Mile Accident Prevention Plan and Missionary Ridge Action Plan items are reviewed on fires to ensure compliance, according to national policy (10% of Type 3 thru 5 fires, all Type 1 and 2 fires). These review items have been incorporated into the Cody Dispatch Zone **Incident Organizer**, included in the electronic file for this FMP. In addition, all standard safety practices including the 10 Fire Orders and 18 Watch-out Situations, LCES, work-rest guidelines, personal protective equipment (PPE), defensive driving and seat belt use, fire danger pocket cards, and after action reviews are mandated in fire responses. Readiness inspections are performed on Forest firefighting resources. While the Forest's engines and initial response vehicles have red lights meeting NFPA standards, Forest employees are not authorized to drive outside of the established laws governing the use of these lights, and lights are to be used as a visual awareness for firefighter safety only. Thus, there is no need to document or certify drivers for use of the lights, as allowed for in agency policy (FSM 5126.5 and 5127.1). Incident traffic signing and other signing is accomplished through the Incident Sign Installation Guide (MTDC 2005). Employee fire qualifications and training are tracked through the Incident Qualification system (IQCS) with records maintained at the Supervisor's Office. IQCS committee operating guidelines are contained in the electronic file system. The Forest has embraced the High Reliability Organizing concepts to its fire management programs to enhance risk management procedures.

Fire Danger/Planning levels are prescribed through the CDC Zone Fire Danger Rating Operations Plan, included in the electronic file for this FMP. Refer also to the **Bighorn NF drawdown matrix/planning level guide** and **preparedness plan**, associated with this document. All initial attack dispatching on the Bighorn NF is handled through Cody Interagency Dispatch center. The front desks of each Forest office have been used as backup radio management sources during radio failures at CDC. Staffing may vary annually based on budget and/or

availability of severity resources. Severity resources may be requested upon approval of Regional Office fire managers after certain criteria have been met. Sample **severity requests** are contained in the electronic file. Extended attack management teams (Type 3) are configured at the Cody Dispatch zone level, and are assessed weekly by fire managers to see if individuals need retained at the local unit to be able to fill out needed organizations. **Fire response times** will vary from less than 1 hour to more than 3 hours depending on location within either FMU, and available resources. In general, 7 day staffing occurs on the Forest through at least one IA resource identified on each District during the peak fire period. Each resource (e.g. engine or crew module) does not have 7 day coverage, rather, overlapping schedules are developed each year.

Fire restrictions are implemented through Forest Supervisor declared special orders, in conjunction with District Rangers and Fire Management Officer input. Sample fire restriction orders are included in the electronic reference file for this FMP. In general, fuels conditions, season remaining, and the amount of human activity and starts are considered in applying the different stages of restrictions. Signing and public media contact are done by the Forest/Districts. Districts may also issue campfire permits during periods of restrictions. Contractors (e.g. timber sale operators) must also comply with restriction orders, unless otherwise stated in the special order. Restrictions are coordinated through a statewide database hosted by the BLM. The following are the categories and conditions of restrictions considered:

No restrictions – Operational all times of the year, except when superceded by a restriction. Fire Danger index is low to moderate.

Partial restrictions – The Forest is responsible for implementation (Stage 1 and Stage 2). The Forest and Districts are responsible for enforcement of the restrictions. Stage 1 restricts welding, chainsaws, campfires and smoking to certain areas or conditions. Stage 2 prohibits campfires and welding and chainsaw use, while restricting other activities. *Consideration* will be given to implementing partial restrictions if four or more of the criteria are present.

1. Fire Danger index level rating is very high or greater.
2. 1000 Hour Fuel Moistures are above 90th percentile.
3. ERC (energy release component) above 90th percentile.
4. Fires are affecting available suppression resources making adequate initial attack difficult.
5. Area is receiving a high occurrence of human caused fires.
6. Adverse fire weather conditions and risks are predicted to continue.
7. Forest Preparedness Plan level three or greater
8. Regional Preparedness Plan level four or greater.
9. National Preparedness Plan level four or greater.

Full restrictions - Area closures will be considered for isolated incidences when fire danger is very high to extreme and five or more of the above criteria are met and expected to continue for a week or more. A communication/enforcement plan is needed. Area closures should only be considered when Stage 1 and 2 (partial) restrictions are not effective and human-caused fires are still occurring.

Restrictions or closures should be rescinded when the criteria that implemented the action have lessened. These criteria should be reviewed carefully and frequently.

3.2.1 FMU Snap Shot – Bighorn Contiguous FMU

The following is a summary of fire management responses based on Forest Plan management areas that are for initial attack within the FMU.

Table 5. Bighorn NF Contiguous FMU Snap Shot

Bighorn Contiguous Fire Management Unit		
Closest Forest IA Resources and Area Description	**Dispatch Responses**	**Fire Danger/ Planning or Preparedness Level***
Shell E641, Porcupine IA Squad, Burgess E661, Big Goose IA Squad, Tyrell E611, Hunter IA Squad FMU is comprised mostly of accessible/roaded areas, though steep terrain occurs on west and east faces of Forest Boundary, and some larger roadless areas occur. Mutual Aid zone with counties is 1 mile either side of Forest Boundary by agreement. Counties have primary structure suppression responsibility and should be involved immediately with any threat potential.	1 of Closest Resources[1] Notify Duty Officer, who may modify response, and will coordinate with line officer regarding objectives and strategies of response.	Low – Moderate PL1 or 2
Summer Home groups, lodges, administrative and recreation sites, and several areas of private land inholding and adjacent private land structures are primary values at risk. BLM and Private lands adjoin the Forest on West side, Crow Reservation to North, and Private/State on East side of Forest. Fire management response for resource benefit (perimeter/prescription) appropriate corresponding to Policy Guidance (USFS 2009) and Forest Plan direction (AMR map), considering firefighter exposure, fuels and longer range weather. Otherwise, in areas with structures, direct strategies are appropriate. Restrictions on retardant use in/near streams and lakes. Mechanized equipment restriction (dozers, etc.) may apply depending on Forest Plan management area.	2 of Closest Resources Consider Helicopter and/or Retardant[2] Notify Duty Officer, who may modify response, and will coordinate with line officer regarding objectives and strategies of response. Consider detection flight if multiple starts.	High - Extreme PL3 - 5

* Note that under various combinations of Fire Danger and PL, other responses may be justified, the above are recommended guidelines.

[1] Minimum IA Resource to include IC5 plus 1 FFT2. Depending on staffing, closest resource may be from BLM/County resource.

[2] Commensurate with Values at Risk and Safety of Air Resource. Remote locations and/or structures threatened justifies use of air resource for logistical support and IA, even under Low/Moderate fire danger. Dispatch should check on availability of these resources as part of response.

3.2.2 FMU Guidance – Bighorn Contiguous FMU

There is no additional guidance for this FMU outside of the Forest Plan direction included in the above sections. This FMU incorporates all of the non-wilderness and non-proposed wilderness management areas.

3.2.3 FMU Characteristics – Bighorn Contiguous FMU

Firefighter and public safety considerations

Firefighter and public safety is the priority in all fire management activities. History on the Forest indicates that while the annual number of fire starts is not high, the fire environment is complex as high intensity fires with rapid rates of spread are common during active burning years. The fire environment is further complicated by mature forest conditions, steep terrain, and frequent wind events that are not always well forecasted. There have been two entrapments on the Forest (Little Goose "near miss" 2007; Stockwell 1997). There are inherent safety issues with the volume of public recreation occurring with cabins, lodges, dispersed sites occupied with trailers and tents, fishing at lakes, etc. that create the potential for firefighters to actively engage fire in an effort to protect public safety. There has been little coordinated advanced planning to protect structures in these high use areas, although the Forest has begun to reduce fuels in the areas. Structures to protect have been mapped on the Forest, and include adjacent private land structures, with maps residing in initial attack vehicles and Forest offices and GIS. Fire prevention contacts are made during periods of restrictions, and proactively at cabin owner meetings to stress fuels reductions. There are only a few pockets of private inholdings within the FMU, with none larger than a few thousand acres (Dome Lake is largest).

Annual readiness reviews are conducted on Forest firefighting resources to ensure standard safety components are in place. These are retained in a separate file (5120) in the Supervisor's Office.

There are no oil/gas wells or hazards from mining related activities. The highways (14 and 16) provide public access that is often busy during summer months with traffic towards Yellowstone NP, and as such is a known safety issue. There are powerlines (low voltage) along portions of Highway 14 and 16 that provide power to recreation cabins and lodges.

Environmental and Aviation Hazards

Aviation hazards are identified on the Forest Aviation Hazard Map included in the electronic reference file. High winds and terrain-influenced winds that affect aviation operations are common. Environmental hazards include steep, rocky and difficult terrain. Rattlesnakes may be found at lower elevations along the east and west faces of the Forest. Air quality is generally excellent in the FMU, with the only non-attainment zone for smoke being located in the city of Sheridan.

Biological and Resource Characteristics

These elements were described at the Forest-wide scale in Chapters 1 and 2.

3.2.4 FMU Fire Environment – Bighorn Contiguous FMU

The **fire behavior and weather patterns** that influence fire management decisions in this FMU vary with the diversity of the terrain. Again, the faces of the mountain on the east and west sides of the Forest are steep, with Douglas-fir and ponderosa pine vegetation types that may have missed one or more fire cycles. These areas would support crown fire given the right circumstances. Drainages on the top of the mountain also influence fire behavior and weather patterns typical with other areas of the intermountain west. Mature forested canopies of lodgepole pine and spruce/fir occur throughout much of the FMU, with some of the most recent fires (1988, 2003, 2007) having returned fire to approximately 25,000 acres of the FMU. Otherwise, most of the rest of the FMU has not experienced widespread fire since the late 1800's/early 1900's, and as such can support crown fire readily. Fire return intervals vary from 10 to over 100 years, depending on fuel type. Livestock grazing typically reduces fine fuels in meadows and shrub communities to limit wildfire potential in non-forested areas.

The Forest prepared a Fire Regime Condition Class layer associated with the Forest Plan, which was tied to current vegetation types and age class structures from large scale aerial photo interpretation. There is also the Landfire database from satellite generated sampling. Otherwise, there are no compiled fuels databases for use in project planning.

Weather patterns include frontal passages that typically come from the northwest. Daily thundercell formation is also typical in the summer months that can influence fire behavior with winds associated with passing cells. Precipitation ranges from 15" at lower elevations to over 25" at over 9,000'. Prevailing winds are westerly to southwesterly. Typical diurnal/nocturnal wind patterns influence fire weather in the drainages on the Forest. Most weather systems approach the Forest from the northwest. Strong southwest winds associated with fronts or high pressure systems may be associated with large fire days in periods of drought. This FMU has had the most fire occurrence associated with lightning and human causes, as it has the higher recreation visitor occurrence, and also the most vegetation to support fires. Severe fire years have typically been associated with prolonged drought.

Fuels conditions that support large fires are evident when Energy Release Component (ERC) indicators reach 90th percentile, although large fires can occur below this level also. 1,000 Hour fuel moistures also tend to be a good indicator of the potential to support large fires, as evidenced when these levels drop below 11% moisture.

3.2.1 FMU Snap Shot – Bighorn Wilderness FMU

The following is a summary of fire management responses that are for initial attack within the FMU. This FMU is comprised of the Cloud Peak Wilderness and the Rock Creek recommended wilderness areas, as identified in the management area prescription map.

Table 6. Bighorn NF Wilderness FMU Snap Shot

Bighorn Wilderness Fire Management Unit		
Closest Forest IA Resources and Area Description	**Dispatch Responses**	**Fire Danger/ Planning or Preparedness Level***
Shell E641, Tyrell E611, Hunter IA Squad, Big Goose IA Squad, Burgess E661, Porcupine IA Squad FMU is comprised mostly of inaccessible/unroaded areas, with steep terrain. Mutual Aid zone with counties is 1 mile either side of Forest Boundary by agreement. There are no structures other than outfitter camps within the area, however private or other structures are adjacent to the area. Counties have primary structure protection responsibility and should be involved immediately with any threat potential. Primary values include wilderness (Cloud Peak) and Rock Creek recommended wilderness. General fire management response will be resource benefit with limited suppression. Fire management response for resource benefit (perimeter/prescription) appropriate corresponding to Policy Guidance (USFS 2009) and Forest Plan direction (AMR map), considering firefighter exposure, fuels and weather. Restrictions on retardant use in/near streams and lakes. Mechanized/motorized equipment restriction (dozers, chainsaws, etc.) and aircraft use apply **requiring line officer (Forest Supervisor) approval**. MIST and other restrictions apply as directed in the Fire Management Plan and Forest Plan.	1 of Closest Resources[1] Notify Duty Officer, who may modify response, and will coordinate with line officer regarding objectives and strategies of response.	Low – Moderate PL1 or 2
	1 of Closest Resources Consider Helicopter[2] Notify Duty Officer, who may modify response, and will coordinate with line officer regarding objectives and strategies of response. Consider detection flight if multiple starts.	High - Extreme PL3 – PL5

[1] Minimum IA Resource to include IC5 plus 1 FFT2. Depending on staffing, closest resource may be from BLM/County resource. IC should be Forest employee.

[2] Commensurate with Values at Risk and Safety of Air Resource. Remote locations and/or structures threatened justifies use of air resource for logistical support and IA, even under Low/Moderate fire danger. Dispatch should check on availability of these resources as part of response.

3.2.2 FMU Guidance – Bighorn Wilderness FMU

There is additional guidance for this FMU, pertaining to the uniqueness of wilderness management direction. The following guidance applies specifically to the Cloud Peak Wilderness portion of the FMU. The Rock Creek recommended wilderness is managed to a less restrictive level (as described in 3.1.1), but the Minimum Impact Suppression Tactics (MIST) guidelines should be employed. The MIST tactics are included in the electronic file for this FMP.

Wilderness direction is summarized in Section 2(c) of the Wilderness Act as follows:
"A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean in this chapter an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation."

The fire suppression policy for the Cloud Peak Wilderness is to conduct all fire management activities in a manner compatible with overall wilderness management objectives. The fire management objectives in wilderness, as stated in the Forest Service Manual (FSM2324.21) are:

Permit lightning caused fires to play, as nearly as possible, their ecological role within the wilderness.

Reduce to an acceptable level the risks and consequences of wildfire within wilderness or of wildfire escaping from wilderness.

The **goal** of fire management in the Wilderness is best achieved when the effects of fire as a natural agent are observed, and the affects of fire management activities are not. Fire managers shall give preference to using methods and equipment that cause the least:

1. Alteration of the wilderness landscape
2. Disturbance of the land surface
3. Disturbance to visitor solitude
4. Adverse effect on other air quality related values

If suppression of wildfire in Wilderness is necessary, preference must be given to those suppression methods and strategies that provide for firefighter and public safety first and that have the least physical impact on the land consistent with other management considerations. Minimum Impact Management Action Guidelines should also be recognized. Preference will be given to use of natural fuel breaks. In some cases direct attack with a minimum width hand line, or wet line using power driven pumps and hose may be most cost-effective and cause the least overall damage to Wilderness values.

A Wilderness Resource Advisor will be assigned to all fires within or expected to enter the Cloud Peak Wilderness – typically the wilderness rangers employed on the Forest who are fire qualified. Wilderness resource advisors will be listed in the Delegation of Authority letter for any fire requiring suppression in the wilderness by an Incident Management Team.

The Wilderness Resource Advisor on the Bighorn NF will be Brian Boden, or contact SHF for a qualified advisor (Bill Oliver, etc).

The following chart shows the delegated authorities for approving motorized and mechanical equipment within the Cloud Peak Wilderness on the Bighorn National Forest. The same approvals also occur (per 7/1/2005 R2 Memo) for resource benefit fires.

Motorized/Mechanical Request	Authorized for Non-Emergency	Authorized for Emergency
Chainsaws, Pumps	Regional Forester	Forest Supervisor
Helicopters-Fixed Wing Retardant Delivery Bucket Work Personnel Shuttle	Regional Forester	Forest Supervisor
Transport and Supply by aircraft, air drop and mechanical transport	Regional Forester (2326.1)	Forest Supervisor
Helispot construction	Regional Forester	Forest Supervisor
Motor Vehicle	Regional Forester	Forest Supervisor
Tractors (Heavy Equipment)	Regional Forester	Regional Forester
Management Ignited Fire in Wilderness	Regional Forester	N/A
Wildland Fire Use in Wilderness	N/A	Forest Supervisor (where WFU plan is established)
Burned Area Emergency Rehabilitation (BAER) projects in Wilderness	Regional Forester	Forest Supervisor

When considering mechanical transport or motorized equipment use for fire suppression in wilderness, the following criteria should be used to evaluate whether or not Approval or Disapproval is appropriate for the recommended actions.

APPROVE use of Motorized Equipment (chainsaws, portable pumps, etc.) when:

- There is a threat to life, property, public or firefighter safety that can only be mitigated with the use of motorized equipment.
- Potential effects to cultural and natural resources will be outside the range of acceptable effects, unless motorized equipment is used.
- Rate of spread is 10 chains per hour or greater in timber fuel models.
- Fuel loading is greater than 30 tons per acre.
- Technically difficult trees (usually ”C” level of difficulty) must be felled for firefighter safety, and where using a crosscut saw substantially increases risk to the sawyer.
- Use of motorized equipment will result in substantially less impact to the wilderness resource (i.e. using pump to establish a “wet line”, versus using hand tools to dig line).

- Weather patterns, potential fire behavior, and limited resource availability (e.g. National Planning Level V) indicate a long term fire suppression effort is not feasible to manage.

APPROVE use of Mechanized Transport (off-highway vehicles, wagons, carts, helicopters, etc.) when:

- There is threat to life, property, public or firefighter safety that can only be mitigated with the use of mechanized transport.
- Potential effects to cultural or natural resources will be outside the range of acceptable effects, unless mechanized transport is used.
- Use of mechanized transport will result in substantially less impact to the Wilderness resource (i.e. Using helicopters to ferry crews to / from an off site base camp, versus establishing a camp in a sensitive environment).

DO NOT APPROVE use of Mechanized Transport to retrieve firefighters or their equipment from Wilderness unless:

- Ongoing fire situation dictates prompt retrieval of specialized personnel or equipment, and there is no other practical means of retrieval.

APPROVE the use of fire retardant chemicals in wilderness when:

- There is threat to life, property, public or firefighter safety that can only be mitigated with the use of fire retardant chemicals.
- Potential effects to cultural or natural resources will be outside the range of acceptable effects, unless fire retardant chemicals are used.
- Use of fire retardant chemicals will result in substantially less impact to the Wilderness resource (i.e. using fire retardant to substantially extinguish a fire, versus using handcrews and motorized equipment). Remember retardant dyes can last for years on rocks and logs, dependent on weather an exposure.

Construction of Helispots within Wilderness:

Per FSM 2326.04c. “The Forest Supervisor approves the use of motorized equipment or mechanical transport under condition described in section 2326.1”.

If permission is granted, consider the following:

- Consider using helispots outside the Wilderness whenever feasible.
- Provide for risk assessments and safety.
- Use natural openings where possible, or areas that minimize needed tree felling.
- Consider the visual impacts of potential locations; when possible, locate helispots away from main trails and popular attractions.
- Where possible, select locations that can be easily restored to their natural appearance.

DO NOT APPROVE Burned Area Emergency Rehabilitation (BAER) projects within Wilderness unless:

- Necessary to prevent an unnatural loss of the Wilderness resource.
- To protect life, property, and other resources values outside of wilderness.

The Forest will make provisions for fighting fires in wilderness when motorized or mechanized equipment cannot be used. This would include having alternate suppression equipment available, special training for fire suppression crews, and using MIST guidelines.

3.2.3 FMU Characteristics – Bighorn Wilderness FMU

Firefighter and public safety considerations

Firefighter and public safety is the priority in all fire management activities.
Both groups are influenced by the remoteness of this area and the steep terrain. Rock slopes occur predominantly through the wilderness area. Vegetation is primarily restricted to drainage bottoms at the higher elevations in the Wilderness, whereas the Rock Creek area is predominantly forested with lodgepole pine transitioning to ponderosa pine near the Forest boundary at lower elevations. Roads only access the periphery of the FMU, otherwise hiking trails are the predominant access routes.

The public and firefighter safety elements described in the Bighorn Continuous FMU also apply to this FMU, with the exception that the private structures and private inholdings do not apply to this FMU. However, the private land adjacent to Rock Creek does have development that would require protection in the event of a fire moving off of the Forest. There are no powerlines or oil/gas developments within this FMU.

Environmental and Aviation Hazards

These elements are the same as described in the Bighorn Contiguous FMU, with the exception that the Cloud Peak Wilderness is also considered a Class 2 airshed as described in the Clean Air Act and implementing regulations.

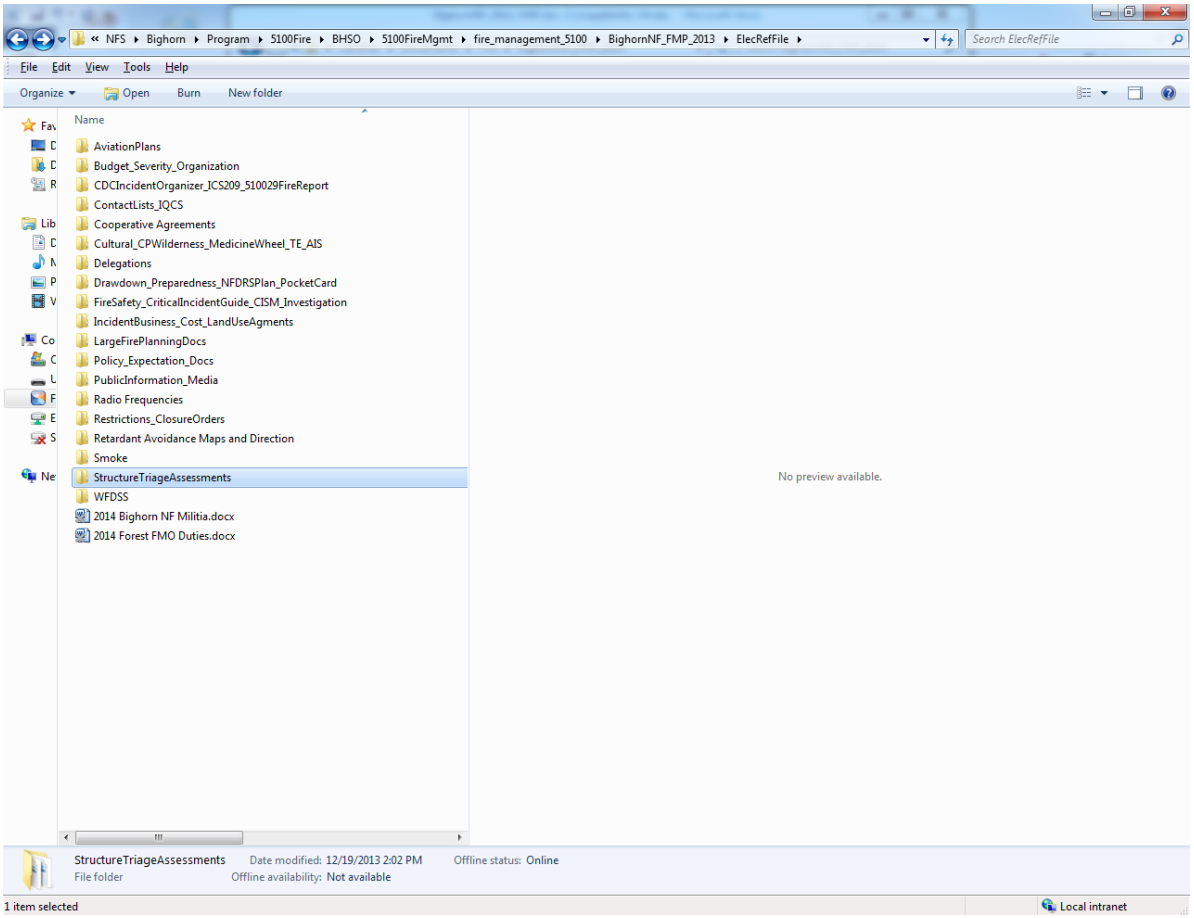
Biological and Resource Characteristics

These elements were described at the Forestwide scale in Chapters 1 and 2.

3.2.4 FMU Fire Environment – Bighorn Wilderness FMU

The **fire behavior and weather patterns** that were described in the Bighorn Contiguous FMU also apply to this FMU. Lightning occurrences are frequent in the wilderness, however fire starts are quite rare due to the lack of vegetation and colder climate associated with the elevation.

Electronic Reference File Structure

The following image displays how referenced documents are organized in the Fire Management Plan.

Electronic File Reference Summary for Bighorn NF Fire Management Plan